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CS MODEL COIL EXPERIMENT LOG BOOK

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Charging test of the ITER CS Model Coil which is the world's largest superconducting pulse coil and the CS Insert Coil had started at April 11, 2000 and had completed at August 18, 2000. In the campaign, total shot numbers were 356 and the size of the data file in the DAS (Data Acquisition System) was over 20 GB. This report is a database that consists of the log list and the log sheets of every shot.

One can access the database, make a search, and browse results via Internet (http://logwww.naka.jaeri.go.jp). The database will be useful to quick search to choose necessary shots.

Keywords: ITER, CS Model Coil, CS Insert Coil, Charging Test, Log, Database

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CSモデル・コイル実験記録

日本原子力研究所那珂研究所核融合工学部
西島　元・杉本　誠・布谷　嘉彦・若林　宏・辻　博史

（2000年 11月 27日受理）

世界最大の超電導パルスコイルであるITER中心ソレノイド（CS）モデル・コイルおよびCSインサート・コイルの通電実験は2000年4月11日に開始され，同年8月18日に終了した。この間，実験番号は356を数え，収集したデータはバイナリ形式で20 GB（テキスト形式では50 GB）を超えた。本報告書は4ヶ月にわたる実験のログ（日誌）とそのリストを集めたデータベースである。

本データベースに収録されている実験記録は全てウェブ上で閲覧でき，検索が可能である(URL: http://logwww.naka.jaeri.go.jp)。膨大な実験データの中から必要なデータを抽出する際に役立つ。

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1. CS Model Coil Experiment Log List

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Date	Time	Run #	Objective	CSMC Imax	CSIC Imax	Current pattern	Results
2000.4.11	11:33	1-1	Sensor check	1 kA	0 kA	Trapezoidal	OK
2000.4.11	13:46	2-1	Sensor check	2.3 kA	0 kA	Trapezoidal	OK
2000.4.11	15:00	3-1	Sensor check	2.3 kA	0 kA	Trapezoidal	OK
2000.4.11	16:20	4-1	Adjustment of quench detector	2.3 kA	0 kA	Trapezoidal	OK
2000.4.11	16:50	5-1	Check quench detector	kA	kA	Trapezoidal	OK
2000.4.12	10:55	6-1	Sensor check	9.2 kA	0 kA	Stepped Trapezoidal	OK
2000.4.12	13:29	7-1	Adjustment of quench detector	9.2 kA	0 kA	Trapezoidal	OK
2000.4.12	14:38	8-1	check detection system	9.2 kA	kA	Manual dump	Vinner = 132 V, Vouter = 159 V, Tau = 18.9 s
2000.4.12	16:16	9-1	AC loss measurement. Tau ~ 20 s.	9.2 kA	kA	Manual dump	Vinner= 132 V, Vouter = 158 V, Tau=19.2 s
2000.4.14	10:35	11-1	Heater test for AC loss measurement	kA	kA	Heater pulse	
2000.4.14	13:15	11-2	Heater test for AC loss measurement	kA	kA	Heater pulse	
2000.4.14	14:04	11-3	Heater test for AC loss measurement	kA	kA	Heater pulse	
2000.4.14	14:56	11-4	Heater test for AC loss measurement	kA	kA	Heater pulse	
2000.4.14	15:55	11-5	Heater test for AC loss measurement	kA	kA	Heater pulse	
2000.4.14	16:37	11-6	Heater test for AC loss measurement	kA	kA	Heater pulse	
2000.4.14	18:29	11-7	Heater test for AC loss measurement	kA	kA	Heater pulse	
2000.4.14	19:27	11-8	Heater test for AC loss measurement	kA	kA	Heater pulse	
2000.4.17	10:12	12-1	Daily check	9.2 kA	kA	Manual dump	Vinner = 134 V, Vouter = 156 V, Tau=19.5 s
2000.4.17	13:20	13-1	Try 23 kA (50 %)	23 kA	0 kA	Stepped Trapezoidal	6.5 T&160 MJ achieved.

2000.4.17	16:00	14-1	AC loss measurement, Tau = 20 s.	23 kA	kA	Manual dump	Vinner = 328 V, Vouter =388 V, Tau = 18.3 s
2000.4.18	10:00	15-1	Daily check	9.2 kA	kA	Manual dump	Vinner= 132 V, Vouter= 156 V, Tau= 19.5 s
2000.4.18	10:59	16-1	Try 36.8 kA (80 %)	36.8 kA	0 kA	Stepped Trapezoidal	13:50 10.4 T, 410 MJ achieved
2000.4.18	15:35	17-1	AC loss measurement , Tau = 20 s	36.8 kA	kA	Manual dump	Vinner = 524 V, Vouter = 622 V, Tau = 18.0 s
2000.4.19	10:07	18-1	Daily check	9.2 kA	kA	Manual dump	Vinner = 131 V, Vouter = 156 V, Tau = 19.4 s
2000.4.19	11:09	19-1	Try 13 T, 46 kA 100 % charge	46 kA	0 kA	Stepped Trapezoidal	14:20 13 T, 46 kA of 100 % current achieved.
2000.4.19	16:20	20-1	AC loss measurement, Tau = 20 s	46 kA	kA	Manual dump	Vinner=652V, Vouter=779V, Tau=17.3s
2000.4.20	9:50	21-1	Daily check	9.2 kA	kA	Manual dump	Vinner=133V, Vouter=156V, Tau=19.4s
2000.4.20	10:40	22-1	AC loss measurement , Tau = 20 s	41.4 kA	kA	Manual dump	Vinner=596V, Vouter=699V, Tau=17.8s
2000.4.22	9:21	23-1	Calorimetric calibration for AC loss measurement. Heat slug test.	kA	kA	Heater pulse	
2000.4.22	10:05	23-2	Calorimetric calibration for AC loss measurement. Heat slug test.	kA	kA	Heater pulse	
2000.4.22	10:48	23-3	Calorimetric calibration for AC loss measurement. Heat slug test.	kA	kA	Heater pulse	
2000.4.22	11:33	23-4	Calorimetric calibration for AC loss measurement. Heat slug test.	kA	kA	Heater pulse	
2000.4.22	12:19	23-5	Calorimetric calibration for AC loss measurement. Heat slug test.	kA	kA	Heater pulse	
2000.4.22	13:59	23-6	Calorimetric calibration for AC loss measurement. Heat slug test.	kA	kA	Heater pulse	
2000.4.22	15:02	23-7	Calorimetric calibration for AC loss measurement. Heat slug test.	kA	kA	Heater pulse	
2000.4.24	10:05	24-1	Measurement of heat transfer for Tcs experiment	kA	kA	Heater energise	
2000.4.24	13:12	24-2	Measurement of heat transfer for Tcs experiment	kA	kA	Heater energise	
2000.4.24		24-3	Measurement of heat transfer for Tcs experiment	kA	kA	Heater energise	
2000.4.24		24-4	Measurement of heat transfer for Tcs experiment	kA	kA	Heater energise	

2000.4.25	9:55	25-1	Daily check	9.2 kA	kA	Manual dump	Vinner=129V, Vouter=155V, Tau=19.3s
2000.4.25	10:55	26-1	AC loss measurement , Tau = 20 s	36.8 kA	kA	Manual dump	Vinner=516.5V, Vouter=620V, Tau=17.8s
2000.4.25	13:16	27-1	100% Charge	46 kA	0 kA	Trapezoidal	
2000.4.26	9:35	28-1	Make 5.3 K temp on 1st and 2nd layer	kA	kA	Heater energise	MCI_TS_01AI=5.32K at heat input 162.5W
2000.4.26	10:20	29-1	Daily check	9.2 kA	0 kA	Trapezoidal	Joint voltage was inconsistent. Instrumentation wires revised. Heater for 1-2 layer was off on 14:20
2000.4.26	14:32	30-1	Daily check	9.2 kA	kA	Manual dump	Vinner=131V, Vouter=157V, Tau=19.4s
2000.4.26	16:07	31-1	Check noise filters	9.2 kA	0 kA	Trapezoidal	
2000.4.26	18:00	32-1	Heat slug test on 1st and 2nd layers.	kA	kA	Heater pulse	
2000.4.27	9:20	33-1	Heat up 5.3 K on 1st and 2nd layers	kA	kA	Heater energise	MCI_TS_01AI=5.3K at 163W
2000.4.27	10:00	34-1	Daily check	9.2 kA	kA	Manual dump	Vinner=134V, Vouter=156V, Tau=19.6s
2000.4.27	11:17	35-1	Confirm 2 K operation margin	46 kA	0 kA	Stepped Trapezoidal	2 K operation margin at 13 T was confirmed.
2000.4.27	16:24	36-1	Confirm 2 K operation margin	46 kA	0 kA	Trapezoidal	2K operation margin at 13T was confirmed.
2000.4.28	9:59	37-1	Daily check	9.2 kA	kA	Manual dump	Vinner=129V, Vouter=156V, Tau=19.3s
2000.4.28	11:28	38-1	Tcs measurement on 1st layers at 13 T	46 kA	kA	Tcs	Hold at 23kA for lunch. 13:35 46kA hold. Heat up on 1-2 layer was next run.
2000.4.28	14:00	38-2	Tcs measurement on 1st layers at 13 T, Heat up on 1-2 layer	kA	kA	Tcs	17:52 309W heater power
2000.5.1	9:37	39-1	Heat up on 1st and 2nd layers	kA	kA	Heater energise	
2000.5.1	10:33	40-1	Daily check	9.2 kA	kA	Manual dump	Vinner=129V, Vouter=156V, Tau=19.3s

2000.5.1	11:51	41-1	Tcs measurement on 1st layers at 40 kA	40 kA	kA	Tcs	Hold at 23kA for lunch. 13:24 40kA hold. Heat up on 1-2 layer was next run.
2000.5.1	13:50	41-2	Tcs measurement on 1st layers at 40 kA, Heat up on 1st and 2nd layers	kA	kA	Tcs	Quench. Normal zone was travelling on 40kA. Manual dump after Tcs measurement Vinner=679V, Vouter=578V, Tau=17.8s
2000.5.2	13:27	42-1	Daily check	9.2 kA	kA	Manual dump	Vinner=132V, Vouter=157V, Tau=19.4s
2000.5.2	14:43	43-1	Confirm coil performance at 13 T, 46 kA after quench	46 kA	0 kA	Stepped Trapezoidal	
2000.5.3	10:08	44-1	Daily check	9.2 kA	kA	Manual dump	Vinner=131V, Vouter=157V, Tau=19.6s
2000.5.3	11:28	45-1	President charge and Tcs measurement at 30 kA on 1st layer	30 kA	0 kA	Stepped Trapezoidal	
2000.5.3	14:20	46-1	Tcs measurement at 30 kA on 1st layer	kA	kA	Stepped Trapezoidal	
2000.5.3		46-2	Tcs measurement at 30 kA on 1st layer. Energise heater MCI_HR_IN.	kA	kA	Stepped Trapezoidal	
2000.5.3		46-3	Tcs measurement at 30 kA on 1st layer. Energise heater MCI_HR_01AI1 and MCI_HR_01AI2.	kA	kA	Stepped Trapezoidal	
2000.5.4	9:40	47-1	Heater test	kA	kA	Heater energise	
2000.5.4	12:42	47-2	Valve HC-12ABX (outlet of 1st and 2nd layers) test.	kA	kA	No current	
2000.5.4	14:11	47-3	Discharge heater	kA	kA	Heater discharge	
2000.5.4		48-1	Heat slug test on 17th layer.	0 kA	0 kA	Heater pulse	
2000.5.4	17:07	48-2	Heat slug test on 17th layer.	0 kA	0 kA	Heater pulse	
2000.5.4		48-3	Heat slug test on 17th layer.	0 kA	0 kA	Heater pulse	
2000.5.5	9:44	49-1	Heat 1st layer up to 7 K.	kA	kA	Heater energise	9:57 250W heat up
2000.5.5	10:39	50-1	Daily check	9.2 kA	kA	Manual dump	Vinner=134V, Vouter=156V, Tau=19.4s

2000.5.5	11:46	51-1	Tcs measurement at 30 kA on 1st layer	30 kA	kA	Tcs	12:20 30 kA hold. Heat up on 1-2 layer was next run.
2000.5.5	13:30	51-2	Tcs measurement at 30 kA on 1st layer. Heat up 1st layer.	30 kA	kA	Tcs	16:28 706 W heat up Quench Manual dump after quench Vinner=476V, Vouter=539V, Tau=18.2s
2000.5.8	9:30	52-1	Heat 1st layer up to 8.9 K	kA	kA	Heater energise	8.8K at 555W
2000.5.8	10:57	53-1	Daily check	9.2 kA	kA	Manual dump	Vinner=131V, Vouter=157V, Tau=19.4s
2000.5.8	11:51	54-1	Ic measurement at 9.1 K, 1st layer	39.5 kA	kA	Ic	MCI_TS_01AI=9.1K at 580W Vinner=564V, Vouter=671V, Tau=17.8s
2000.5.8	15:27	55-1	Tcs measurement at 1 kA on 1st layer	1 kA	kA	Tcs	18:09 862W heat up.
2000.5.9		56-1	Heater test for Tcs on 11th layer	kA	kA	Heater energise	MCO_TC_11AI=12.48K at 455W
2000.5.9	11:32	57-1	Daily check	9.2 kA	kA	Manual dump	Vinner=129V, Vouter=156V, Tau=19.3s 11:59 heater off
2000.5.9	13:03	58-1	Tcs measurement at 46 kA on 11th layer and heat up 11th layer	46 kA	kA	Tcs	15:36 420W heat up. Quench. Manual dump after quench. Vinner=692V, Vouter=782V, Tau=17.4s
2000.5.9	16:50	59-1	Confirm the coil performance after quench	46 kA	kA	Manual dump	Vinner=660V, Vouter=785V, Tau=17.0s
2000.5.10	9:37	60-1	Daily check	9.2 kA	kA	Manual dump	Vinner=131V, Vouter=157V, Tau=19.5s
2000.5.10	10:32	61-1	AC loss measurement at 46 kA. Tau = 20 s.	46 kA	kA	Manual dump	Vinner=597V, Vouter=778V, Tau=17.5s
2000.5.10	13:35	62-1	Tcs measurement at 40 kA on 11th layer	40 kA	kA	Tcs	Heat up on 11 layer was next run.
2000.5.10	14:04	62-2	Heat up 11th layer for Tcs measurement at 40 kA	kA	kA	Tcs	16:13 435W heat up Quench. Manual dump after quench. Vinner=572V, Vouter=680V, Tau=17.6s

2000.5.11	9:38	63-1	Daily check	9.2 kA	kA	Manual dump	Vinner=131V, Vouter=156V, Tau=19.5s
2000.5.11	10:48	64-1	AC loss measurement at 23 kA, Tau = 20 s.	23 kA	kA	Manual dump	Vinner=322V, Vouter=387V, Tau=18.7s
2000.5.11	13:42	65-1	Tcs measurement at 1 kA on 11th layer	1 kA	kA	Tcs	Heat up on 11 layer was next run.
2000.5.11	15:28	65-2	Heat up 11th layer for Tcs measurement at 1 kA	kA	kA	Tcs	17:17 630W heat up
2000.5.12	9:20	66-1	Daily check and AC loss measurement, Tau = 30 s	9.2 kA	kA	Manual dump	Vinner = 96 V, Vouter= 112.6 V, Tau= 27.3 s
2000.5.12	10:20	67-1	AC loss measurement, Tau = 30 s	23 kA	kA	Manual dump	Vinner = 232 V, Vouter = 279 V, Tau = 26.4 s
2000.5.12	13:10	68-1	AC loss measurement, Tau = 30 s	29.9 kA	kA	Manual dump	Vinner = 310 V, Vouter = 364 V, Tau = 26.0 s
2000.5.12	15:15	69-1	AC loss measurement, Tau = 30 s	36.8 kA	kA	Manual dump	Vinner = 372 V, Vouter = 448 V, Tau = 25.6 s
2000.5.16	9:40	70-1	Daily check	9.2 kA	0 kA	Trapezoidal	Output of MCO_VD_ALL was twice lager than expected. Adjustment was done after this run.
2000.5.16	10:24	71-1	Daily check & AC loss measurement, Tau = 15 s	9.2 kA	kA	Manual dump	Vinner = 173 V, Vouter = 208 V, Tau = 14.6 s
2000.5.16	11:29	72-1	AC loss measurement, Tau = 15 s	23 kA	kA	Manual dump	Vinner = 436 V, Vouter = 518 V, Tau = 14.0 s
2000.5.16	13:05	73-1	AC loss measurement, Tau = 15 s	29.9 kA	kA	Manual dump	Vinner = 566 V, Vouter = 675 V, Tau = 13.7 s
2000.5.16	14:55	74-1	AC loss measurement, Tau = 15 s	36.8 kA	kA	Manual dump	Vinner = 698 V, Vouter = 832 V, Tau = 13.6 s
2000.5.18	9:40	75-1	Daily check & AC loss measurement, Tau = 10 s	9.2 kA	kA	Manual dump	Vinner= 245V, Vouter= 276V, Tau=9.35s
2000.5.18	10:57	76-1	AC loss measurement, Tau = 10 s	23 kA	kA	Manual dump	Vinner= 687V, Vouter= 805V, Tau=9.0s
2000.5.18	13:08	77-1	AC loss measurement, Tau = 10 s	29.9 kA	kA	Manual dump	Vinner= 895V, Vouter= 1048V, Tau=8.9s
2000.5.18	15:06	78-1	AC loss measurement, Tau = 10 s	36.8 kA	kA	Manual dump	Vinner= 1104V, Vouter= 1292V, Tau=8.75s
2000.5.19	9:35	79-1	Daily check and AC loss measurement, Tau = 6 s	9.2 kA	kA	Manual dump	Vinner= 440V, Vouter= 515V, Tau=5.9s
2000.5.19	11:00	80-1	AC loss measurement, Tau = 6 s	23 kA	kA	Manual dump	Vinner= 1099V, Vouter= 1282V, Tau=5.6s
2000.5.19	13:00	81-1	AC loss measurement, Tau = 6 s	29.9 kA	kA	Manual dump	Vinner=1429V, Vouter=1669V, Tau=5.5s

2000.5.19	14:54	82-1	AC loss measurement, Tau = 6 s	36.8 kA	kA	Manual dump	Vinner=1762V, Vouter=2059V, Tau=5.4s
2000.5.19	16:52	83-1	AC loss measurement, Tau = 6 s	46 kA	kA	Manual dump	Vinner=2205V, Vouter=2579V, Tau=5.29s Max. peak voltage was achieved
2000.5.23	10:47	84-1	Verification of the coil performance at Mode A. 5 kA initial check for sensors and balanced voltages.	5 kA	0 kA	Trapezoidal	1A outlet temperature rise : 0.1 K 1A inlet pressure rise : 0.019 MPa 1A outlet mass flow change : 0.3 g/s DAS trigger did not respond (i.e. no transient data).
2000.5.23	13:15	85-1	Verification of the coil performance at Mode A. 5 kA check for sensors and balanced voltages.	5 kA	0 kA	Trapezoidal	1A outlet temperature rise : 0.1 K 1A inlet pressure rise : 0.017 MPa 1A outlet mass flow change : 0.2 g/s
2000.5.23	13:43	86-1	Verification of the coil performance at Mode A. 5 kA check for sensors and balanced voltages.	5 kA	0 kA	Trapezoidal	Current from JT60F went 'fast down,' but BDS-3 closed and 5-kA persistent current flowed. Current went down by using 50-kA power supply. 1A outlet temperature rise : 0.058 K 1A inlet pressure rise : 0.0084 MPa 1A outlet mass flow change : 0.1 g/s
2000.5.23	15:25	87-1	Verification of the coil performance at Mode A. 10 kA check for sensors and balanced voltages.	10 kA	0 kA	Trapezoidal	1A outlet temperature rise : 0.25 K 1A inlet pressure rise : 0.038 MPa 1A outlet mass flow change : 0.2 g/s
2000.5.23	16:07	88-1	Verification of the coil performance at Mode A. 10 kA check for sensors and balanced voltages. tau ~ 10 s.	10 kA	kA	Manual dump	1A outlet temperature rise : 0.23 K 1A inlet pressure rise : 0.0365 MPa 1A outlet mass flow change : 0.2 g/s Vouter : 346 V Vinner : 297 V Tau : 9.3 s
2000.5.23	16:46	89-1	Verification of the coil performance at Mode A. 20 kA charge and AC loss measurement (Mode A).	20 kA	0 kA	Trapezoidal	1A outlet temperature rise : 0.67 K 1A inlet pressure rise : 0.1 MPa 1A outlet mass flow change : 1.2 g/s

2000.5.23	17:30	90-1	Verification of the coil performance at Mode A. 30 kA charge and AC loss measurement (Mode A).	30 kA	0 kA	Trapezoidal	1A outlet temperature rise : 1.25 K 1A inlet pressure rise : 0.202 MPa 1A outlet mass flow change : 2.0 g/s
2000.5.23	18:20	91-1	Verification of the coil performance at Mode A. 40 kA charge and AC loss measurement (Mode A).	40 kA	0 kA	Trapezoidal	1A outlet temperature rise : 1.9 K 1A inlet pressure rise : 0.335 MPa
2000.5.23	19:09	92-1	Verification of the coil performance at Mode A. 43 kA charge and AC loss measurement (Mode A).	43 kA	0 kA	Trapezoidal	1A outlet temperature rise : 2.1 K 1A inlet pressure rise : 0.375 MPa
2000.5.23	19:59	93-1	Verification of the coil performance at Mode A. Verify 0.4 T/s operation. 46 kA charge and AC loss measurement (Mode A).	46 kA	0 kA	Trapezoidal	1A outlet temperature rise : 2.31 K 1A inlet pressure rise : 0.421 MPa
2000.5.24	10:21	94-1	Verification of the coil performance at Mode B. 10 kA initial check for sensors and balanced voltages.	10 kA	0 kA	Trapezoidal	1A outlet temperature rise : 0.25 K 1A inlet pressure rise : 0.039 MPa Im (flat top) : 10 28 kA Vinner : 150 V Vouter : 185 V
2000.5.24	10:58	95-1	Verification of the coil performance at Mode B. 10 kA manual dump (Mode B).	10 kA	kA	Manual dump	1A outlet temperature rise : 0.23 K 1A inlet pressure rise : 0.0355 MPa Vouter : 358 V Vinner : 307.7 V Tau : 9.35 s
2000.5.24	11:43	96-1	Verification of the coil performance at Mode B. 37 kA manual dump (Mode B).	37 kA	kA	Manual dump	1A outlet temperature rise : 1.54 K 1A inlet pressure rise : 0.259 MPa Vouter : 1,305 V Vinner : 1,120 V Tau : 8.7 s
2000.5.24	13:40	97-1	Verification of the coil performance at Mode B. 46 kA manual dump (Mode B). Verify -1.2 T/s operation.	46 kA	kA	Manual dump	1A outlet temperature rise : 2.25 K 1A inlet pressure rise : 0.403 MPa Vouter : 1,626 V Vinner : 1,388 V Tau : 8.5 s

2000.5.24	14:34	98-1	Verification of the coil performance at Mode C. AC loss measurement.	10 kA	kA	Stepped Trapezoidal (Mode C)	1A outlet temperature rise : 0.25 K 1A inlet pressure rise : 0.039 MPa Vouter : 600 V Vinner : 500 V
2000.5.24	15:21	99-1	Verification of the coil performance at Mode C. AC loss measurement.	37 kA	kA	Stepped Trapezoidal (Mode C)	1A outlet temperature rise : 1.57 K 1A inlet pressure rise : 0.266 MPa Vouter : 840 V Vinner : 700 V
2000.5.24	16:15	100-1	Verification of the coil performance at Mode C. AC loss measurement.	43 kA	kA	Stepped Trapezoidal (Mode C)	1A outlet temperature rise : 2.00 K 1A inlet pressure rise : 0.356 MPa Vouter : 690 V Vinner : 820V
2000.5.24	17:09	101-1	Verification of the coil performance at Mode C. AC loss measurement.	46 kA	kA	Stepped Trapezoidal (Mode C)	1A outlet temperature rise : 2.25 K 1A inlet pressure rise : 0.409 MPa Vouter : 820 V Vinner : 680 V
2000.5.24	18:03	102-1	Verification of the coil performance at Mode E. AC loss measurement in bipolar trapezoidal field.	11 kA	kA	Bipolar (Mode E)	1A outlet temperature rise : 0.68 K 1A inlet pressure rise : 0.115 MPa Vouter : V Vinner : V
2000.5.24	18:50	103-1	Verification of the coil performance at Mode E. AC loss measurement in bipolar trapezoidal field.	35 kA	kA	Bipolar (Mode E)	1A outlet temperature rise : 1.77 K 1A inlet pressure rise : 0.316 MPa Vouter : V Vinner : V
2000.5.25		104-1	1st layer inlet temperature (MCI_TS_01I) goes up to 6 K.	kA	kA	Heater energise	MCI_HR_01AI1+MCI_HR_01AI2 : 324 W MCI_TS_01AI : 5.99 K MCI_TS_01AO : 5.85 K MCI_TS_01BO : 5.84 K

2000.5.25	10:24	105-1	10 kA initial check for sensors and balanced voltages.	10 kA	kA	Manual dump	1A outlet temperature rise : 0.15 K 1A inlet pressure rise : 0.037 MPa Vouter : 358 V Vinner : 306 V Tau : 9.3 s
2000.5.25	11:00	106-1	CSMC 1st layer ramp rate limitation test at 6 K, up to 35 kA.	35 kA	0 kA	Trapezoidal	No quench. 1A outlet temperature rise : 1.17 K 1A inlet pressure rise : 0.24 MPa Vouter : 548 V Vinner : 410 V
2000.5.25	11:42	107-1	CSMC 1st layer ramp rate limitation test at 6 K, up to 40 kA.	40 kA	0 kA	Trapezoidal	No quench. 1A outlet temperature rise : 1.40 K 1A inlet pressure rise : 0.282 MPa Vouter : 460 V Vinner : 380 V
2000.5.25	14:09	108-1	CSMC 1st layer ramp rate limitation test at 6 K, up to 46 kA.	46 kA	0 kA	Trapezoidal	No quench. 1A outlet temperature rise : 1.88 K 1A inlet pressure rise : 0.37 MPa Vouter : 640 V Vinner : 546 V
2000.5.25		109-1	1st layer inlet temperature (MCI_TS_01I) goes up to 6.5 K.	kA	kA	Heater energise	MCI_HR_01AI1+MCI_HR_01AI2 : 465 W MCI_TS_01AI : 6.52 K MCI_TS_01AO : 6.34 K MCI_TS_01BO : 6.31 K
2000.5.25	15:44	110-1	CSMC 1st layer ramp rate limitation test at 6.5 K, up to 35 kA.	35 kA	0 kA	Trapezoidal	No quench. 1A outlet temperature rise : 1.22 K 1A inlet pressure rise : 0.243 MPa Vouter : 380 V Vinner : 460 V

2000.5.25	16:29	111-1	CSMC 1st layer ramp rate limitation test at 6.5 K, up to 40 kA.	40 kA	0 kA	Trapezoidal	No quench. 1A outlet temperature rise : 1.44 K 1A inlet pressure rise : 0.282 MPa Vouter : 460 V Vinner : 380 V
2000.5.25	17:14	112-1	CSMC 1st layer ramp rate limitation test at 6.5 K, up to 46 kA.	46 kA	0 kA	Trapezoidal	1B quenched at 45 kA. 1A outlet temperature rise : K 1B outlet temperature rise : K 1A inlet pressure rise : 0.725 MPa 1A outlet pressure rise : 1.174 MPa Vouter : 1,612 V Vinner : 1,362 V Tau : 8.46 s
2000.5.25	19:17	113-1	Confirm the coil performance after quench	46 kA	0 kA	Trapezoidal	1A outlet temperature rise : 1.95 K 1A inlet pressure rise : 0.357 MPa Vouter : V Vinner : V
2000.5.26		114-1	Increase inlet temperature of 1st and 2nd layer by resistive heaters (MCI_HR_01A1 and MCI_HR_01A2) up to 6.5 K.	kA	kA	Heater energise	
2000.5.26	10:19	115-1	Check of protection system by 10 kA manual dump.	10 kA	kA	Manual dump	NG. Fast down.
2000.5.26	10:58	116-1	Check of protection system by 10 kA manual dump.	10 kA	kA	Manual dump	1A outlet temperature rise : K 1A inlet pressure rise : MPa 5A outlet temperature rise : 5B outlet temperature rise : Vouter : V Vinner : V Tau : s
2000.5.26	11:38	117-1	CSMC 1st layer ramp rate limitation test at 6.5 K and 0.6 T/s up to 40 kA.	40 kA	0 kA	Trapezoidal	No quench. 1A outlet temperature rise : 1.92 K 1A inlet pressure rise : 0.36 MPa Vouter : 760 V Vinner : 590 V

2000.5.26	13:13	118-1	CSMC 1st layer ramp rate limitation test at 6.5 K and 0.6 T/s up to 40 kA.	46 kA	0 kA	Trapezoidal	1B quenched at 41.3 kA. After 1B quench, 1A also quenched. Imax = 44.9 kA 1B outlet temperature rise : 32 K 1A inlet pressure rise : 1.055 MPa 1A outlet maximum pressure : 2.2 MPa 1A outlet pressure rise : 1.557 MPa Vouter : 1,572.2 V Vinner : 1,333.5 V Tau : 8.56 s
2000.5.26	15:10	119-1	Increase inlet temperature of 5th layer up to 9 K by resistive heater (MCO_HR_05AI1 and MCO_HR_05AI2).	kA	kA	Heater energise	
2000.5.26	16:58	120-1	CSMC 5th layer ramp rate limitation test at 9.0 K and 0.6 T/s up to 35 kA.	35 kA	0 kA	Trapezoidal	Quench at 34.8 kA Balanced voltage VB0506 5A outlet temperature rise : 0.82 K 5A inlet pressure rise : 0.253 MPa Vouter : 1236 V Vinner : 1056 V Tau : 8.75 s
2000.5.26		121-1	Increase inlet temperature of 5th layer up to 9 K by resistive heater (MCO_HR_05AI1 and MCO_HR_05AI2).	kA	kA	Heater energise	
2000.5.26	18:51	122-1	CSMC 5th layer ramp rate limitation test at 9.0 K and 0.6 T/s up to 46 kA.	46 kA	0 kA	Trapezoidal	Quench at 38.4 kA 5A outlet temperature rise : 6.34 K 5A inlet pressure rise : 0.582 MPa Vouter : 1464 V Vinner : 1245 V Tau : 8.48 s
2000.5.30	10:00	123-1	Calibration and adjustment of sensors and data acquisition systems.	kA	5 kA	Trapezoidal	
2000.5.30	10:37	124-1	5 kA manual dump. Check for protection system.	kA	5 kA	Manual dump	V = 2.52 V Tau = 1.1 s
2000.5.30	11:08	125-1	Check for protection system.	kA	10 kA	Trapezoidal	BH_01 = 0.17 T ICS_VD_JT = 4.3 n-ohm ICS_VD_JB = 2.2 n-ohm

2000.5.30	11:32	126-1	Check for protection system.	kA	10 kA	Trapezoidal	BH_01 = 0.17 T ICS_VD_JT = 4.4 n-ohm ICS_VD_JB = 2.6 n-ohm
2000.5.30	13:10	127-1	Measurement of basic coil performance and joint resistance.	0 kA	20 kA	Stepped Trapezoidal	at 20 kA, BH_01 = 0.33 T ICS_VD_JT = 4.4 n-ohm ICS_VD_JB = 2.5 n-ohm
2000.5.30	13:55	128-1	20 kA manual dump. Check for protection system and AC loss measurement. Tau ~ 1 s.	kA	20 kA	Manual dump	V = 12.8 V Tau = 1.0 s
2000.5.30	14:51	129-1	Measurement of basic coil performance and joint resistance.	0 kA	40 kA	Stepped Trapezoidal	at 40 kA, BH_01 = 0.66 T ICS_VD_JT = 4.3 n-ohm ICS_VD_JB = 2.4 n-ohm SCB_VD_JIP = 1.0 n-ohm FAC_VD_JIP = 0.9 n-ohm FAC_VD_JIN = 6.1 n-ohm
2000.5.30	16:05	130-1	40 kA Manual Dump. AC loss measurement. Tau ~ 1 s.	kA	40 kA	Manual dump	V = 31 V Tau = 0.91 s
2000.5.30	17:06	131-1	Confirmation of the circuit breaker NB2-2.	kA	40 kA	Manual dump	V = 34 V Tau = 0.93 s
2000.5.30	17:34	132-1	Adjustment of quench detection system.	kA	40 kA	Trapezoidal	
2000.5.31	10:19	133-1	Check the sensors and the protection system. Charge up CSMC to 9.2 kA for background field.	9.2 kA	kA	Back up field	
2000.5.31	10:37	133-2	Check the sensors and the protection system at 9.2 kA in CSMC.	9.2 kA	5 kA	Trapezoidal	
2000.5.31	11:11	133-3	Check the sensors and the protection system at 9.2 kA in CSMC.	9.2 kA	5 kA	Manual dump	V_outer = 171 V V_inner = 123 V Tau_CSMC = 19.7 s V_insert = 11.5 V Tau_insert = 21.6 s
2000.5.31	13:14	134-1	Charge CSMC up to 9.2 kA for background field.	9.2 kA	kA	Back up field	

2000.5.31	13:35	134-2	Charge CSIC up to 30 kA in 9.2-kA CSMC.	9.2 kA	30 kA	Stepped Trapezoidal	at 30 kA in CSI (and 9.2 kA in CSMC), BH_01 = 2.9 T ICS_VD_JT = 4.4 n-ohm ICS_VD_JB = 2.5 n-ohm SCB_VD_JIP = 1.0 n-ohm
2000.5.31	14:46	135-1	Charge CSMC up to 23 kA (50 %) for background field.	23 kA	kA	Back up field	at 23 kA in CSMC (and 0 kA in CSI), BH_01 = 6.07 T
2000.5.31	15:11	135-2	Charge CSIC up to 20 kA in 23-kA CSMC.	23 kA	20 kA	Stepped Trapezoidal	at 20 kA in CSI (and 23 kA in CSMC), BH_01 = T ICS_VD_JT = n-ohm ICS_VD_JB = n-ohm SCB_VD_JIP = n-ohm
2000.5.31	15:45	135-3	Manual dump simultaneously.	23 kA	20 kA	Manual dump	V_outer = 409 V V_inner = 318 V Tau_CSMC = 19.0 s V_insert = 24.5 V, 13.0 V Tau_insert = 19.2 s
2000.6.1	9:43	136-1	Heater test for Tcs measurement.	kA	kA	Heater pulse	
2000.6.1	10:41	137-1	Heat slug test on CSIC.	kA	kA	Heater pulse	
2000.6.1	13:08	138-1	Heat slug test on CSIC.	kA	kA	Heater pulse	
2000.6.1	13:26	138-2	Heat slug test on CSIC.	kA	kA	Heater pulse	
2000.6.1	13:45	138-3	Heat slug test on CSIC.	kA	kA	Heater pulse	
2000.6.1		139-1		kA	kA	Heater energise	
2000.6.1	16:50	139-2		kA	kA	Heater energise	
2000.6.2	9:22	140-1	Heat slug test at 10 g/s/ch.	kA	kA	Heater pulse	ICS_HR_IN : 470 W - 10.6 s Pin = 0.507 MPa Pout = 0.459 MPa TC_01 = 4.43 K

2000.6.2	10:06	140-2	Heat slug test at 10 g/s/ch.	kA	kA	Heater pulse	Average input: 338 W (Peak 368 W) - 20.3 s
2000.6.2	10:52	140-3	Heat slug test at 10 g/s/ch.	kA	kA	Heater pulse	165 W - 40.6 s
2000.6.2	11:37	140-4	Heat slug test at 10 g/s/ch.	kA	kA	Heater pulse	89.2 W - 60.4 s
2000.6.2	13:10	141-1	Energise heater ICS_HR_IN up to 18.5 K for Tcs measurement.	kA	kA	Heater energise	ICS_HR_IN : 298 W ICS_TC_01 : 19.65 K Mass Flow Rate = 2.5 g/s
2000.6.2	16:15	142-1	Heat slug test at 15 g/s.	kA	kA	Heater pulse	Mass flow rate = 14.5 g/s 96.4 W - 20.2 s
2000.6.2	16:51	142-2	Heat slug test at 7 g/s.	kA	kA	Heater pulse	peak: 103 W average: 99.2 W 10.5 s
2000.6.5	10:01	143-1	Check protection system. Charge CSIC up to 9.2 kA for background field.	9.2 kA	kA	Back up field	
2000.6.5	10:19	143-2	Check protection system. Charge CSIC up to 5 kA in 9.2-kA CSMC.	9.2 kA	5 kA	Trapezoidal	
2000.6.5	10:30	143-3	Check protection system. Manual dump simultaneously.	9.2 kA	5 kA	Manual dump	Vouter = 169.4 V Vinner = 124.4 V Tau_CSMC = 19.7 s Vinsert = -12.75 V, -4.6 V Tau_CSI = 19.32 s
2000.6.5	11:00	144-1	Charge CSMC up to 23 kA for background field.	23 kA	kA	Ramp up	
2000.6.5	11:42	144-2	Manual dump CSIC from 20 kA in 23-kA CSMC.	23 kA	20 kA	Manual dump	Vouter = 406 V Vinner = 321 V Tau_CSMC = 19.0 s Vinsert = -30.3 V, -13.6 V Tau_CSI = 18.7 s
2000.6.5	14:03	145-2	Charge CSIC up to 40 kA (100 %) in 36.8-kA CSMC.	36.8 kA	40 kA	Stepped Trapezoidal	Succeeded.
2000.6.5	13:16	145-1	Charge CSMC up to 36.8 kA for background field.	36.8 kA	kA	Ramp up	

2000.6.5	15:30	145-3	Charge CSIC up to 40 kA (100 %) in 36.8-kA CSMC.	36.8 kA	40 kA	Trapezoidal	Succeeded.
2000.6.5	16:08	146 -1	Charge CSMC up to 44.5 kA for background field.	44.5 kA	kA	Ramp up	
2000.6.5	16:26	146-2	100 % charge of the CS insert coil (CSIC). Charge CSIC up to 40 kA (100 %) in 44.5-kA CSMC. CSIC operation under 13 T.	44.5 kA	40 kA	Stepped Trapezoidal	Succeeded!!
2000.6.5	17:24	146-3	100 % charge of the CS insert coil (CSIC). Charge CSIC up to 40 kA (100 %) in 44.5-kA CSMC. CSIC operation under 13 T.	44.5 kA	40 kA	Trapezoidal	Succeeded!!
2000.6.5	18:18	146-4	Discharge CSMC.	44.5 kA	kA	Ramp down	
2000.6.6	13:24	147-1	Check for sensors, balanced voltages, and protection system.	kA	5 kA	Trapezoidal	Voltage ICS_VD_0708 had gone out of range during sweep.
2000.6.6	13:49	147-2	Re-check for sensors, balanced voltages, and protection system.	kA	5 kA	Trapezoidal	Voltage ICS_VD_0708 had confirmed.
2000.6.6	14:20	148-1	Charge CSMC up to 9.2 kA for background field.	9.2 kA	kA	Ramp up	
2000.6.6	14:46	148-2	Check for sensors, balanced voltages, and protection system.	9.2 kA	5 kA	Manual dump	Vouter = 169.0 V Vinner = 124.8 V Tau_CSMC = 19.6 s Vinsert = -12.2 V, 5.2 V Tau_CSI = 19.32 s
2000.6.6	15:48	149-1	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 44.5 kA for background field.	44.5 kA	kA	Ramp up	
2000.6.6	16:57	149-2	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 40 kA under 12.5 T.	44.5 kA	40 kA	Tcs	
2000.6.6	17:31	149-3	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energise heater ICS_HR_IN.	44.5 kA	40 kA	Tcs	No quench in CSI. Fast down safely. Temperature corresponds to 0.1 micro-V/cm was approx. 7.5 K (ICS_TC_04H and 05H).
2000.6.6	19:29	149-4	Discharge CSMC.	44.5 kA	kA	Ramp down	
2000.6.6		150-1	DAS Maintenance.	kA	kA	No current	Maintenance of hard disk was completed.
2000.6.7	9:44	151-1	Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.	9.2 kA	kA	Ramp up	

2000.6.7	10:01	151-2	Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.	9.2 kA	5 kA	Manual dump	Vouter = 169 V Vinner = 125 V Tau_CSMC = 19.6 s Vinsert = 12.3 V, 5.2 V Tau_CSI = 18.9 s
2000.6.7	10:42	152-1	CSMC AC loss measurement at 80 % (36.8 kA). Tau ~ 20 s.	36.8 kA	kA	Manual dump	Vouter = 624 V Vinner = 526 V Tau_CSMC = 18.0 s 1A inlet pressure rise = 0.099 MPa 1A outlet temperature rise = 0.61 K
2000.6.7	13:15	153-1	30 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 45.3 kA.	45.3 kA	kA	Ramp up	
2000.6.7	14:24	153-2	30 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 30 kA.	45.3 kA	30 kA	Tcs	
2000.6.7		153-3	30 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energise heater ICS_HR_IN.	45.3 kA	30 kA	Tcs	No quench in CSI. Fast down safely. Temperature corresponds to 0.1 micro-V/cm was approx. 8.0 K (ICS_TC_04H and 05H).
2000.6.7	17:50	154-1	Temperature calibration for ICS_TC_04H and ICS_TC_05H at ~8 K.	45.3 kA	kA	Ramp down	Energise ICS_HR_IN up to 240 W at 16:55.
2000.6.8	9:38	155-1	Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.	9.2 kA	kA	Ramp up	
2000.6.8	9:56	155-2	Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.	9.2 kA	5 kA	Manual dump	Vouter = 169 V Vinner = 125 V Tau_CSMC = 19.7 s Vinsert = 12.3 V, 5.2 V Tau_CSI = 18.8 s 1A inlet pressure rise = 0.013 MPa 1A outlet temperature rise = 0.07 K CSI outlet temperature rise = 0.04 K
2000.6.8	10:33	156-1	Heat CSIC up to ~8 K. Energise ICS_HR_IN.	kA	kA	Heater energise	ICS_HR_IN : 222 W CS_TC_01 : 7.96 K ICS_TC_04H : 7.64 K ICS_TC_05H : 7.67 K ICS_TC_02 : 7.31 K

2000.6.8	13:10	157-1	20 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 45.8 kA.	45.8 kA	kA	Ramp up	
2000.6.8	14:26	157-2	20 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 20 kA.	45.8 kA	20 kA	Tcs	CSI dI/dt was 5 kA/m between 0 and 15 kA, and 1 kA/m between 15 kA and 20 kA.
2000.6.8		157-3	20 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energise heater ICS_HR_IN.	45.8 kA	20 kA	Tcs	No quench in CSI. Fast down safely. CSMC current remained 45.8 kA. Temperature corresponds to 0.1 micro-V/cm was approx. 8.71 K (ICS_TC_04H and 05H).
2000.6.8	16:36	158-1	CSIC Ic measurement at 8.9 K - 13 T.	45.8 kA	20 kA	Ic	No quench in CSI. Fast down safely. CSMC current remained 45.8 kA. Current corresponds to 0.1 micro-V/cm was approx. 18.95 kA at 8.81 K (9.04 K in correlated value).
2000.6.8	17:47	158-2	Discharge CSMC.	45.8 kA	kA	Ramp down	
2000.6.9	9:56	159-1	Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.	9.2 kA	kA	Ramp up	
2000.6.9	10:14	159-2	Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.	9.2 kA	5 kA	Manual dump	Vouter = 169.2 V Vinner = 125.1 V Tau_CSMC = 19.6 s Vinsert = 12.2 V, 5.2 V Tau_CSI = 19.4 s 1A inlet pressure rise = 0.013 MPa 1A outlet temperature rise = 0.07 K CSI outlet temperature rise = 0.03 K
2000.6.9	10:40	160-1	Heat CSIC up to ~8.5 K. Energise ICS_HR_IN.	kA	kA	Heater energise	270 W, 8.57 K (ICS_TC_04H)
2000.6.9	13:14	161-1	10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 46 kA.	46 kA	kA	Ramp up	
2000.6.9	14:32	161-2	10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 10 kA.	46 kA	10 kA	Tcs	
2000.6.9		161-3	10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energise heater ICS_HR_IN.	46 kA	10 kA	Tcs	Inlet flow choking occurred, CSI current down. No quench.
2000.6.9	15:21	161-4	Retry 10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 10 kA.	46 kA	10 kA	Tcs	

2000.6.9	15:41	161-5	Retry 10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energise heater ICS_HR_IN.	46 kA	10 kA	Tcs	No quench in CSI. Fast down safely. CSMC current remained 46 kA. Temperature corresponds to 0.1 micro-V/cm was approx. 9.49 K (ICS_TC_04H and 05H). Calibrated value is 9.72 K.
2000.6.9		161-6	CSMC is remaining 46 kA - 13 T - 640 MJ. Watch coolant condition.	46 kA	kA	No current	
2000.6.9	17:31	162-1	CSIC Ic measurement at 9.5 K - 13 T.	46 kA	kA	Ic	No quench in CSI. Fast down safely. CSMC current remained 46 kA. Current corresponds to 0.1 micro-V/cm was approx. 9.0 kA at 9.83K (calibrated value).
2000.6.9	18:23	162-2	Discharge CSMC	46 kA	kA	Ramp down	
2000.6.12	9:45	163-1	Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.	9.2 kA	kA	Ramp up	
2000.6.12	10:02	163-2	Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.	9.2 kA	5 kA	Manual dump	Vouter = 168 V Vinner = 124 V Tau_CSMC = 19.8 s Vinsert = 12.3 V, 5.2 V Tau_CSI = 18.8 s 1A inlet pressure rise = 0.013 MPa 1A outlet temperature rise = 0.07 K CSI outlet temperature rise = 0.03 K
2000.6.12		164-1	1 kA - 0 T Tcs measurement for the CS insert coil (CSIC). Energise heater ICS_HR_IN.	kA	kA	Heater energise	13:00 ICS_HR_IN 415 W ICS_TC_04H 13.47 K
2000.6.12	13:11	164-2	1 kA - 0 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 1 kA.	kA	1 kA	Tcs	
2000.6.12		164-3	1 kA - 0 T Tcs measurement for the CS insert coil (CSIC). Energise heater ICS_HR_IN.	kA	1 kA	Tcs	Tcs(1 kA - 0 T) = 17.1 K (0.1 micro-V/cm def.)
2000.6.12	16:15	165-1	1 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 46 kA - 13 T.	46 kA	kA	Ramp up	
2000.6.12	17:28	165-2	1 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 1 kA.	46 kA	1 kA	Tcs	
2000.6.12		165-3	1 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energise heater ICS_HR_IN.	46 kA	1 kA	Tcs	Tcs(1 kA - 13 T) = 10.9 K (0.1 micro-V/cm def.)

2000.6.12	18:57	166-1	Manual dump from 100 % charge for the circuit breaker test and AC loss measurement. Discharge CSMC to 44.5 kA.	46 kA	kA	Ramp down	
2000.6.12	19:21	166-2	Manual dump from 100 % charge for the circuit breaker test and AC loss measurement. Charge CSIC up to 40 kA and dump simultaneously.	44.5 kA	40 kA	Manual dump	Vouter = 775 V Vinner = 625 V Tau_CSMC = 17.5 s Vinsert > 50 V Tau_CSI = 18.2 s 1A inlet pressure rise = 0.154 MPa 1A outlet temperature rise = 0.835 K CSI outlet temperature rise = 0.535 K
2000.6.13	9:46	167-1	Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.	9.2 kA	kA	Ramp up	
2000.6.13	10:06	167-2	Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.	9.2 kA	5 kA	Manual dump	Vouter = 168 V Vinner = 124 V Tau_CSMC = 19.7 s Vinsert =12.3 V, 5.2 V Tau_CSI =18.8 s 1A inlet pressure rise = 0.013 MPa 1A outlet temperature rise =0.08 K CSI outlet temperature rise = 0.04 K
2000.6.13		168-1	Heat CSIC up to ~8 K.	kA	kA	Heater energise	
2000.6.13	13:10	169-1	10.8 T - 40 kA Tcs measurement for CSIC. Charge CSMC up to 39.1 kA.	39.1 kA	kA	Ramp up	
2000.6.13	14:21	169-2	10.8 T - 40 kA Tcs measurement for CSIC. Charge CSI up to 40 kA.	39.1 kA	40 kA	Tcs	
2000.6.13		169-3	10.8 T - 40 kA Tcs measurement for CSIC. Energise ICS_HR_IN.	39.1 kA	40 kA	Tcs	Tcs(40 kA - 10.8 T) = 8.8 K (0.1 micro-V/cm def.)
2000.6.13		170-1	Heat CSIC up to ~9.2 K.	39.1 kA	kA	Heater energise	
2000.6.13	17:07	170-2	CSIC Ic measurement at 10.8 T, 9 K.	39.1 kA	kA	Ic	Ic(10.8 T, K)=kA No quench. Fast down.
2000.6.13		170-3	Temperature sensor calibration. Heat CSIC up to 9.5 K.	39.1 kA	kA	Heater energise	

2000.6.14	9:55	171-1	Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA and CSIC up to 5 kA. Dump simultaneously.	9.2 kA	5.0 kA	Manual dump	Vouter = 170 V Vinner = 124 V Tau_CSMC = 19.7 s Vinsert = 12.6 V, 5.2 V Tau_CSI = 18.7 s 1A inlet pressure rise = 0.013 MPa 1A outlet temperature rise = 0.07 K CSI outlet temperature rise = 0.03 K
2000.6.14	10:48	172-1	Inductive Heater test shot	9.2 kA	kA	Ramp up	
2000.6.14	11:19	172-2	Inductive Heater test shot	9.2 kA	kA	Heater pulse	Inductive heater voltage : 69V Inductive heater current : 68A I^2 integral : 33.2 A^2 s
2000.6.14	11:29	172-3	Inductive Heater test shot	9.2 kA	kA	Heater pulse	Inductive heater voltage : 138V Inductive heater current : 137A I^2 integral : 135.2 A^2 s
2000.6.14	11:40	172-4	Inductive Heater test shot	9.2 kA	kA	Heater pulse	Inductive heater voltage : 207V Inductive heater current : 204A I^2 integral : 308.9 A^2 s
2000.6.14		172-5	Inductive Heater test shot	9.2 kA	kA	Ramp down	
2000.6.14	13:10	173-1	Inductive Heater test shot at 13T	44.5 kA	kA	Ramp up	
2000.6.14	14:14	173-2	Inductive Heater test shot at 13T	44.5 kA	kA	Heater pulse	Inductive heater voltage : 67V Inductive heater current : 65A I^2 integral : 30.8 A^2 s
2000.6.14	14:24	173-3	Inductive Heater test shot at 13T	44.5 kA	kA	Heater pulse	Inductive heater voltage : 193V Inductive heater current : 184A I^2 integral : 255.6 A^2 s
2000.6.14	14:33	173-4	Inductive Heater test shot at 13T	44.5 kA	kA	Heater pulse	Inductive heater voltage : 276V Inductive heater current : 264A I^2 integral : 524.6 A^2 s

2000.6.14	14:43	173-5	Inductive Heater test shot at 13T	44.5 kA	kA	Heater pulse	Inductive heater voltage : 385V Inductive heater current : 369A I^2 integral : 1019.7 A^2 s
2000.6.14	14:53	173-6	Inductive Heater test shot at 13T	44.5 kA	kA	Heater pulse	Inductive heater voltage : 463V Inductive heater current : 442A I^2 integral : 1453.5 A^2 s
2000.6.14	15:03	173-7	Inductive Heater test shot at 13T	44.5 kA	kA	Heater pulse	Inductive heater voltage : 579V Inductive heater current : 552A I^2 integral : 2300 A^2 s
2000.6.14	15:18	174-1	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Ramp up	
2000.6.14	16:18	174-2	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 39V Inductive heater current : 38A I^2 integral : 10.6 A^2 s
2000.6.14	16:29	174-3	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 68V Inductive heater current : 67A I^2 integral : 32.5 A^2 s
2000.6.14	16:36	174-4	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 142V Inductive heater current : 138A I^2 integral : 135.9 A^2 s
2000.6.14	16:46	174-5	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 212V Inductive heater current : 207A I^2 integral : 308.5 A^2 s
2000.6.14	16:55	174-6	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 246V Inductive heater current : 239A I^2 integral : 417.3 A^2 s

2000.6.14	17:06	174-7	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 273V Inductive heater current : 267A I^2 integral : 521.2 A^2 s
2000.6.14	17:13	174-8	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 310V Inductive heater current : 302A I^2 integral : 655.5 A^2 s
2000.6.14	17:20	174-9	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 337V Inductive heater current : 329A I^2 integral : 781.1 A^2 s
2000.6.14	17:32	174-10	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 376V Inductive heater current : 368A I^2 integral : 992.7 A^2 s
2000.6.14	17:39	174-11	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	No quench Inductive heater voltage : 406V Inductive heater current : 399A I^2 integral : 1150 A^2 s
2000.6.14	17:48	174-12	13 T - 40 kA - 5.3 K Stability test	44.5 kA	40.0 kA	Heater pulse	Quench Inductive heater voltage : 444V Inductive heater current : 487A I^2 integral : 1393 A^2 s
2000.6.15	11:08	175-1	Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA and CSIC up to 5 kA. Dump simultaneously.	9.2 kA	5.0 kA	Manual dump	Vouter =170 V Vinner = 125 V Tau_CSMC = 19.7 s Vinsert = 12.5 V Tau_CSI = 18.7 s 1A inlet pressure rise = 0.014 MPa 1A outlet temperature rise = 0.08 K CSI outlet temperature rise = 0.04 K

2000.6.15	11:44	176-1	Heat CSIC up to ~5.3 K.	kA	kA	Heater energise	
2000.6.15	13:03	176-2	Test shot for ICS_HI_03	kA	kA	Heater pulse	Inductive heater voltage : 152V Inductive heater current : 52A I^2 integral : 17.9 A^2 s
2000.6.15	13:25	176-3	13 T - 30 kA - 5.3 K Stability test	45.3 kA	kA	Ramp up	Inductive heater voltage : 152V Inductive heater current : 52A I^2 integral : 17.9 A^2 s
2000.6.15	14:25	176-4	Test shot for ICS_HI_03	45.3 kA	kA	Heater pulse	Inductive heater voltage : 67.7V Inductive heater current : 65.5A I^2 integral : 31.5 A^2 s
2000.6.15	14:41	176-5	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	
2000.6.15	15:10	176-6	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	No quench Inductive heater voltage : 404V Inductive heater current : 397A I^2 integral : 1135.4 A^2 s
2000.6.15	15:18	176-7	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	No quench Inductive heater voltage : 422V Inductive heater current : 415A I^2 integral : 1262.8A^2 s
2000.6.15	15:26	176-8	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	No quench Inductive heater voltage : 441V Inductive heater current : 433A I^2 integral : 1380 A^2 s
2000.6.15	15:36	176-9	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	No quench inductive heater voltage : 452V Inductive heater current : 446A I^2 integral : 1447.8 A^2 s

2000.6.15	15:43	176-10	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	No quench Inductive heater voltage : 465V Inductive heater current : 460A I^2 integral : 1538.1 A^2 s
2000.6.15	15:53	176-11	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	No quench Inductive heater voltage : 465V Inductive heater current : 460A I^2 integral : 1538.1 A^2 s
2000.6.15	16:03	176-12	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	No quench Inductive heater voltage : 488V Inductive heater current : 481A I^2 integral : 1697.4 A^2 s
2000.6.15	16:11	176-13	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	No quench Inductive heater voltage : 497V Inductive heater current : 493A I^2 integral : 1761.6 A^2 s
2000.6.15	16:18	176-14	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	No quench Inductive heater voltage : 510V Inductive heater current : 505A I^2 integral : 1850.9 A^2 s
2000.6.15	16:25	176-15	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	Recover Inductive heater voltage : 521V Inductive heater current : 513A I^2 integral : 1910.3 A^2 s
2000.6.15	16:35	176-16	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	Recover Inductive heater voltage : 527V Inductive heater current : 519A I^2 integral : 1910.3 A^2 s
2000.6.15	16:43	176-17	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	Recover Inductive heater voltage : 536V Inductive heater current : 528A I^2 integral : 2052.7 A^2 s

2000.6.15	16:51	176-18	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	Recover Inductive heater voltage : 544V Inductive heater current : 539A I^2 integral : 2091.4 A^2 s
2000.6.15	17:00	176-19	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	Recover Inductive heater voltage : 553V Inductive heater current : 544A I^2 integral : 2186.7 A^2 s
2000.6.15	17:07	176-20	13 T - 30 kA - 5.3 K Stability test	45.3 kA	30.0 kA	Heater pulse	Quench Inductive heater voltage : 563V Inductive heater current : 557A I^2 integral : 2255.2 A^2 s
2000.6.15	17:10	176-21	13 T - 30 kA - 5.3 K Stability test. Monitor coolant after quench.	kA	kA	No current	
2000.6.15	17:26	177-1	Heat CSIC up to ~5.3 K.	kA	kA	Heater energise	
2000.6.15	17:45	177-2	13 T - 35 kA - 5.3 K Stability test	44.9 kA	kA	Ramp up	
2000.6.15	18:43	177-3	13 T - 35 kA - 5.3 K Stability test	44.9 kA	35.0 kA	Ramp up	
2000.6.15	19:11	178-1	13 T - 35 kA - 5.3 K Stability test	44.9 kA	35.0 kA	Heater pulse	No quench Inductive heater voltage : 413V Inductive heater current : 406A I^2 integral : 1203.5 A^2 s
2000.6.15	19:18	178-2	13 T - 35 kA - 5.3 K Stability test	44.9 kA	35.0 kA	Heater pulse	No quench Inductive heater voltage : 431V Inductive heater current : 425A I^2 integral : 1323.6 A^2 s
2000.6.15	19:25	178-3	13 T - 35 kA - 5.3 K Stability test	44.9 kA	35.0 kA	Heater pulse	No quench Inductive heater voltage : 449V Inductive heater current : 443A I^2 integral : 1436.8 A^2 s

2000.6.15	19:33	178-4	13 T - 35 kA - 5.3 K Stability test	44.9 kA	35.0 kA	Heater pulse	No quench Inductive heater voltage : 464V Inductive heater current : 461A I^2 integral : 1524.1 A^2 s
2000.6.15	19:40	178-5	13 T - 35 kA - 5.3 K Stability test	44.9 kA	35.0 kA	Heater pulse	No quench Inductive heater voltage : 482V Inductive heater current : 478A I^2 integral : 1660.5 A^2 s
2000.6.15	19:47	178-6	13 T - 35 kA - 5.3 K Stability test	44.9 kA	35.0 kA	Heater pulse	Recover Inductive heater voltage : 498V Inductive heater current : 494A I^2 integral : 1771.1 A^2 s
2000.6.15	19:54	178-7	13 T - 35 kA - 5.3 K Stability test	44.9 kA	35.0 kA	Heater pulse	Quench Inductive heater voltage : 509V Inductive heater current : 502A I^2 integral : 1841.1 A^2 s
2000.6.16	9:44	179-1	Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA and CSIC up to 5 kA. Dump simultaneously.	9.2 kA	5 kA	Manual dump	Vouter = 169.7 V Vinner = 129.8 V Tau_CSMC = 19.7 s Vinsert = 12.5 V, 5.2 V Tau_CSI = 18.8 s 1A inlet pressure rise = 0.014 MPa 1A outlet temperature rise = 0.08 K CSI outlet temperature rise = 0.03 K
2000.6.16		180-1	13 T - 40 kA - 5.3 K - 5 g/s Stability test. Reduce mass flow rate of CSIC inlet to 5 g/s.	kA	kA	Heater energise	10:59 Inlet mass flow rate = 6.2 g/s Outlet mass flow rate = 4.8 g/s ICS_HR_IN = 20 W
2000.6.16		180-2	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	kA	kA	No current	
2000.6.16	13:11	180-3	13 T - 40 kA - 5.3 K - 5 g/s Stability test. Charge CSMC up to 44.5 kA.	44.5 kA	kA	Ramp up	

2000.6.16	14:08	180-4	Inductive heater calibration under high field.	44.5 kA	kA	Heater pulse	Inductive heater ICS_HI_03 Vmax = 139 V Imax = 134 A I^2 integral = 133.1
2000.6.16	14:14	180-5	Inductive heater calibration under high field.	44.5 kA	kA	Heater pulse	Inductive heater ICS_HI_03 Vmax = 317 V Imax = 305 A I^2 integral = 701.4 A^2s
2000.6.16	14:21	180-6	Inductive heater calibration under high field.	44.5 kA	kA	Heater pulse	Inductive heater ICS_HI_03 Vmax = 440 V Imax = 424 A I^2 integral = 1346.1 A^2s
2000.6.16	14:27	180-7	Inductive heater calibration under high field.	44.5 kA	kA	Heater pulse	Inductive heater ICS_HI_03 Vmax = 530 V Imax = 510 A I^2 integral = 1925.3 A^2s
2000.6.16	14:29	180-8	13 T - 40 kA - 5.3 K - 5 g/s Stability test. Charge CSIC up to 40 kA.	44.5 kA	40 kA	Ramp up	
2000.6.16	15:42	181-1	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	kA	kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 135 A Vmax = 138 V I^2 integral = 135.2 A^2s
2000.6.16	15:48	181-2	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 170 A Vmax = 174 V I^2 integral = 215.0 A^2s
2000.6.16	15:54	181-3	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 215 A Vmax = 220 V I^2 integral = 334.1 A^2s

2000.6.16	16:00	181-4	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 240 A Vmax = 246 V I^2 integral = 424.3 A^2s
2000.6.16	16:06	181-5	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 267 A Vmax = 272 V I^2 integral = 524.4 A^2s
2000.6.16	16:12	181-6	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 300 A Vmax = 304 V I^2 integral = 657.6 A^2s
2000.6.16	16:18	181-7	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 319 A Vmax = 323 V I^2 integral = 747.3 A^2s
2000.6.16	16:25	181-8	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 348 A Vmax = 345 V I^2 integral = 849.4 A^2s
2000.6.16	16:31	181-9	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 359 A Vmax = 363 V I^2 integral = 944.6 A^2s

2000.6.16	16:37	181-10	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 377 A Vmax = 380 V I^2 integral = 1031.0 A^2s
2000.6.16	16:45	181-11	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 398 A Vmax = 408 V I^2 integral = 1151.4 A^2s
2000.6.16	16:51	181-12	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03 Imax = 405 A Vmax = 409 V I^2 integral = 1173.8 A^2s
2000.6.16	17:01	181-13	13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	Quench.
2000.6.16		182-1	DAS check.	kA	kA	No current	
2000.6.19	9:54	183-1	Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA and CSIC up to 5 kA. Dump simultaneously.	9.2 kA	5 kA	Manual dump	Vouter = 159.5 V Vinner = 124.5 V Tau_CSMC = 19.7 s Vinsert = 12.6 V, 5.1 V Tau_CSI = 18.9 s 1A inlet pressure rise = 0.014 MPa 1A outlet temperature rise = 0.075 K CSI outlet temperature rise = 0.022 K
2000.6.19	10:41	184-1	Heat up CSIC to 6.8 K.	kA	kA	Heater energise	
2000.6.19	11:25	184-2		44.5 kA	kA	Ramp up	
2000.6.19	13:06	184-3	Inductive heater test.	kA	kA	Heater pulse	Inductive heater ICS_HI_03 Imax = 133 A Vmax = 140 V I^2 integral = 133.2 A^2s

2000.6.19	13:14	184-4	Inductive heater test.	kA	kA	Heater pulse	Inductive heater ICS_HI_03 Imax = 303 A Vmax = 315 V I^2 integral = 690.4 A^2s
2000.6.19	13:20	184-5		kA	kA	Heater pulse	Inductive heater ICS_HI_03 Imax = 426 A Vmax = 441 V I^2 integral = 1346.9 A^2s
2000.6.19	13:28	184-6		kA	kA	Heater pulse	Inductive heater ICS_HI_03 Imax = 477 A Vmax = 493 V I^2 integral = 1696.2 A^2s
2000.6.19	13:37	184-7		kA	kA	Heater pulse	Inductive heater ICS_HI_03 Imax = 511 A Vmax = 529 V I^2 integral = 1948.3 A^2s
2000.6.19	13:47	184-8	Charge CSIC up to 40 kA for 13 T - 40 kA - 5.3 K - 5 g/s Stability test.	44.5 kA	40 kA	Ramp up	
2000.6.19	14:56	185-1	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 119 A. Vmax = 121 V. I^2 integral = 103.7 A^2s.
2000.6.19	15:04	185-2	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 146 A. Vmax = 150 V. I^2 integral = 153.8 A^2s.
2000.6.19	15:13	185-3	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 168 A. Vmax = 172 V. I^2 integral = 202.5 A^2s.

2000.6.19	15:24	185-4	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 188 A. Vmax = 192 V. I^2 integral = 253.1 A^2s.
2000.6.19	15:32	185-5	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 206 A. Vmax = 210 V. I^2 integral = 304.3 A^2s.
2000.6.19	15:40	185-6	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 223 A. Vmax = 226 V. I^2 integral = 354.1 A^2s.
2000.6.19	15:48	185-7	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 239 A. Vmax = 240 V. I^2 integral = 402 A^2s.
2000.6.19	15:46	185-8	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 252 A. Vmax = 253 V. I^2 integral = 445.9 A^2s.
2000.6.19	16:03	185-9	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 264 A. Vmax = 266 V. I^2 integral = 464.5 A^2s.

2000.6.19	16:11	185-10	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 276 A. Vmax = 279 V. I^2 integral = 540.3 A^2s.
2000.6.19	16:21	185-11	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 291 V Vmax = 294 V I^2 integral = 604.2 A^2s
2000.6.19	16:28	185-12	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 292 V Vmax = 294 V I^2 integral = 612.5 A^2S
2000.6.19	16:36	185-13	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 296 V Vmax = 299 V I^2 integral = 631.6 A^2S
2000.6.19	16:45	185-14	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 299 V Vmax = 302 V I^2 integral = 651.9 A^2S
2000.6.19	16:53	185-15	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 302 V Vmax = 304 V I^2 integral = 658.9 A^2S

2000.6.19	17:01	185-16	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 305 V Vmax = 307 V I^2 integral = 666.0 A^2S
2000.6.19	17:09	185-17	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 307 V Vmax = 310 V I^2 integral = 671.7 A^2S
2000.6.19	17:17	185-18	13 T - 40 kA - 6.8 K - 5 g/s Stability test.	44.5 kA	40 kA	Heater pulse	Quench. Inductive heater ICS_HI_03. Imax = 310 V. Vmax = 314 V. I^2 integral = 693.9 A^2S. Vouter = 782 V. Vinner = 630 V. Tau_CSMC = 17.5 s. Vinsert = 53.8 V, 26.2 V. Tau_CSI = 17.9 s. 1A inlet pressure rise = 0.174MPa. 1A outlet temperature rise = 0.87 K. CSI outlet temperature rise = 2.81 K.
2000.6.20	16:09	186-1	System check after sensor assignment had been changed. Charge CSMC up to 9.2 kA and CSIC up to 5 kA. Dump simultaneously.	9.2 kA	5 kA	Manual dump	Vouter = 569.7 V Vinner = 398.3 V Tau_CSMC = 5.94 s Vinsert = 12.6 V Tau_CSI = 5.8 s 1A inlet pressure rise = 0.023 MPa 1A outlet temperature rise = 0.144 K CSI outlet temperature rise = 0.083 K

2000.6.20	17:12	187-1	System check . Charge CSMC and CSIC up to 9.2 kA in series. Dump simultaneously.	9.2 kA	9.2 kA	Manual dump	Vouter = 505.3 V Vinner = 439.0 V Tau = 6.1 s Vinsert = 20.7 V 1A inlet pressure rise = 0.022 MPa 1A outlet temperature rise = 0.135 K CSI outlet temperature rise = 0.071 K
2000.6.21	9:37	188-1	Daily check for sensors. Charge CSMC up to 9.2 kA. Dump manually. (CSIC circuit was open)	9.2 kA	kA	Manual dump	Vouter = 517 V Vinner = 442 V Tau = 5.9 s 1A inlet pressure rise = 0.022 MPa 1A outlet temperature rise = 0.135 K CSI outlet temperature rise = 0.076 K
2000.6.21	10:55	189-1	AC loss measurement. CSMC 50 % (23 kA) manual dump. (CSIC circuit was open). Tau = 6 s.	23 kA	kA	Manual dump	Vouter = 1287 V Vinner = 1099 V Tau = 5.6 s 1A inlet pressure rise = 0.095 MPa 1A outlet temperature rise = 0.606 K CSI outlet temperature rise = 0.412 K
2000.6.21	13:13	190-1	AC loss measurement. CSMC 65 % (29.9 kA) manual dump. (CSIC circuit was open). Tau ~ 6 s.	29.9 kA	kA	Manual dump	Vouter = 1677 V Vinner = 1431 V Tau = 5.56 s 1A inlet pressure rise = 0.158 MPa 1A outlet temperature rise = 0.925 K CSI outlet temperature rise = 0.77 K
2000.6.21	15:10	191-1	AC loss measurement. CSMC 80 % (36.8 kA) manual dump. (CSIC circuit was open). Tau ~ 6 s.	36.8 kA	kA	Manual dump	Vouter = 2069.4 V Vinner = 1766.1 V Tau = 5.4 s 1A inlet pressure rise = 0.243 MPa 1A outlet temperature rise = 1.183 K CSI outlet temperature rise = 1.204 K

2000.6.22	9:38	192-1	Daily check. CSMC+CSIC 9.2 kA manual dump.	9.2 kA	9.2 kA	Manual dump	Vouter = 503.8 V Vinner = 435.3 V Tau = 6.0 s Vinsert = 20.6 V 1A inlet pressure rise = 0.022 MPa 1A outlet temperature rise = 0.14 K CSI outlet temperature rise = 0.081 K
2000.6.22	11:07	193-1	AC loss measurement. CSMC+CSIC 23 kA manual dump. Tau ~ 6 s.	23 kA	23 kA	Manual dump	Vouter = 1255 V Vinner = 1084 V Tau = 5.7 s Vinsert = 51.7 V 1A inlet pressure rise = 0.094 MPa 1A outlet temperature rise = 0.578 K CSI outlet temperature rise = 0.422 K
2000.6.22	13:12	194-1	AC loss measurement. CSMC+CSIC 29.9 kA manual dump. Tau ~ 6 s.	29.9 kA	29.9 kA	Manual dump	Vouter = 1634 V Vinner = 1411 V Tau = 5.8 s Vinsert = 66.6 V 1A inlet pressure rise = 0.154 MPa 1A outlet temperature rise = 0.885 K CSI outlet temperature rise = 0.725 K
2000.6.22	15:12	195-1	AC loss measurement. CSMC+CSIC 36.8 kA manual dump. Tau ~ 6 s.	kA	kA	Manual dump	Vouter = 2015 V. Vinner = 1738 V. Tau = 5.6 s. Vinsert = 81 V. 1A inlet pressure rise = 0.235 MPa. 1A outlet temperature rise = 1.225 K. CSI outlet temperature rise = 1.105 K.
2000.6.23	9:33	196-1	Daily check for sensors. Charge CSMC up to 9.2 kA. Dump manually. (CSIC circuit was open). Tau~9 s.	9.2 kA	kA	Manual dump	Vouter = 323.4 V. Vinner = 275.6 V. Tau = 9.4 s. Vinsert = 13.2 V. 1A inlet pressure rise = 0.019 MPa. 1A outlet temperature rise = 0.109 K. CSI outlet temperature rise = 0.071 K.

2000.6.23	11:04	197-1	AC loss measurement. Charge CSMC up to 23 kA. Dump manually. (CSIC circuit was open). Tau~9 s.	23 kA	kA	Manual dump	Vouter = 804.1 V. Vinner = 685.1 V. Tau = 9.0 s. Vinsert = 30.8 V. 1A inlet pressure rise = 0.073 MPa. 1A outlet temperature rise = 0.45 K. CSI outlet temperature rise = 0.41 K.
2000.6.23	13:13	198-1	AC loss measurement. Charge CSMC up to 29.9 kA. Dump manually. (CSIC circuit was open). Tau~9 s.	kA	kA	Manual dump	Vouter = 1047 V. Vinner = 892 V. Tau = 8.9 s. Vinsert = 39.7 V. 1A inlet pressure rise = 0.12 MPa. 1A outlet temperature rise = 0.70 K. CSI outlet temperature rise = 0.75 K.
2000.6.23	15:20	199-1	AC loss measurement. Charge CSMC up to 36.8 kA. Dump manually. (CSIC circuit was open). Tau~9 s.	36.8 kA	kA	Manual dump	Vouter = 1290 V. Vinner = 1098 V. Tau = 8.75 s. Vinsert = 48.9 V. 1A inlet pressure rise = 0.183 MPa. 1A outlet temperature rise = 0.97 K. CSI outlet temperature rise = 1.14 K.
2000.6.26	9:36	200-1	Daily check. CSMC + CSIC 9.2 kA manual dump.	9.2 kA	9.2 kA	Manual dump	Vouter = 314V. Vinner = 270 V. Tau = 9.8 s. Vinsert = 13.1 V. 1A inlet pressure rise = 0.018 MPa. 1A outlet temperature rise = 0.10 K. CSI outlet temperature rise = 0.07 K.
2000.6.26	11:07	201-1	AC loss measurement. CSMC + CSIC 23 kA manual dump.	23 kA	23 kA	Manual dump	Vouter = 783V Vinner = 675V Tau = 9.48s Vinsert = 31.5V 1A inlet pressure rise = 0.071MPa 1A outlet temperature rise = 0.432K CSI outlet temperature rise = 0.440K

2000.6.26	13:15	202-1	AC loss measurement. CSMC + CSIC 29.9 kA manual dump.	29.9 kA	29.9 kA	Manual dump	Vouter = 1019.4 V Vinner = 878 V Tau = 9.24 s Vinsert = 41.2 V 1A inlet pressure rise = 0.116 MPa 1A outlet temperature rise = 0.66 K CSI outlet temperature rise = 0.63 K
2000.6.26	15:21	203-1	AC loss measurement. CSMC + CSIC 36.8 kA manual dump.	36.8 kA	36.8 kA	Manual dump	Vouter = 1259 V Vinner = 1084 V Tau = 9.1 s Vinsert = 50.7 V 1A inlet pressure rise = 0.175 MPa 1A outlet temperature rise = 0.93 K CSI outlet temperature rise = 0.96 K
2000.6.27	9:33	204-1	Daily check. CSMC 9.2 kA manual dump. Tau ~ 20 s.	9.2 kA	kA	Manual dump	Vouter = 156 V Vinner = 134 V Tau = 19.4 s Vinsert = 6.4 V 1A inlet pressure rise = 0.014 MPa 1A outlet temperature rise = 0.075 K CSI outlet temperature rise = 0.056 K
2000.6.27	11:08	205-1	AC loss measurement. CSMC 23 kA (50 %) manual dump. Tau ~ 20 s.	23 kA	kA	Manual dump	Vouter = 389.6 V Vinner = 331.6 V Tau = 18.6 s Vinsert = 15.3 V 1A inlet pressure rise = 0.048 MPa 1A outlet temperature rise = 0.285 K CSI outlet temperature rise = 0.282 K
2000.6.27	13:12	206-1	AC loss measurement. CSMC 36.8 kA (80 %) manual dump. Tau ~ 20 s.	36.8 kA	kA	Manual dump	Vouter = 625 V Vinner = 533 V Tau = 17.9 s Vinsert = 25.0 V 1A inlet pressure rise = 0.113 MPa 1A outlet temperature rise = 0.627 K CSI outlet temperature rise = 0.85 K

2000.6.27	15:25	207-1	AC loss measurement. CSMC + CSIC 36.8 kA manual dump. Tau ~ 20 s.	36.8 kA	36.8 kA	Manual dump	Vouter = 610.4 V Vinner = 525 V Tau = 18.64 s Vinsert = 24.9 V 1A inlet pressure rise = 0.11 MPa 1A outlet temperature rise = 0.597 K CSI outlet temperature rise = 0.693 K
2000.6.28	9:43	208-1	Check sensors, inductive heater. Daily Check.	9.2 kA	kA	Ramp up	
2000.6.28		208-2	Check sensors, inductive heater. Daily Check.	9.2 kA	kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 31.3 A^2s Ipeak = 66.2 A Vpeak = 66.6 V
2000.6.28	10:11	208-3	Check sensors, inductive heater. Daily Check.	9.2 kA	5 kA	Manual dump	Vouter = 169 V Vinner = 125 V Tau_CSMC = 20.0 s V_CSIC = 12.3 V Tau_CSIC = 18.8 s 1A inlet pressure rise = 0.014 MPa 1A outlet temperature rise = 0.08 K CSI outlet temperature rise = 0.06 K
2000.6.28	11:25	209-1	Heat CSIC up to 5.3 K.	kA	kA	Heater energise	
2000.6.28	13:12	210-1	Quench test at 13 T, 30 kA, 5.3 K, 10 g/s, and 3 s delay. Charge CSMC up to 45.3 kA and CSIC up to 30 kA.	45.3 kA	30 kA	Ramp up	

2000.6.28	14:38	210-2	Quench test at 13 T, 30 kA, 5.3 K, 10 g/s, and 3 s delay. Inductive heater shot.	45.3 kA	30 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 2168.7 A^2s Ipeak = 545.5 A Vpeak = 554.9 V Quench. Dump at 14:38. Vouter = 802.2 V Vinner = 625.5 V Tau_CSMC = 17.6 s V_CSIC = 39.5 V Tau_CSIC = 18.7 s 1A inlet pressure rise = 0.196 MPa CSI outlet temperature rise = 6.1 K
2000.6.28	16:01	211-1	Heat CSIC up to 5.3 K.	kA	kA	Heater energise	
2000.6.28	16:43	212-1	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Charge CSMC up to 44.5 kA and CSIC up to 40 kA.	44.5 kA	40 kA	Ramp up	
2000.6.28		212-2	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	NG Some incident occurred in the inductive heater power supply. Discharge CSIC.
2000.6.28	19:52	213-1	Discharge CSMC to 10 kA. Manual dump.	44.5 kA	kA	Ramp down	1A inlet pressure rise = 0.013 MPa 1A outlet temperature rise = 0.087 K CSI outlet temperature rise = 0.06 K
2000.6.29	10:15	214-1	Daily check. Check sensors, inductive heater. Charge CSMC up to 9.2 kA.	9.2 kA	kA	Ramp up	
2000.6.29	10:34	214-2	Daily check. Check sensors, inductive heater. Inductive heater check.	9.2 kA	kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 31.47 A^2s Ipeak = 66.6 A Vpeak = 67.5 V

2000.6.29	10:38	214-3	Daily check. Check sensors, inductive heater. Charge CSIC up to 5 kA. Manual dump.	9.2 kA	5 kA	Manual dump	Vouter = 169 V Vinner = 124.8 V Tau_CSMC = 19.7 s V_CSIC = 12.3 V Tau_CSIC = 18.7 s 1A inlet pressure rise = 0.014 MPa 1A outlet temperature rise = 0.08 K CSI outlet temperature rise = 0.04 K
2000.6.29	11:41	215-1	Heat CSIC up to 5.3 K.	kA	kA	Heater energise	
2000.6.29	13:09	216-1	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Charge CSMC up to 44.5 kA and CSIC up to 40 kA.	44.5 kA	40 kA	Ramp up	
2000.6.29	14:25	216-2	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 1052 A^2s Ipeak = 381.5 A Vpeak = 387 V No quench.
2000.6.29	14:33	216-3	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 1123 A^2s Ipeak = 393.4 A Vpeak = 403.4 V No quench.
2000.6.29	14:41	216-4	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 1252 A^2s Ipeak = 414 A Vpeak = 421 V No quench.
2000.6.29	14:49	216-5	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 1357 A^2s Ipeak = 432 A Vpeak = 438 V No quench.

2000.6.29	14:58	216-6	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 1399 A^2s Ipeak = 439 A Vpeak = 446 V No quench.
2000.6.29	15:06	216-7	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 1468 A^2s Ipeak = 448 A Vpeak = 454 V No quench.
2000.6.29	15:14	216-8	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 1591 A^2s Ipeak = 468 A Vpeak = 474 V Quench. Dump at 15:14 Vouter = 778 V Vinner = 628 V Tau_CSMC = 17.0 s V_CSIC > 50 V Tau_CSIC = 17.5 s Maximum CSIC inlet pressure = 0.778 MPa Maximum CSIC temperature (04H) = 18 K (before dump)
2000.6.29	15:40	217-1	Heat CSIC up to 5.3 K.	kA	kA	Heater energise	
2000.6.29	16:16	218-1	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 5 s delay. Charge CSMC up to 44.5 kA and CSIC up to 40 kA.	44.5 kA	40 kA	Ramp up	

2000.6.29	17:31	218-2	Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 5 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 1484 A^2s Ipeak = 451 A Vpeak = 456 V Quench. Dump at 17:31 Vouter = 784 V Vinner = 6318 V Tau_CSMC = 17.4 s V_CSIC > 50 V Tau_CSIC = 17.0 s Maximum CSIC inlet pressure = 0.776 MPa Maximum CSIC temperature (04H) = 28 K (before dump)
2000.6.30	9:42	219-1	Daily check. Check sensors, inductive heater. Charge CSMC up to 9.2 kA.	9.2 kA	kA	Ramp up	
2000.6.30	10:01	219-2	Daily check. Check sensors, inductive heater. Charge CSIC up to 5 kA. Manual dump.	9.2 kA	5 kA	Manual dump	Vouter = 169.6 V Vinner = 125.2 V Tau_CSMC = 19.7 s V_CSIC = 12.4 V, 5.22 V Tau_CSIC = 19.7 s 1A inlet pressure rise = 0.013 MPa 1A outlet temperature rise = 0.075 K CSI outlet temperature rise = 0.058 K
2000.6.30	11:07	220-1	Heat CSIC up to 5.3 K.	kA	kA	Heater energise	
2000.6.30	13:10	221-1	Quench test at 13 T, 35 kA, 5.3 K, 10 g/s, and 5 s delay. Charge CSMC up to 44.9 kA and CSIC up to 35 kA.	44.9 kA	35 kA	Ramp up	

2000.6.30	14:25	221-2	Quench test at 13 T, 35 kA, 5.3 K, 10 g/s, and 5 s delay. Inductive heater shot.	44.5 kA	35 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 1662 A^2s Ipeak = 476 A Vpeak = 484 V Quench. Dump at 14:25 Vouter = 793 V Vinner = 627 V Tau_CSMC = 17.56 s V_CSIC = 45.0 V Tau_CSIC = 18.8 s Maximum CSIC inlet pressure = 0.778 MPa Maximum CSIC temperature (04H) = 26.8 K (before dump)
2000.6.30	14:46	222-1	Heat CSIC up to 5.3 K.	kA	kA	Heater energise	
2000.6.30	16:16	223-1	Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Charge CSMC up to 44.5 kA and CSIC up to 40 kA.	44.5 kA	40 kA	Ramp up	
2000.6.30	17:32	223-2	Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 483 A^2s Ipeak = 257 A Vpeak = 263 V No quench.
2000.6.30	17:40	223-3	Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 590 A^2s Ipeak = 284 A Vpeak = 289 V No quench.
2000.6.30	17:48	223-4	Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 663 A^2s Ipeak = 302 A Vpeak = 308 V No quench.

2000.6.30	17:56	223-5	Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 738 A^2s Ipeak = 318 A Vpeak = 324 V No quench.
2000.6.30	18:04	223-6	Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.	44.5 kA	40 kA	Heater pulse	Inductive heater ICS_HI_03 I^2 integral = 822 A^2s Ipeak = 337 A Vpeak = 342 V Quench. Dump at 18:04 Vouter = 783.6 V Vinner = 632.7 V Tau_CSMC = 17.4 s V_CSIC = 50.1 V Tau_CSIC = 18.4 s Maximum CSIC inlet pressure = 0.827 MPa Maximum CSIC temperature (04H) = 27 K (before dump. Not calibrated)
2000.7.3	9:47	224-1	Daily check. Check sensors, inductive heater. Charge CSMC up to 9.2 kA.	9.2 kA	kA	Ramp up	
2000.7.3	10:06	224-2	Daily check. Check sensors, inductive heater. Charge CSIC up to 5 kA. Manual dump.	9.2 kA	5 kA	Manual dump	Vouter = 169.2 V Vinner = 125.0 V Tau_CSMC = 19.75 s V_CSIC = 12.1 V, 5.2 V Tau_CSIC = 18.8 s 1A inlet pressure rise = 0.014 MPa 1A outlet temperature rise = 0.076 K CSI outlet temperature rise = 0.061 K
2000.7.3	10:54	225-1	Cyclic test procedure check. 5 cycles at 7.5 T.	23 kA	40 kA	Cyclic	NG. Dump at 7 kA by ICS_VB_ALL2. Vouter = 416 V Vinner = 308 V Tau_CSMC = 18.7 s V_CSIC = 129 V Tau_CSIC = 19.9 s

2000.7.3	13:24	226-1	Balanced voltages adjustment. Charge and discharge CSIC several times.	9.2 kA	40 kA	Cyclic	
2000.7.3	14:56	227-1	Cyclic test procedure check. 10 cycles at 4.2 T.	15 kA	40 kA	Cyclic	Succeeded.
2000.7.3	15:59	228-1	Cyclic test procedure check. 10 cycles at 4.2 T.	15 kA	40 kA	Cyclic	Succeeded.
2000.7.3	16:49	229-1	Cyclic test at 13 T. Charge CSMC up to 44.5 kA.	44.5 kA	kA	Ramp up	NG. Current went down at 40 kA.
2000.7.3	18:33	230-1	Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 100 cycle test for CSIC.	44.5 kA	40 kA	Cyclic	NG. Dump at 7.44 kA by ICS_VB_ALL2. Vouter = 810 V Vinner = 600 V Tau_CSMC = 17.6 s V_CSIC = 25.3 V Tau_CSIC = 19.5 s 1A outlet temperature rise = 0.827 K CSI outlet temperature rise = 1.06 K
2000.7.4	10:34	231-1	Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 100 cycle test for CSIC.	44.5 kA	40 kA	Cyclic	Succeeded.
2000.7.4	11:22	231-2	CSMC 36.8 kA (80 %) AC loss measurement. Manual dump.	36.8 kA	kA	Manual dump	Vouter = 664 V Vinner = 485 V Tau_CSMC = 18.1 s V_CSIC = 20.4 V Tau_CSIC = 18.9 s 1A inlet pressure rise = 0.115 MPa 1A outlet temperature rise = 0.62 K CSI outlet temperature rise = 0.785 K
2000.7.4	13:15	232-1	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 100 cycle test. Charge CSMC up to 44.5 kA for background field.	44.5 kA	kA	Ramp up	
2000.7.4	14:15	232-2	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 100 cycle test. Charge CSIC up to 40 kA under 12.5 T.	44.5 kA	40 kA	Tcs	
2000.7.4		232-3	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 100 cycle test. Energise heater ICS_HR_IN.	44.5 kA	40 kA	Tcs	Tcs (0.1 micro-V def.) = 7.48 K (calibrated value) CSIC current down safely. After the Tcs measurement, CSMC current down to 36.8 kA.

2000.7.4	17:15	232-4	CSMC 80 % (36.8 kA) AC loss measurement. Manual dump.	36.8 kA	kA	Manual dump	Vouter = 626 V Vinner = 527 V Tau_CSMC = 17.91 s V_CSIC = 25.0 V 1A inlet pressure rise = 0.12 MPa 1A outlet temperature rise = 0.63 K CSI outlet temperature rise = 0.71 K
2000.7.5	9:46	233-1	Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 100 cycle test for CSIC.	44.5 kA	40 kA	Cyclic	Succeeded.
2000.7.5	11:10	233-2	Discharge CSMC to 36.8 kA. Manual dump.	36.8 kA	kA	Manual dump	Vouter = 622 V Vinner = 523 V Tau_CSMC = 17.97 s V_CSIC = 24.8 V 1A inlet pressure rise = 0.117 MPa 1A outlet temperature rise = 0.63 K CSI outlet temperature rise = 0.69 K
2000.7.5	13:37	234-1	Try 44.3 kA charge for CSIC. Charge CSMC up to 44.3 kA.	44.3 kA	kA	Ramp up	
2000.7.5	14:36	234-1	Charge CSIC up to 44.3 kA at 13 T.	44.5 kA	44.3 kA	Trapezoidal	
2000.7.5	15:20	235-1	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 200 cycle test. Energise heater ICS_HR_IN up to 150 W. Charge CSMC up to 44.5 kA.	44.5 kA	kA	Ramp up	
2000.7.5	15:54	235-2	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 200 cycle test. Charge CSIC up to 40 kA. Energise heater ICS_HR_IN.	44.5 kA	40 kA	Tcs	Tcs (0.1 micro-V def.) = 7.45 K (calibrated value) CSIC current down safely. After the Tcs measurement, CSMC current up to 46 kA.
2000.7.5	18:28	235-3	100 % (46 kA) AC loss measurement. Manual dump.	46 kA	kA	Manual dump	Vouter = 784 V Vinner = 659 V Tau_CSMC = 17.4 s V_CSIC = 31.5 V 1A inlet pressure rise = 0.178 MPa 1A outlet temperature rise = 0.88 K CSI outlet temperature rise = 1.00 K
2000.7.6	9:52	236-1	Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 300 cycle test for CSIC.	44.5 kA	40 kA	Cyclic	Succeeded.

2000.7.6	12:24	236-2	Discharge CSMC to 36.8 kA (80 %) . Manual dump.	36.8 kA	kA	Manual dump	Vouter = 623 V Vinner = 524 V Tau_CSMC = 17.9 s V_CSIC = 25.0 V 1A inlet pressure rise = 0.117 MPa 1A outlet temperature rise = 0.63 K CSI outlet temperature rise = 0.67 K
2000.7.6	14:11	237-1	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 500 cycle test. Energise heater ICS_HR_IN up to 150 W. Charge CSMC up to 44.5 kA	44.5 kA	kA	Ramp up	
2000.7.6	15:08	237-2	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 500 cycle test. Charge CSIC up to 40 kA.	44.5 kA	40 kA	Tcs	
2000.7.6	15:29	237-3	40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 500 cycle test. Energise heater ICS_HR_IN.	44.5 kA	40 kA	Tcs	Tcs (0.1 micro-V def.) = 7.46 K (calibrated value) CSIC current down safely.
2000.7.6	17:45	237-4	100 % (46 kA) AC loss measurement. Manual dump.	44.5 kA	kA	Manual dump	Vouter = 784 V Vinner = 660 V Tau_CSMC = 17.4 s V_CSIC = 31.5 V 1A inlet pressure rise = 0.179 MPa 1A outlet temperature rise = 0.88 K CSI outlet temperature rise = 1.01 K
2000.7.7	9:47	238-1	Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 501 cycle test for CSIC.	44.5 kA	40 kA	Cyclic	Succeeded.
2000.7.7	13:35	238-2	Discharge CSMC to 36.8 kA (80 %) . Manual dump.	36.8 kA	kA	Manual dump	Vouter = 625 V Vinner = 525 V Tau_CSMC = 17.95 s V_CSIC = 25.1 V 1A inlet pressure rise = 0.12 MPa 1A outlet temperature rise = 0.63 K CSI outlet temperature rise = 0.68 K
2000.7.10	13:33	239-1	Check sensors and balanced voltages.	9.2 kA	9.2 kA	Trapezoidal	
2000.7.10	14:13	239-2	Check sensors and balanced voltages.	9.2 kA	9.2 kA	Triangular	
2000.7.10	15:30	239-3	Check sensors and balanced voltages.	9.2 kA	9.2 kA	Triangular	

2000.7.10	16:49	240-1	Check sensors and balanced voltages.	9.2 kA	9.2 kA	Manual dump	
2000.7.10	17:31	240-2	Check sensors and balanced voltages.	9.2 kA	9.2 kA	Manual dump	Vouter = 315.5 V Vinner = 270.5 V Tau_CSMC = 9.82 s V_CSIC = 13.3 V 1A inlet pressure rise = 0.018 MPa 1A outlet temperature rise = 0.101 K CSI outlet temperature rise = 0.072 K
2000.7.11	10:59	241-1	Check for sensors.	5 kA	5 kA	Trapezoidal	OK. 01AI pressure rise = 0.019 MPa 01AO temperature rise = 0.09 K TC02 temperature rise = 0.06 K
2000.7.11	11:27	242-1	Check for protection systems.	5 kA	5 kA	Trapezoidal	NG. Failed in fast down.
2000.7.11	13:48	243-1	Check for protection systems.	5 kA	5 kA	Trapezoidal	OK.
2000.7.11	14:20	244-1	Pulse charge CSMC + CSIC up to 10 kA.	10 kA	10 kA	Trapezoidal	Im = 9.9 kA 01AI pressure rise = 0.026 MPa 01AO temperature rise = 0.20 K TC02 temperature rise = 0.12 K
2000.7.11	15:05	245-1	10 kA manual dump.	10 kA	10 kA	Manual dump	Im = 9.9 kA 01AI pressure rise = 0.033 MPa 01AO temperature rise = 0.19 K TC02 temperature rise = 0.11 K Vouter = 336 V Vinner = 288 V V_CSIC = 14.3 V Tau = 9.8 s
2000.7.11	15:42	246-1	Pulse charge CSMC + CSIC up to 20 kA.	20 kA	20 kA	Trapezoidal	Im = 19.45 kA 01AI pressure rise = 0.088 MPa 01AO temperature rise = 0.52 K TC02 temperature rise = 0.27 K

2000.7.11	16:20	247-1	Pulse charge CSMC + CSIC up to 30 kA.	30 kA	30 kA	Trapezoidal	Im = 29.02 kA 01AI pressure rise = 0.163 MPa 01AO temperature rise = 0.95 K TC02 temperature rise = 0.50 K
2000.7.11	16:57	248-1	Pulse charge CSMC + CSIC up to 40 kA.	40 kA	40 kA	Trapezoidal	Im = 39.62 kA 01AI pressure rise = 0.292 MPa 01AO temperature rise = 1.57 K TC02 temperature rise = 0.96 K
2000.7.11	17:44	249-1	Pulse charge CSMC + CSIC up to 44.3 kA (13 T).	44.3 kA	44.3 kA	Trapezoidal	Im = 44.4 kA 01AI pressure rise = 0.367 MPa 01AO temperature rise = 1.91 K TC02 temperature rise = 1.29 K
2000.7.11	18:31	250-1	44.3 kA (13 T) manual dump.	44.3 kA	44.3 kA	Manual dump	Im = 44.4 kA 01AI pressure rise = 0.346 MPa 01AO temperature rise = 1.82 K TC02 temperature rise = 1.24 K Vouter = 1519 V Vinner = 1296 V V_CSIC = 60.2 V Tau = 8.94 s
2000.7.12	10:02	251-1	Daily check. 10 kA manual dump.	10 kA	10 kA	Manual dump	Im = 9.89 kA 01AI pressure rise = 0.033 MPa 01AO temperature rise = 0.20 K TC02 temperature rise = 0.11 K Vouter = 326 V Vinner = 279 V V_CSIC = 13.6 V Tau = 9.82 s
2000.7.12	10:37	252-1	Pulse charge up to 13 T (Mode C).	44.3 kA	44.3 kA	Stepped Trapezoidal (Mode C)	Im = 44.4 kA I1 = 39.2 kA 01AI pressure rise = 0.368 MPa 01AO temperature rise = 1.94 K TC02 temperature rise = 1.38 K

2000.7.12	11:21	253-1	Bipolar charge from -3 T to 10 T (Mode E).	33.3 kA	33.3 kA	Bipolar (Mode E)	Im = 33.5 kA I1 = -10.3 kA 01AI pressure rise = 0.328 MPa 01AO temperature rise = 1.75 K TC02 temperature rise = 0.872 K
2000.7.12	13:13	254-1	Bipolar charge from -3 T to 13 T (Mode E).	44.3 kA	44.3 kA	Bipolar (Mode E)	Im = 44.4 kA I1 = -11.0 kA 01AI pressure rise = 0.451 MPa 01AO temperature rise = 2.30 K TC02 temperature rise = 1.38 K
2000.7.12	14:04	255-1	Pulse charge up to 44.3 kA (13 T) at 0.6 T/s.	44.3 kA	44.3 kA	Trapezoidal	No quench. Im = 44.4 kA 01AI pressure rise = 0.374 MPa 01AO temperature rise = 1.95 K TC02 temperature rise = 1.26 K
2000.7.12	14:57	256-1	Energise heater ICS_HR_IN up to 6.5 K.	kA	kA	Heater energise	
2000.7.12	16:05	257-1	CSIC ramp rate limitation test at 6.5 K and 0.4 T/s, up to 40 kA.	40 kA	40 kA	Trapezoidal	No quench. Im = 40.2 kA 01AI pressure rise = 0.254 MPa 01AO temperature rise = 1.39 K TC02 temperature rise = 0.9 K
2000.7.12	17:06	258-1	CSIC ramp rate limitation test at 6.5 K and 0.4 T/s, up to 44.3 kA.	44.3 kA	44.3 kA	Trapezoidal	No quench. Im = 44.5 kA 01AI pressure rise = 0.37 MPa 01AO temperature rise = 1.89 K TC02 temperature rise = 1.46 K
2000.7.12	17:51	259-1	CSIC ramp rate limitation test at 6.5 K and 0.5 T/s, up to 40 kA.	40 kA	40 kA	Trapezoidal	No quench. Im = 40.2 kA 01AI pressure rise = 0.29 MPa 01AO temperature rise = 1.58 K TC02 temperature rise = 1.07 K

2000.7.12	18:39	260-1	CSIC ramp rate limitation test at 6.5 K and 0.5 T/s, up to 44.3 kA.	44.3 kA	44.3 kA	Trapezoidal	No quench. Im = 44.4 kA 01AI pressure rise = 0.34 MPa 01AO temperature rise = 1.79 K TC02 temperature rise = 1.41 K
2000.7.12	19:28	261-1	CSIC ramp rate limitation test at 6.5 K and 0.6 T/s, up to 44.3 kA.	44.3 kA	44.3 kA	Trapezoidal	Quench. Dump at 40.9 kA. Im = 44.5 kA 01AI pressure rise = 0.40 MPa 01AO temperature rise = 2.04 K TC02 temperature rise = 1.78 K Vouter = 1394.7 V Vinner = 1189.3 V Tau_CSMC = 9.0 s V_CSIC = 52.8 V
2000.7.13	9:42	262-1	Control CSIC temperature up to 7.5 K.	kA	kA	Heater energise	ICS_HR_IN: 287 W ICS_TC_01: 7.75 K ICS_TC_04H: 7.4 K Inlet mass flow: 9.5 g/s
2000.7.13	10:34	263-1	Daily check. 10 kA manual dump.	10 kA	10 kA	Manual dump	Im = 10.3 kA 01AI pressure rise = 0.033 MPa 01AO temperature rise = 0.19 K TC02 temperature rise = 0.21 K Vouter = 348.5 V Vinner = 298.8 V V_CSIC = 14.6 V Tau = 9.79 s

2000.7.13	11:07	264-1	CSIC ramp rate limitation test at 7.5 K and 0.4 T/s, up to 44.3 kA.	44.3 kA	44.3 kA	Trapezoidal	Quench at 43.0 kA (corresponds to 100 mV). Dump at 43.6 kA. 01AI pressure rise = 0.65 MPa 01AO temperature rise = 1.78 K TC02 temperature rise = 27.9 K CSIC inlet maximum pressure = 3.01 MPa CSIC center maximum pressure > 6 MPa CSIC outlet maximum pressure = 3.37 MPa Vouter = 1394.7 V Vinner = 1189.3 V Tau_CSMC = 9.0 s V_CSIC = 52.8 V
2000.7.13	14:18	265-1	Control CSIC temperature up to 6.5 K.	kA	kA	Heater energise	
2000.7.13	15:45	266-1	CSIC ramp rate limitation test at 6.5 K and 0.6 T/s, up to 40 kA.	40 kA	40 kA	Trapezoidal	No quench. Im = 39.4 kA 01AI pressure rise = 0.245 MPa 01AO temperature rise = 1.38 K TC02 temperature rise = 1.36 K
2000.7.13		267-1	Control CSIC temperature up to 7.5 K.	kA	kA	Heater energise	At 17:18 ICS_HR_IN: 290 W TC_01 = 7.8 K
2000.7.13	17:25	268-1	CSIC ramp rate limitation test at 7.5 K and 0.4 T/s, up to 40 kA.	40 kA	40 kA	Trapezoidal	No quench. Im = 40.2 kA 01AI pressure rise = 0.245 MPa 01AO temperature rise = 1.38 K TC02 temperature rise = 1.36 K
2000.7.13	17:45	268-2	Increase CSIC temperature to 4.5 K. Discharge heater ICS_HR_IN.	kA	kA	No current	
2000.7.13	19:14	269-1	AC loss measurement with bipolar field.	23 kA	23 kA	Bipolar (Mode E)	Im = -21.9 kA, 22.4 kA 01AI pressure rise = 0.332 MPa 01AO temperature rise = 1.65 K TC02 temperature rise = 0.76 K

2000.7.14	9:50	270-1	The 5th layer heater test. Energise heater MCI_HR_05AI1 and 05AI2 up to 9 K.	kA	kA	Heater energise	At 11:10 MCI_HR_05AI1+05AI2: 650 W TS_05AI = 8.9 K TS_05AO = 7.04 K TS_05BO = 6.64 K At 11:30, turned off heater.
2000.7.14	14:39	271-1	CSIC ramp rate limitation test. Pulse charge to 10 kA with 1 T/s.	10 kA	10 kA	Trapezoidal	No quench. Im = 10.08 kA 01AI pressure rise = 0.103 MPa 01AO temperature rise = 0.654 K TC02 temperature rise = 0.247 K
2000.7.14	15:31	272-1	10 kA manual dump.	10 kA	10 kA	Manual dump	Im = 10.09 kA 01AI pressure rise = 0.043 MPa 01AO temperature rise = 0.280 K TC02 temperature rise = 0.116 K Vouter = 337 V Vinner = 288 V V_CSIC = 14.3 V Tau = 9.85 s
2000.7.14	15:31	273-1	CSIC ramp rate limitation test. Pulse charge to 10 kA with 2 T/s.	10 kA	10 kA	Trapezoidal	No quench. Im = kA 01AI pressure rise = 0.143 MPa 01AO temperature rise = 0.832 K TC02 temperature rise = 0.315 K
2000.7.14	17:20	274-1	CSIC ramp rate limitation test. Pulse charge to 20 kA with 1 T/s.	20 kA	20 kA	Trapezoidal	No quench. Im = 20.02 kA 01AI pressure rise = 0.18 MPa 01AO temperature rise = 1.11 K TC02 temperature rise = 0.45 K

2000.7.14	18:15	275-1	CSIC ramp rate limitation test. Pulse charge to 20 kA with 2 T/s.	20 kA	20 kA	Trapezoidal	No quench. Im = 20.02 kA 01AI pressure rise = 0.30 MPa 01AO temperature rise = 1.63 K TC02 temperature rise = 0.70 K
2000.7.14	19:11	276-1	CSIC ramp rate limitation test. Pulse charge to 30 kA with 2 T/s.	30 kA	30 kA	Trapezoidal	No quench. Im = 29.9 kA 01AI pressure rise = 0.48 MPa 01AO temperature rise = 2.42 K TC02 temperature rise = 1.15 K
2000.7.17	9:54	277-1	Control CSIC temperature up to 6.5 K.	kA	kA	Heater energise	ICS_HR_IN: 165 W ICS_TC_01: 6.68 K ICS_TC_04H: 6.50 K Inlet mass flow: 10.8 g/s
2000.7.17	10:16	278-1	Daily check. 10 kA manual dump.	10 kA	10 kA	Manual dump	Im = 10.0 kA 01AI pressure rise = 0.044 MPa 01AO temperature rise = 0.30 K TC02 temperature rise = 0.14 K Vouter = 338 V Vinner = 288.5 V V_CSIC = 14.2 V Tau = 9.85 s
2000.7.17	11:01	279-1	CSIC ramp rate limitation test at 6.5 K. Pulse charge to 35 kA with 2 T/s.	35 kA	35 kA	Trapezoidal	No quench. Im =kA 01AI pressure rise = 0.58 MPa 01AO temperature rise = 2.89 K TC02 temperature rise = 1.65 K

2000.7.17	13:17	280-1	CSIC ramp rate limitation test at 6.5 K. Pulse charge to 40 kA with 2 T/s.	40 kA	40 kA	Trapezoidal	Quenched at 40 kA (flat top). Dump at 40 kA. 01AI pressure rise = 0.58 MPa 01AO temperature rise = 2.89 K TC02 temperature rise = 1.65 K Vouter = 1355 V Vinner = 1157 V V_CSIC = 53.5 V Tau = 8.97 s
2000.7.17		281-1	Control CSIC temperature up to 6.5 K.	kA	kA	Heater energise	ICS_HR_IN: 155 W ICS_TC_04H: 6.51 K Inlet mass flow: 11.3 g/s
2000.7.17	15:42	282-1	CSIC ramp rate limitation test at 6.5 K. Pulse charge to 38 kA with 2 T/s.	38 kA	38 kA	Trapezoidal	No quench. 01AI pressure rise = 0.61 MPa 01AO temperature rise = 3.03 K TC02 temperature rise = 1.64 K
2000.7.17	18:33	283-1	AC loss measurement for CSMC+CSIC. Pulse charge to 20 kA with 2 T/s.	20 kA	20 kA	Trapezoidal	01AI pressure rise = 0.308 MPa 01AO temperature rise = 1.624 K TC02 temperature rise = 0.725 K
2000.7.17	19:29	284-1	CSMC 1st layer ramp rate limitation test at 4.5 K. Pulse charge to 40 kA with 2 T/s. (CSIC circuit is open.)	40 kA	0 kA	Trapezoidal	Quench. Dump at 35.3 kA. 01AI pressure rise = 0.58 MPa 01AO temperature rise = 2.89 K TC02 temperature rise = 1.65 K Vouter = 1235 V (dump) Vinner = 1040 V (dump) V_CSIC = 46.5 V Tau = 8.73 s

2000.7.18	9:55	285-1	Daily check. CSMC 10 kA manual dump. CSIC circuit is opened.	10 kA	kA	Manual dump	Im = 10.0 kA 01AI pressure rise = 0.042 MPa 01AO temperature rise = 0.28 K TC02 temperature rise = 0.09 K Vouter = 346 V Vinner = 292 V V_CSIC = 13.8 V Tau = 9.45 s
2000.7.18	10:40	286-1	CSMC AC loss measurement at 4.5 K. Pulse charge to 10 kA with 1 T/s. CSIC circuit is opened.	10 kA	0 kA	Trapezoidal	Im = 10.1 kA 01AI pressure rise = 0.09 MPa 01AO temperature rise = 0.58 K TC02 temperature rise = 0.17 K
2000.7.18	11:35	287-1	CSMC AC loss measurement at 4.5 K. Pulse charge to 10 kA with 2 T/s. CSIC circuit is opened.	10 kA	0 kA	Trapezoidal	Im = 10.0 kA 01AI pressure rise = 0.14 MPa 01AO temperature rise = 0.84 K TC02 temperature rise = 0.24 K
2000.7.18	13:34	288-1	CSMC AC loss measurement at 4.5 K. Pulse charge to 20 kA with 1 T/s. CSIC circuit is opened.	20 kA	0 kA	Trapezoidal	Im = 19.9 kA 01AI pressure rise = 0.18 MPa 01AO temperature rise = 1.1 K TC02 temperature rise = 0.3 K
2000.7.18	14:38	289-1	CSMC AC loss measurement at 4.5 K. Pulse charge to 20 kA with 2 T/s. CSIC circuit is opened.	20 kA	0 kA	Trapezoidal	Im = 19.9 kA 01AI pressure rise = 0.30 MPa 01AO temperature rise = 1.56 K TC02 temperature rise = 0.47 K
2000.7.18	15:48	290-1	CSMC 1st layer ramp rate limitation test at 4.5 K. Pulse charge to 38 kA with 1.9 T/s. CSIC circuit is opened.	38 kA	0 kA	Trapezoidal	No quench. Dump at 18 kA (decreasing current) due to the power supply trouble. Im = 37.8 kA 01AI pressure rise = 0.42 MPa 01AO temperature rise = 2.36 K TC02 temperature rise = 0.65 K

2000.7.18	16:20	291-1	Control CSIC temperature up to 6.5 K.	kA	kA	Heater energise	ICS_HR_IN: 164 W ICS_TC_04H: 6.52 K Inlet mass flow: 10.6 g/s Inlet pressure : 0.58 MPa
2000.7.18	17:29	292-1	CSIC ramp rate limitation test at 6.5 K. Pulse charge to 42 kA with 1.2 T/s. After 1-s hold, dump manually.	42 kA	42 kA	Manual dump	CSIC quenched at 41.7 kA (flat top). No quench in CSMC. Dump at 41.7 kA. Im = 41.7 kA 01AI pressure rise = 0.39 MPa 01AO temperature rise = 2.06 K TC02 temperature rise = 3.45 K Vouter = 1423 V Vinner = 1217 V V_CSIC = 56.2 V Tau = 8.89 s
2000.7.19	9:31	293-1	Control CSMC 5th layer temperature up to 10 K.	kA	kA	Heater energise	10:23 MCI_HR_05AI1 and 05AI2: 600 W MCI_TS_05AI: 8.24 K
2000.7.19	10:33	294-1	Daily check. CSMC 10 kA manual dump. CSIC circuit is opened.	10 kA	kA	Manual dump	Im = 10.0 kA 01AI pressure rise = 0.042 MPa 01AO temperature rise = 0.28 K TC02 temperature rise = 0.10 K Vouter = 345 V Vinner = 293 V V_CSIC = 13.8 V Tau = 9.46 s
2000.7.19		294-2	Control CSMC 5th layer temperature up to 10 K.	kA	kA	Heater energise	11:26 MCI_HR_05AI1 and 05AI2: 767 W MCI_TS_05AI: 10.05 K MCI_TS_05AO: 7.37 K MCI_TS_05BO: 6.96 K

2000.7.19	11:35	295-1	CSMC 5th layer ramp rate limitation test at 10 K. Pulse charge to 40 kA. CSIC circuit is open.	38 kA	0 kA	Trapezoidal	Quench at 36.4 kA (100 mV) 01AI pressure rise = 0.60 MPa 01AO temperature rise = 2.35 K TC02 temperature rise = 0.59 K 05AI pressure rise = 0.9 MPa (Pmax = 1.6 MPa) 05AI temperature rise = 26.4 K 05AO temperature rise = 9.49 K 05BO temperature rise = 9.41 K Vouter = 1310 V (dump) Vinner = 1103 V (dump) V_CSIC = 49 V Tau = 8.71 s
2000.7.19	13:00	296-1	Control CSIC layer temperature up to 6.5 K.	kA	kA	Heater energise	ICS_HR_IN: 169 W ICS_TC_01: 6.67 K ICS_TC_04H: 6.50 K ICS_TC_05H: 6.54 K ICS_TC_02: 6.33 K
2000.7.19	14:14	297-1	CSIC ramp rate limitation test at 6.5 K. Pulse charge to 40 kA with 1.2 T/s. After 1-s hold, dump manually.	40 kA	40 kA	Manual dump	No quench. Im = 39.8 kA 01AI pressure rise = 0.35 MPa 01AO temperature rise = 1.90 K TC02 temperature rise = 1.14 K Vouter = 1360 V Vinner = 1160 V V_CSIC = 54 V Tau = 8.96 s
2000.7.19	14:31	298-1	Control CSMC 5th layer temperature up to 10 K.	kA	kA	Heater energise	MCI_HR_05AI1 and 05AI2: 773 W MCI_TS_05AI: 10.1 K MCI_TS_05AO: 7.41 K MCI_TS_05BO: 7.01 K

2000.7.19	16:19	299-1	CSMC 5th layer ramp rate limitation test at 10 K. Pulse charge to 44.3 kA. After 1-s hold, dump manually. CSIC circuit is open.	40 kA	0 kA	Manual dump	Quench at 38.0 kA (100 mV) 01AI pressure rise = 0.64 MPa 01AO temperature rise = 2.12 K TC02 temperature rise = 0.60 K 05AI pressure rise = 0.49 MPa (Pmax = 1.92 MPa) 05AI temperature rise = 27.7 K 05AO temperature rise = 11.9 K 05BO temperature rise = 10.9 K Vouter = 1393 V (dump) Vinner = 1173 V (dump) V_CSIC = 52 V Tau = 8.59 s
2000.7.20	9:58	300-1	Daily check. CSMC 10 kA manual dump. CSIC circuit is open.	10 kA	10 kA	Manual dump	Im = 10.0 kA 01AI pressure rise = 0.043 MPa 01AO temperature rise = 0.27 K TC02 temperature rise = 0.099 K Vouter = 338 V Vinner = 290 V V_CSIC = 14.2 V Tau = 9.82 s
2000.7.20	10:55	301-1	Demonstration of 13 T and 1.2 T/s pulse charge for series connected CSMC and CSIC. Pulse charge to 44.3 kA.	44.3 kA	44.3 kA	Manual dump	CSMC quenched at 44.1 kA (flat top). No quench in CSIC. 01AI pressure rise = 0.44 MPa 01AO temperature rise = 8.08 K TC02 temperature rise = 1.33 K Vouter = 1500 V (dump) Vinner = 1280 V (dump) V_CSIC = 59 V Tau = 8.89 s
2000.7.20	11:40	302-1	Control CSMC 1st layer temperature up to 6.5 K.	kA	kA	Heater energise	13:00 MCI_HR_01AI1 and 01AI2: 516 W MCI_TS_01AI: 6.51 K MCI_TS_01AO: 6.34 K MCI_TS_01BO: 6.31 K

2000.7.20	13:16	303-1	CSMC 1st layer ramp rate limitation test at 6.5 K and 2 T/s. Pulse charge to 38 kA. CSIC circuit is open.	38 kA	0 kA	Trapezoidal	Quench at 37.85 kA (100 mV) 01AI pressure rise = 0.45 MPa 01AO temperature rise = 10.08 K TC02 temperature rise = 0.69 K Vouter = 1322 V (dump) Vinner = 1117 V (dump) V_CSIC = 49.5 V Tau = 8.68 s
2000.7.21	10:09	304-1	Daily check. CSMC 10 kA manual dump. CSIC circuit is open.	10 kA	kA	Manual dump	Im = 10.34 kA 01AI pressure rise = 0.032 MPa 01AO temperature rise = 0.188 K TC02 temperature rise = 0.074 K Vouter = 361 V Vinner = 306 V V_CSIC = 14.4 V Tau = 9.45 s
2000.7.21	10:58	305-1	AC loss measurement with 0.2 T/s sweep rate and up to 10 kA. CSIC circuit is open.	10 kA	0 kA	Trapezoidal	Im =10.34 kA 01AI pressure rise = 0.0 41MPa 01AO temperature rise = 0.252 K TC02 temperature rise = 0.089 K
2000.7.21	11:46	306-1	AC loss measurement with 0.2 T/s sweep rate and up to 20 kA. CSIC circuit is open.	20 kA	0 kA	Trapezoidal	Im =20.31 kA 01AI pressure rise = 0.0 73MPa 01AO temperature rise = 0.454 K TC02 temperature rise = 0.140 K
2000.7.21	13:37	307-1	AC loss measurement with 0.4 T/s sweep rate and up to 20 kA. CSIC circuit is open.	20 kA	0 kA	Trapezoidal	Im =20.32 kA 01AI pressure rise = 0.104 MPa 01AO temperature rise = 0.672 K TC02 temperature rise = 0.188 K
2000.7.21	14:28	308-1	AC loss measurement with 0.6 T/s sweep rate and up to 10 kA. CSIC circuit is open.	10 kA	0 kA	Trapezoidal	Im =20.355 kA 01AI pressure rise = 0.066 MPa 01AO temperature rise = 0.451K TC02 temperature rise = 0.130 K

2000.7.21	15:20	309-1	AC loss measurement with 0.6 T/s sweep rate and up to 20 kA. CSIC circuit is open.	20 kA	0 kA	Trapezoidal	Im =20.32kA 01AI pressure rise = 0.132MPa 01AO temperature rise = 0.853 K TC02 temperature rise = 0.230K
2000.7.21	16:12	310-1	AC loss measurement with 44.3 kA /32.5 s charge. CSIC circuit is open.	44.3 kA	0 kA	Trapezoidal	Im =44.52kA 01AI pressure rise = 0.322MPa 01AO temperature rise = 1.772K TC02 temperature rise = 0.441K
2000.7.21	17:10	311-1	AC loss measurement with bipolar charge (-22.15 to +22.15). CSIC circuit is open.	22.15 kA	kA	Bipolar (Mode E)	Im =-21.66kA Im= +22.47kA 01AI pressure rise = 0.291MPa 01AO temperature rise = 1.587K TC02 temperature rise = 0.474K
2000.7.21	18:29	312-1	AC loss measurement with 0.6 T/s, 46 kA charge. CSIC circuit is open.	46 kA	0 kA	Trapezoidal	Im = 46.20kA 01AI pressure rise = 0.367MPa 01AO temperature rise = 1.979K TC02 temperature rise = 0.482K
2000.7.21	19:24	313-1	AC loss measurement with 0.6 T/s, 10 kA charge. CSIC circuit is open.	10 kA	0 kA	Trapezoidal	Im = 10.35kA 01AI pressure rise = 0.056MPa 01AO temperature rise = 0.361K TC02 temperature rise = 0.113K
2000.7.24	13:46	314-1	CSIC balanced voltages (ICS_VB_ALL2) adjustment and daily check.	9.2 kA	0 kA	Trapezoidal	NG CSMC outer module voltage was two times larger than the inner module one.
2000.7.24	14:29	315-1	CSIC balanced voltages (ICS_VB_ALL2) adjustment and daily check.	9.2 kA	kA	Ramp up	

2000.7.24	14:50	315-2	CSIC balanced voltages (ICS_VB_ALL2) adjustment.	9.2 kA	5 kA	Manual dump	Vouter = 169.7 V Vinner = 125.5 V Tau_CSMC = 19.7 s V_CSIC = 12.1 V, 5.2 V Tau_CSIC = 16.7 s 1A inlet pressure rise = 0.012 MPa 1A outlet temperature rise = 0.063 K CSI outlet temperature rise = 0.028 K
2000.7.24	16:56	316-1	AC loss measurement. Charge CSMC and CSIC up to 36.8 kA, and dump manually. Tau ~ 20 s.	36.8 kA	36.8 kA	Manual dump	Vouter = 612 V Vinner = 521 V Tau_CSMC = 18.6 s V_CSIC = 25.9 V Tau_CSIC = 18.6 s 1A inlet pressure rise = 0.088 MPa 1A outlet temperature rise = 0.507 K CSI outlet temperature rise = 0.352 K
2000.7.25	9:56	317-1	CSIC balanced voltages (ICS_VB_ALL2) adjustment. (This shot is not cyclic test)	9.2 kA	40 kA	Cyclic	
2000.7.25	11:20	318-1	Control CSIC temperature up to 6 K. Energise heater ICS_HR_IN.	kA	0 kA	Heater energise	12:55 ICS_HR_IN: 121 W ICS_TC_01: 6.22 K ICS_TC_04H: 6.06 K ICS_TC_05H: 6.09 K ICS_TC_02: 5.91 K
2000.7.25	13:17	319-1	CSIC Tcs measurement at 40 kA and 13 T. Charge CSMC up to 44.5 kA.	44.5 kA	0 kA	Ramp up	
2000.7.25	14:15	319-2	CSIC Tcs measurement at 40 kA and 13 T.	44.5 kA	40 kA	Tcs	
2000.7.25	14:43	319-3	CSIC Tcs measurement at 40 kA and 13 T.	44.5 kA	40 kA	Tcs	CSIC current went down safely. Tcs = 7.22 K. (calibrated value). Heater ICS_HR_IN discharged.

2000.7.25	16:52	320-1	CSIC Ic measurement at 8.9 K. Set CSIC temperature to be 8.8 K. Energise heater ICS_HR_IN.	44.5 kA	0 kA	Heater energise	ICS_HR_IN: 326 W ICS_TC_01: 9.55 K ICS_TC_04H: 8.70 K ICS_TC_05H: 8.77 K ICS_TC-02: 8.37 K
2000.7.25	17:53	320-2	CSIC Ic measurement at 8.9 K. Charge CSMC up from 44.5 kA to 45.8 kA.	45.8 kA	0 kA	Ramp up	
2000.7.25	18:55	320-3	CSIC Ic measurement at 8.9 K. Charge CSIC.	44.5 kA	20 kA	Ic	Ic = 16.8 kA (12.95 T) at 8.8 K. Fast down at 19:22.
2000.7.25	19:30	321-1	Discharge CSMC.	44.5 kA	0 kA	Ramp down	Dump at 35.0 kA.
2000.7.26	9:56	322-1	Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 1401 cycles.
2000.7.26	13:11	322-2	Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 600 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Three sets of 200-cycle test had been performed. Total 2001 cycles.
2000.7.26	16:45	323-1	AC loss measurement. Discharge CSMC to 36.8 kA, and dump manually. CSIC circuit is open. Tau ~ 20 s.	36.8 kA	0 kA	Manual dump	Vouter = 622.3 V Vinner = 523.4 V Tau_CSMC = 17.9 s V_CSIC = 22.6 V 1A inlet pressure rise = 0.098 MPa 1A outlet temperature rise = 0.56 K CSI outlet temperature rise = 0.39 K
2000.7.27	9:36	324-1	CSIC Ic measurement at 8.9 K - 13 T after 2001 cycles.	45.8 kA	0 kA	Ramp up	ICS_HR_IN: 322 W ICS_TC_01: 9.60 K ICS_TC_05H: 8.77 K (not calibrated) ICS_TC_04H: 8.72 K (not calibrated) ICS_TC_02: 8.38 K Inlet pressure : 0.69 MPa Inlet mass flow rate : 7.3 g/s
2000.7.27	11:37	324-2	CSIC Ic measurement at 8.9 K - 13 T after 2001 cycles.	45.8 kA	20 kA	Ic	CSIC current went down at 12:28. Imax = 19.9 kA. Ic = 17.6 kA at 8.75 K. (Temperature was calibrated at 13 T)
2000.7.27	12:34	325-1	CSIC Tcs measurement at 40 kA - 13 T after 2001 cycles. Reduce CSMC current to 44.5 kA and control CSIC temperature up to 6 K.	44.5 kA	0 kA	Ramp down	

2000.7.27	13:17	325-2	CSIC Tcs measurement at 40 kA - 13 T after 2001 cycles. Charge CSIC up to 40 kA.	44.5 kA	40 kA	Tcs	
2000.7.27	13:32	325-3	CSIC Tcs measurement at 40 kA - 13 T after 2001 cycles. Increase CSIC temperature gradually.	44.5 kA	40 kA	Tcs	CSIC current went down at 16:22. Tcs = 7.25 K (corresponds to 1 micro-V/cm). Temperature was calibrated at 13 T.
2000.7.27	16:25	325-4	Discharge CSMC.	44.5 kA	0 kA	Ramp down	
2000.7.28	9:50	326-1	Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 400-cycle test had been performed. Total 2401 cycles.
2000.7.28	13:05	326-2	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 400-cycle test had been performed. Total 2801 cycles.
2000.7.28	15:29	326-3	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 400-cycle test had been performed. Total 3201 cycles.
2000.7.28	17:48	326-4	Discharge CSMC. Manual dump without AC loss measurement. Tau ~ 20 s.	36.8 kA	0 kA	Manual dump	Vouter = 622 V Vinner = 523 V Tau_CSMC = 17.9 s V_CSIC = 24.7 V
2000.7.31	9:51	327-1	Weekly check. CSMC 9.2 kA and CSIC 5 kA manual dump.	9.2 kA	5 kA	Manual dump	Vouter = 169.4 V Vinner = 124.9V Tau_CSMC = 18.9 s V_CSIC = 5.25 V
2000.7.31	10:52	328-1	Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 3601 cycles.
2000.7.31	14:07	328-2	Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 600 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Three sets of 200-cycle test had been performed. Total 4201 cycles.
2000.7.31	17:42	328-3	Discharge CSMC. Manual dump without AC loss measurement. Tau ~ 20 s.	36.8 kA	0 kA	Manual dump	Vouter = 623.1 V Vinner = 524.4 V Tau_CSMC = 17.95 s V_CSIC = 22.5 V 1A inlet pressure rise = 0.100 MPa 1A outlet temperature rise = 0.56 K CSI outlet temperature rise = 0.42 K
2000.8.1	9:39	329-1	Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 4601 cycles.
2000.8.1	12:52	329-2	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 5001 cycles.

2000.8.1	15:16	330-1	AC loss measurement. Manual dump from 36.8 kA (80 %). CSIC circuit is open. Tau ~ 20 s.	36.8 kA	0 kA	Manual dump	Vouter = 623.7 V Vinner = 525.0 V Tau_CSMC = 18.0 s V_CSIC = 22.5 V 1A inlet pressure rise = 0.10 MPa 1A outlet temperature rise = 0.56 K CSI outlet temperature rise = 0.36 K
2000.8.1	17:07	331-1	AC loss measurement. Charge CSMC and CSIC up to 36.8 kA, and dump manually. Tau ~ 20 s.	36.8 kA	36.8 kA	Manual dump	Vouter = 615.2 V Vinner = 524.5 V Tau = 18.5 s V_CSIC = 23.6 V 1A inlet pressure rise = 0.096 MPa 1A outlet temperature rise = 0.525 K CSI outlet temperature rise = 0.52 K
2000.8.2	9:37	332-1	CSIC Ic measurement at 8.9 K - 13 T after 5001 cycles.	45.8 kA	0 kA	Ramp up	ICS_HR_IN: 328 W ICS_TC_01: 9.78 K ICS_TC_05H: 8.95 K (not calibrated) ICS_TC_04H: 8.88 K (not calibrated) ICS_TC_02: 8.53 K Inlet pressure : 0.71 MPa Inlet mass flow rate : 7.5 g/s
2000.8.2	11:22	332-2	CSIC Ic measurement at 8.9 K - 13 T after 5001 cycles.	46.0 kA	-20 kA	Ic	CSIC current went down at 12:00. Imax = 17.2 kA. Ic = 15.1 kA at 8.97 K. (Temperature was calibrated at 13 T)
2000.8.2	12:05	333-1	CSIC Tcs measurement at 40 kA - 13 T after 5001 cycles. Reduce CSMC current to 44.5 kA and control CSIC temperature up to 6 K.	44.5 kA	0 kA	Ramp down	
2000.8.2	12:52	333-2	CSIC Tcs measurement at 40 kA - 13 T after 5001 cycles. Charge CSIC up to 40 kA.	44.5 kA	40 kA	Tcs	
2000.8.2	13:11	333-3	CSIC Tcs measurement at 40 kA - 13 T after 5001 cycles. Increase CSIC temperature gradually.	44.5 kA	40 kA	Tcs	CSIC current went down at 16:22. Tcs = 7.23 K (corresponds to 1 micro-V/cm). Temperature was calibrated at 13 T.
2000.8.2	15:04	333-4	Discharge CSMC.	44.5 kA	0 kA	Ramp down	

2000.8.3	9:45	334-1	Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 5401 cycles.
2000.8.3	13:01	334-2	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 5801 cycles.
2000.8.3	15:25	334-3	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 6201 cycles.
2000.8.3	17:43	334-4	Discharge CSMC. Manual dump without AC loss measurement. Tau ~ 20 s.	36.8 kA	0 kA	Manual dump	Vouter = 612.8 V Vinner = 512.6 V Tau_CSMC = 18.0 s V_CSIC = 22.4 V
2000.8.4	9:38	335-1	Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 6601 cycles.
2000.8.4	12:55	335-2	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 7001 cycles.
2000.8.4	15:19	335-3	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 7401 cycles.
2000.8.4	17:37	335-4	Discharge CSMC. Manual dump without AC loss measurement. Tau ~ 20 s. CSIC circuit is open.	36.8 kA	0 kA	Manual dump	Vouter = 618.5 V Vinner = 520.5 V Tau_CSMC = 18.0 s V_CSIC = 22.5 V
2000.8.7	13:24	336-1	Weekly check. CSMC 9.2 kA and CSIC 5 kA manual dump.	9.2 kA	5 kA	Manual dump	Vouter = 169.5 V Vinner = 125.3 V Tau_CSMC = 18.9 s V_CSIC = 12.1 V Tau_CSIC = 18.5 s 01AI pressure rise = 0.013 MPa 01AO temperature rise = 0.065 K TC02 temperature rise = 0.037 K
2000.8.7	14:39	337-1	Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 7801 cycles.

2000.8.7	17:52	337-2	Discharge CSMC. Manual dump without AC loss measurement. CSIC circuit is open. Tau ~ 20 s.	36.8 kA	0 kA	Manual dump	Vouter = 619.1V Vinner = 520.9 V Tau_CSMC = 18.0 s V_CSIC = 22.5 V 01AI pressure rise = 0.100 MPa 01AO temperature rise = 0.558 K TC02 temperature rise = 0.423 K
2000.8.8	9:35	338-1	Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 8201 cycles.
2000.8.8	12:51	338-2	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 200-cycle test had been performed. Total 8601 cycles.
2000.8.8	15:16	338-3	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	At 16:05, CSMC and CSIC current were dumped at the 163rd cycle (162 cycles were completed) due to a electric power shut off (by thunderbolts). Vouter = 755.1 V Vinner = 547.2 V Tau_CSMC = 17.7 s V_CSIC = 23.5 V I_dump_CSMC = 41.3 kA I_dump_CSIC = 12.0 kA
2000.8.9	9:40	339-1	Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 248-cycle test was performed.
2000.8.9	12:54	339-2	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	Two sets of 248-cycle test was performed.
2000.8.9	15:17	339-3	Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.	45.7 kA	40 kA	Cyclic	248-cycle test was performed. The cyclic test has been completed at 4:17 p.m., August 9th, 2000!!
2000.8.9	16:17	339-4	AC loss measurement after 10003 cycles. CSMC current manual dump from 36.8 kA (80 %). CSIC circuit is open. Tau ~ 20 s.	36.8 kA	0 kA	Manual dump	Vouter = 621.5 V Vinner = 523.2 V Tau_CSMC = 17.9 s V_CSIC = 22.6 V 01AI pressure rise = 0.08 MPa 01AO temperature rise = 0.56 K TC02 temperature rise = 0.46 K

2000.8.10	9:26	340-1	CSIC Ic measurement at 8.9 K - 13 T after 10003 cycles.	45.8 kA	0 kA	Ramp up	ICS_HR_IN:W ICS_TC_01:K ICS_TC_05H:K (not calibrated) ICS_TC_04H:K (not calibrated) ICS_TC_02:K Inlet pressure :MPa Inlet mass flow rate :g/s
2000.8.10	11:01	340-2	CSIC Ic measurement at 8.9 K - 13 T after 10003 cycles.	45.8 kA	20 kA	Ic	CSIC current went down at 11:44. Imax = 18.3 kA. Ic = 16.0 kA at 8.86 K. (Temperature was calibrated at 13 T)
2000.8.10	13:03	341-1	CSIC Tcs measurement at 40 kA - 13 T after 10003 cycles. Reduce CSMC current to 44.5 kA and control CSIC temperature up to 6 K.	44.5 kA	0 kA	Ramp down	
2000.8.10	13:48	341-2	CSIC Tcs measurement at 40 kA - 13 T after 10003 cycles. Charge CSIC up to 40 kA.	44.5 kA	40 kA	Tcs	
2000.8.10	14:00	341-3	CSIC Tcs measurement at 40 kA - 13 T after 10003 cycles. Increase CSIC temperature gradually.	44.5 kA	40 kA	Tcs	CSIC current went down at 15:55. Tcs = 7.20 K (corresponds to 1 micro-V/cm). Temperature was calibrated at 13 T.
2000.8.10	16:00	341-4	Discharge CSMC.	44.5 kA	0 kA	Ramp down	
2000.8.11	9:36	342-1	AC loss measurement. Charge CSMC and CSIC (series connection) up to 36.8 kA, and dump manually. Tau ~ 20 s.	36.8 kA	36.8 kA	Manual dump	Vouter = 610 V Vinner = 520 V Tau = 18.7 s V_CSIC = 23.7 V 1A inlet pressure rise = 0.073 MPa 1A outlet temperature rise = 0.52 K CSI outlet temperature rise = 0.54 K
2000.8.11	13:07	343-1	CSIC stability test at 13 T, 40 kA, and 5.3 K. Increase CSIC temperature to 5.3 K and charge CSMC up to 44.5 kA.	44.5 kA	0 kA	Ramp up	At 15:01 (before Run #343-4) ICS_HR_IN : 54 W TC_01: 5.37 K TC_04H: 5.14 K (not calibrated) TC_05H: 5.15 K (not calibrated) TC_02: 5.29 K

2000.8.11	14:10	343-2	CSIC stability test at 13 T, 40 kA, and 5.3 K. Inductive heater (ICS_HI_03) test.	44.5 kA	0 kA	Heater pulse	Inductive heater ICS_HI_03. Imax = 133 V Vmax = 141 V I^2 integral = 134.6 A^2s
2000.8.11	14:24	343-3	CSIC stability test at 13 T, 40 kA, and 5.3 K. Charge CSIC up to 40 kA.	44.5 kA	40 kA	Ramp up	
2000.8.11	15:02	343-4	CSIC stability test at 13 T, 40 kA, and 5.3 K. Energise inductive heater ICS_HI_03 with 20 ms duration.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 383 V Vmax = 392 V I^2 integral = 1065 A^2s
2000.8.11	15:11	343-5	CSIC stability test at 13 T, 40 kA, and 5.3 K. Energise inductive heater ICS_HI_03 with 20 ms duration.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 399 V Vmax = 407 V I^2 integral = 1162 A^2s
2000.8.11	15:21	343-6	CSIC stability test at 13 T, 40 kA, and 5.3 K. Energise inductive heater ICS_HI_03 with 20 ms duration.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 417 V Vmax = 423 V I^2 integral = 1241 A^2s
2000.8.11	15:30	343-7	CSIC stability test at 13 T, 40 kA, and 5.3 K. Energise inductive heater ICS_HI_03 with 20 ms duration.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 437 V Vmax = 442 V I^2 integral = 1384 A^2s
2000.8.11	15:39	343-8	CSIC stability test at 13 T, 40 kA, and 5.3 K. Energise inductive heater ICS_HI_03 with 20 ms duration.	44.5 kA	40 kA	Heater pulse	No quench. Inductive heater ICS_HI_03. Imax = 444 V Vmax = 453 V I^2 integral = 1429 A^2s

2000.8.11	15:48	343-9	CSIC stability test at 13 T, 40 kA, and 5.3 K. Energise inductive heater ICS_HI_03 with 20 ms duration.	44.5 kA	40 kA	Heater pulse	Quench. Imax = 453 V Vmax = 461 V I^2 integral = 1507 A^2s Vouter = 784 V Vinner = 631 V V_CSIC = 26.5 V Tau = 17.7 s
2000.8.14	9:41	344-1	CSIC reverse charge. Charge CSMC up to 9.2 kA and CSIC up to -5 kA for instrumentation check.	9.2 kA	-5 kA	Trapezoidal	OK.
2000.8.14	10:18	344-2	CSIC reverse charge. CSIC -5 kA charge and simultaneous manual dump.	9.2 kA	-5 kA	Manual dump	Vouter = 171.9 V Vinner = 120.2 V Tau_CSMC = 19.7 s V_CSIC = 12.0 V, -5.02 V Tau_CSIC = ~19 s 01AI pressure rise = 0.013 MPa 01AO temperature rise = 0.072 K TC02 temperature rise = 0.043 K
2000.8.14	10:58	345-1	CSIC reverse charge. Charge CSMC up to 23 kA.	23 kA	kA	Ramp up	
2000.8.14		345-2	CSIC reverse charge and AC loss measurement. CSIC -20 kA charge and manual dump.	23 kA	-20 kA	Manual dump	Vouter = 440 V Vinner = 296 V Tau_CSMC = 18.74 s V_CSIC = 29.13 V, 12.42 V Tau_CSIC = 18.86 s 01AI pressure rise = 0.043 MPa 01AO temperature rise = 0.26 K TC02 temperature rise = 0.17 K
2000.8.14	13:12	346-1	CSIC reverse charge. Charge CSMC up to 23 kA.	23 kA	kA	Ramp up	
2000.8.14	13:45	346-2	CSIC reverse charge. Charge CSIC up to -40 kA.	23 kA	-40 kA	Stepped Trapezoidal	OK.
2000.8.14	14:48	347-1	CSIC reverse charge. Increase CSMC current to 36.8 kA.	36.8 kA	0 kA	Ramp up	
2000.8.14	15:12	347-2	CSIC reverse charge. Charge CSIC up to -40 kA.	36.8 kA	-40 kA	Stepped Trapezoidal	Succeeded.

2000.8.14	16:13	348-1	Discharge CSMC.	36.8 kA	0 kA	Ramp down	
2000.8.15	9:35	349-1	CSIC reverse charge. Increase CSMC current to 46 kA.	46 kA	0 kA	Ramp up	
2000.8.15	10:33	349-2	CSIC reverse charge. Charge CSIC up to -40 kA.	46 kA	-40 kA	Stepped Trapezoidal	CSIC current reached -40 kA at 10:58 a.m. Reverse charge was successfully completed.
2000.8.15	11:30	349-3	CSIC reverse charge. Charge CSIC up to -40 kA.	46 kA	-40 kA	Trapezoidal	
2000.8.15	13:04	349-4	CSIC reverse charge. Charge CSIC up to -40 kA and dump manually.	46 kA	-40 kA	Manual dump	Vouter = 882 V Vinner = 605 V Tau_CSMC = 17.54 s V_CSIC = 51.77 V, -25.21 V Tau_CSIC = 17.4 s 01AI pressure rise = 0.162 MPa 01AO temperature rise = 0.81 K TC02 temperature rise = 0.85 K
2000.8.15	14:36	350-1	AC loss measurement. CSMC 36.8 kA manual dump. CSIC circuit is open.	36.8 kA	0 kA	Manual dump	Vouter = 630.7 V Vinner = 531.8 V Tau_CSMC = 17.83 s V_CSIC = 25.27 V 01AI pressure rise = 0.101 MPa 01AO temperature rise = 0.55 K TC02 temperature rise = 0.45 K
2000.8.16	10:27	351-1	CSIC 13 T - 40 kA Tcs measurement at reverse field. Charge CSMC up to 46 kA and increase CSIC temperature to 6 K.	46 kA	0 kA	Ramp up	
2000.8.16	13:03	351-2	CSIC 13 T - 40 kA Tcs measurement at reverse field. Charge CSIC up to -40 kA.	46 kA	40 kA	Tcs	
2000.8.16	13:25	351-3	CSIC 13 T - 40 kA Tcs measurement at reverse field. Increase CSIC temperature by energising resistive heater ICS_HR_IN.	46 kA	40 kA	Tcs	CSIC current went down at . Tcs = 6.77 K (corresponds to 1 micro-V/cm). Temperature was calibrated at 13 T.
2000.8.16		351-4	Discharge CSMC.	46 kA	0 kA	Ramp down	
2000.8.17	9:29	352-1	CSMC 13 T charge up for Ic measurement.	46 kA	0 kA	Ramp up	
2000.8.17	10:46	352-2	Ic measurement of CS insert coil (CSIC) under reversed current. Field = 13 T.	46 kA	21.8 kA	Ic	Ic = 18.5 kA @ 8.34 K (criteria 0.1 micro-V/cm).

2000.8.17	13:04	353-1	Increase CSIC temperature for Tcs measurement.	46 kA	0 kA	Heater energise	
2000.8.17	13:45	353-2	CSIC charge up to -30 kA for Tcs measurement.	46 kA	-30 kA	Tcs	
2000.8.17	13:52	353-3	CSIC Tcs measurement at 13 T.	46 kA	-30 kA	Tcs	Tcs = 7.41 K @ -30 kA (criteria 0.1 micro-V/cm).
2000.8.17	16:00	353-4	CSMC discharge.	0 kA	0 kA	Ramp down	
2000.8.18	9:35	354-1	Confirmation of CSMC performance.	46 kA	0 kA	Trapezoidal	
2000.8.18	10:55	355-2	CSIC charge up for Tcs measurement.	46 kA	40 kA	Ramp up	
2000.8.18	11:13	356-1	CSIC Tcs measurement at 13 T, 46 kA (current direction is normal).	46 kA	40 kA	Tcs	Tcs = 7.16 K at 13 T (criteria is 0.1 micro-V/cm)
2000.8.18	13:21	356-2	Discharge of CSMC.	46 kA	kA	Ramp down	

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2. CS Model Coil Experiment Log Sheets

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CS Model Coil Experiment Log

Date 2000.4.11 Time 11:33 p. 1

Run No. 1 - 1
Procedure No. MC-A4
Operation Mode DC

Objective: Sensor check

Coolant condition (before this run): all

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

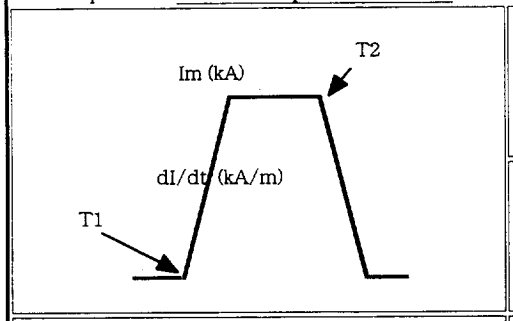
Facility condition

	Power Supply	Resistor
CSMC	50KA	30m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.1k		0.1k		

Current pattern: Trapezoidal



CSMC I_m = 1 kA I_1 = kA
dI/dt_1 = 0.5 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -0.5 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:33 T_2 ____ T_3 ____

Heater W T_d = s

Results: OK

Remarks:

CS Model Coil Experiment Log

Date 2000.4.11 Time 13:46 p. 2

Run No. 2 - 1
Procedure No. MC-A4
Operation Mode DC

Objective: Sensor check

Coolant condition (before this run): All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

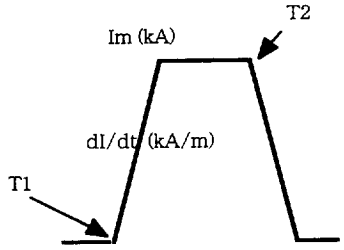
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.1k		0.1k		

Current pattern: Trapezoidal



CSMC I_m = 2.3 kA I_1 = kA
dI/dt_1 = 0.5 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -0.5 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:46 T_2 14:10 T_3 ____

Heater W T_d = s

Results: OK

Remarks:

CS Model Coil Experiment Log

Date 2000.4.11 Time 15:00 p. 3

Run No. 3 - 1
Procedure No. MC-A5
Operation Mode DC

Objective: Sensor check

Coolant condition (before this run)

All			
Temperature	~ 4.6 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

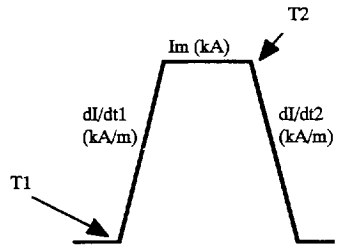
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10 ms	1s	10ms	
Pre-trigger	0.1k	1k	0.1k	1k	

Current pattern Trapezoidal



CSMC I_m = 2.3 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:02 T_2 15:22 T_3 ____

Heater W T_d = s

Results: OK

Remarks:

CS Model Coil Experiment Log

Date 2000.4.11 Time 16:20 p. 4

Run No. 4 - 1
Procedure No. MC-A5
Operation Mode DC

Objective: Ajustment of quech detector

Coolant condition (before this run)

All			
Temperature	~ 4.6 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

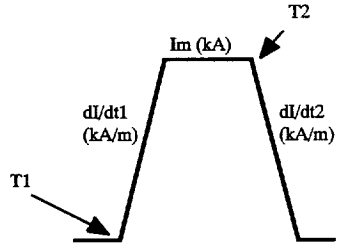
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern Trapezoidal



CSMC I_m = 2.3 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:22 T_2 16:32 T_3 ____

Heater W T_d = s

Results: OK

Remarks:

CS Model Coil Experiment Log

Date 2000.4.11 Time 16:50 p. 5

Run No. 5 - 1

Procedure No. MC-A6

Operation Mode DC

Objective: Check quench detector

Coolant condition (before this run): All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

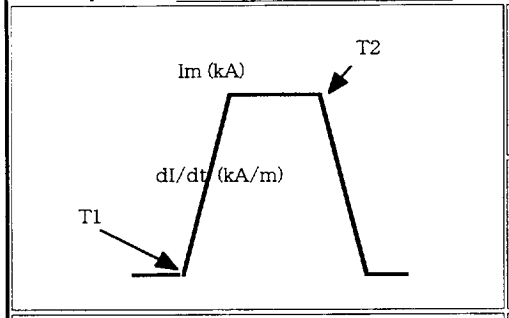
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s	10ms	
Pre-trigger	0.3k		0.3k	1k	

Current pattern: Trapezoidal



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:50 T_2 ____ T_3 ____

Heater W T_d = s

Results: OK

Remarks:

CS Model Coil Experiment Log

Date 2000.4.12 Time 10:55 p. 6

Run No. 6 - 1

Procedure No. MC-B1A

Operation Mode DC

Objective: Sensor check

Coolant condition (before this run): All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

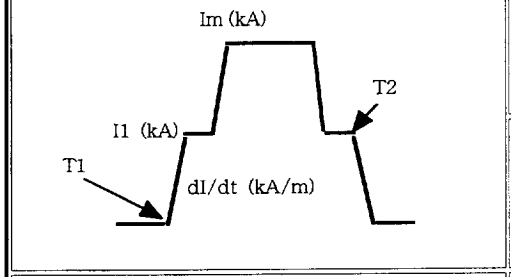
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Stepped Trapezoidal



CSMC I_m = 9.2 kA I_1 = 4.6 kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:56 T_2 11:54 T_3 ____

Heater W T_d = s

Results: OK

Remarks: Magnetic field measurement was done on the outside of the building.

CS Model Coil Experiment Log

Date 2000.4.12 Time 13:29 p. 7

Run No. 7 - 1

Procedure No. MC-B11

Operation Mode DC

Objective: Ajustment of quech detector

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

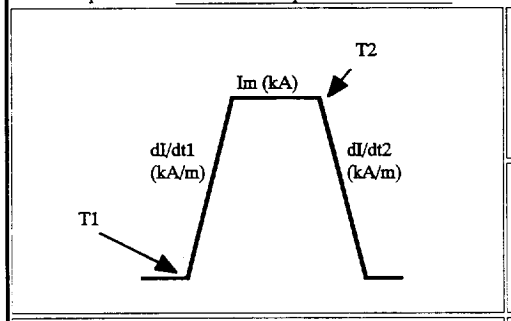
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:31 T_2 13:56 T_3 ____

Heater W T_d = s

Results: OK

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.12 Time 14:38 p. 8

Run No. 8 - 1

Procedure No. MC-B12

Operation Mode DC

Objective: check detecton system

Coolant condition (before this run)

All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

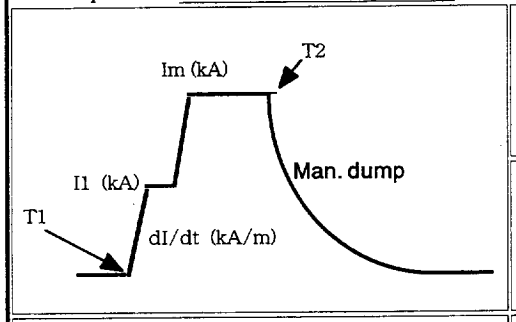
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = 4.6 kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:38 T_2 15:28 T_3 ____

Heater W T_d = s

Results: Vinner = 132 V, Vouter = 159 V, Tau = 18.9 s

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.12 Time 16:16 p. 9

Run No. 9 - 1
Procedure No. MC-B2
Operation Mode DC

Objective: AC loss measurement. Tau ~20 s.

Coolant condition (before this run)

All			
Temperature	~ 4.6 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

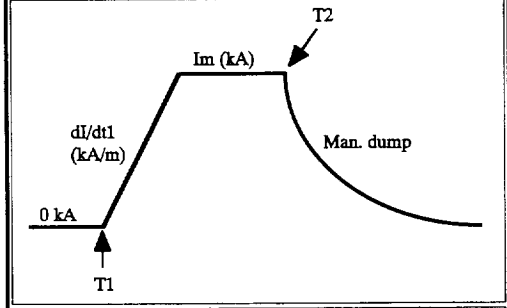
Facility condition

	Power Supply	Resistor
CSMC	50kA	30 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:16 T_2 17:00 T_3 ____

Heater W T_d = s

Results
Vinner= 132 V, Vouter = 158 V, Tau=19.2 s

Remarks
Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.14 Time 10:35 p. 10

Run No. 11 - 1
Procedure No. MC-A3a
Operation Mode No Current

Objective: Heater test for AC loss mesurement

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

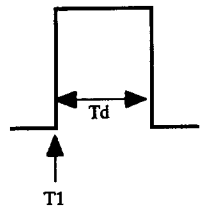
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:35 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.14 Time 13:15 p. 11

Run No. 11 - 2
Procedure No. MC-A3a
Operation Mode No Current

Objective: Heater test for AC loss mesurement

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

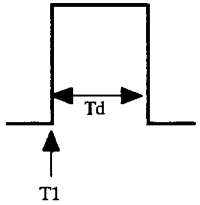
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern: Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:15 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.14 Time 14:04 p. 12

Run No. 11 - 3
Procedure No. MC-A3a
Operation Mode No Current

Objective: Heater test for AC loss mesurement

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

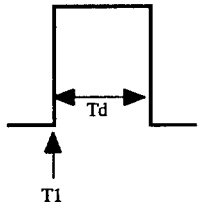
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern: Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:04 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.14 Time 14:56 p. 13

Run No. 11 - 4
Procedure No. MC-A3a
Operation Mode No Current

Objective: Heater test for AC loss mesurement

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

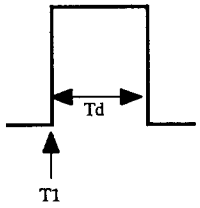
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:56 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.14 Time 15:55 p. 14

Run No. 11 - 5
Procedure No. MC-A3a
Operation Mode No Current

Objective: Heater test for AC loss mesurement

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

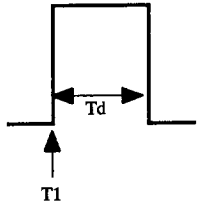
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:55 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.14 Time 16:37 p. 15

Run No. 11 - 6
Procedure No. MC-A3a
Operation Mode No Current

Objective: Heater test for AC loss mesurement

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

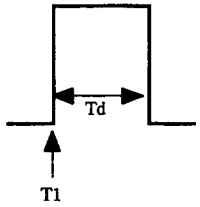
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:37 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.14 Time 18:29 p. 16

Run No. 11 - 7
Procedure No. MC-A3a
Operation Mode No Current

Objective: Heater test for AC loss mesurement

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

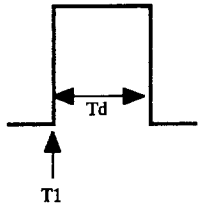
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:29 T_2 ____ T_3 ____

Heater W T_d = 120 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.14 Time 19:27 p. 17

Run No. 11 - 8
Procedure No. MC-A3a
Operation Mode No Current

Objective: Heater test for AC loss mesurement

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

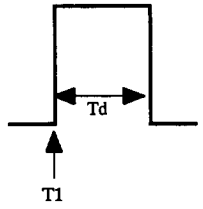
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern: Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:27 T_2 ____ T_3 ____

Heater W T_d = 180 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.17 Time 10:12 p. 18

Run No. 12 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

All			
Temperature	~ 4.6 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

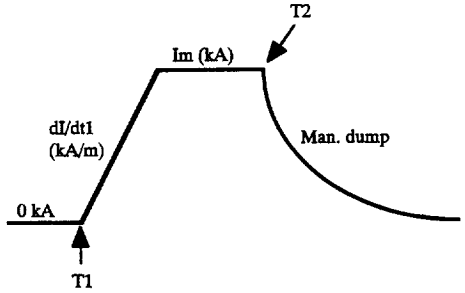
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:12 T_2 10:44 T_3 ____

Heater W T_d = s

Results: Vinner = 134 V, Vouter = 156 V, Tau=19.5 s

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.17 Time 13:20 p. 19

Run No. 13 - 1
Procedure No. MC-B3
Operation Mode DC

Objective: Try 23 kA (50 %)

Coolant condition (before this run): All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

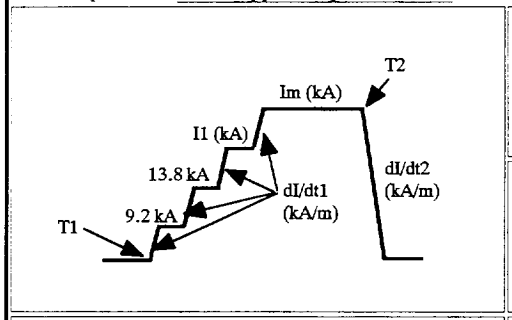
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Stepped Trapezoidal



CSMC I_m = 23 kA I_1 = 18.4 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:20 T_2 14:54 T_3 ____

Heater W T_d = s

Results: 6.5 T&160 MJ achieved.

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.17 Time 16:00 p. 20

Run No. 14 - 1
Procedure No. MC-B4
Operation Mode DC

Objective: AC loss measurement, Tau = 20 s.

Coolant condition (before this run): All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

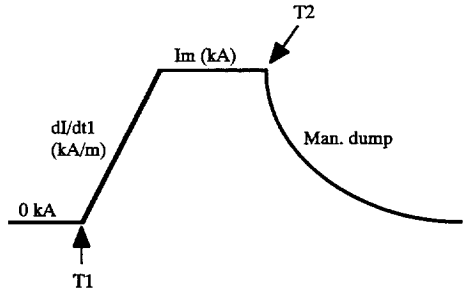
Facility condition

	Power Supply	Resistor
CSMC	50kA	30 m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:00 T_2 16:45 T_3 ____

Heater W T_d = s

Results: Vinner = 328 V, Vouter =388 V, Tau = 18.3 s

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.18 Time 10:00 p. 21

Run No. 15 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run): All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

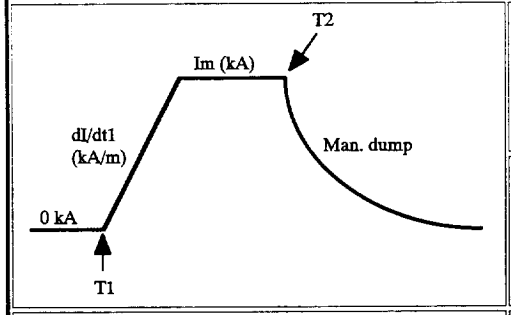
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:00 T_2 10:17 T_3 ____

Heater W T_d = s

Results: Vinner= 132 V, Vouter= 156 V, Tau= 19.5 s

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL, MCO_VD_J11B12BL, MCO_VD_J11A12AL, MCO_VD_J12A13BL

Happy birthday Yasu!!

CS Model Coil Experiment Log

Date 2000.4.18 Time 10:59 p. 22

Run No. 16 - 1
Procedure No. MC-B5
Operation Mode DC

Objective: Try 36.8 kA (80 %)

Coolant condition (before this run): All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

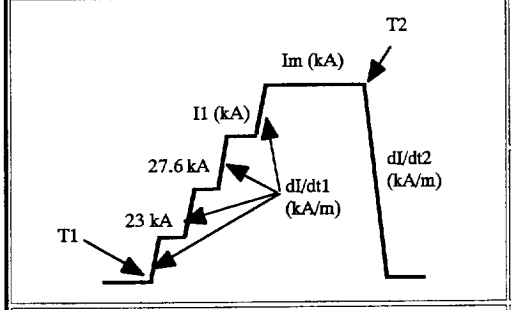
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Stepped Trapezoidal



CSMC I_m = 36.8 kA I_1 = 32.2 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:59 T_2 14:09 T_3 ____

Heater W T_d = s

Results: 13:50 10.4 T, 410 MJ achieved

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL, MCO_VD_J11B12BL, MCO_VD_J11A12AL, MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.18 Time 15:35 p. 23

Run No. 17 - 1
Procedure No. MC-B6
Operation Mode DC

Objective: AC loss measurement , Tau = 20 s

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

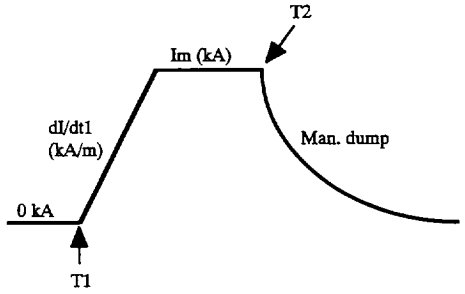
Facility condition

	Power Supply	Resistor
CSMC	50kA	30 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:35 T_2 16:48 T_3 ____

Heater W T_d = s

Results: Vinner = 524 V, Vouter = 622 V, Tau = 18.0 s

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.19 Time 10:07 p. 24

Run No. 18 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

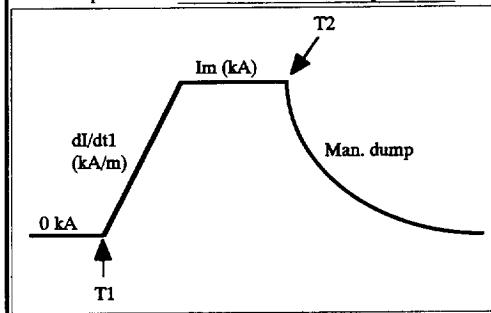
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:07 T_2 10:31 T_3 ____

Heater W T_d = s

Results: Vinner = 131 V, Vouter = 156 V, Tau = 19.4 s

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.19 Time 11:09 p. 25

Run No. 19 - 1
Procedure No. MC-B7
Operation Mode DC

Objective: Try 13 T, 46 kA 100 % charge

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

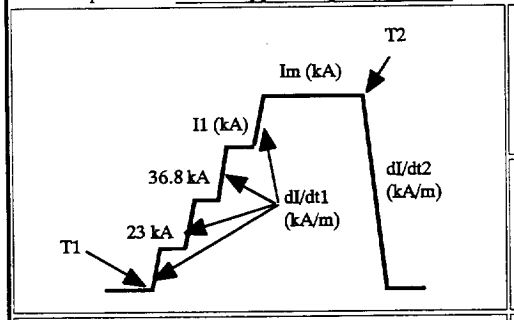
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Stepped Trapezoidal



CSMC I_m = 46 kA I_1 = 41.65 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:09 T_2 14:42 T_3 ____

Heater W T_d = s

Results
14:20 13 T, 46 kA of 100 % current achieved.

Remarks
Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL, MCO_VD_J11B12BL, MCO_VD_J11A12AL, MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.19 Time 16:20 p. 26

Run No. 20 - 1
Procedure No. MC-B8
Operation Mode DC

Objective: AC loss measurment, Tau = 20 s

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

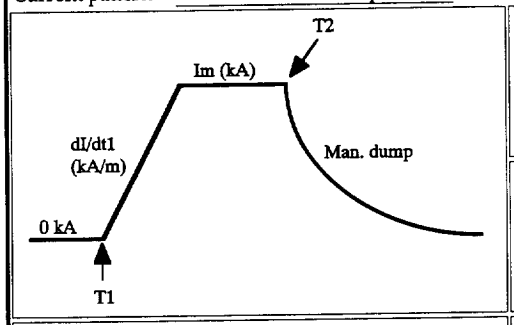
Facility condition

	Power Supply	Resistor
CSMC	50kA	30 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:20 T_2 17:33 T_3 ____

Heater W T_d = s

Results
Vinner=652V, Vouter=779V, Tau=17.3s

Remarks
Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL, MCO_VD_J11B12BL, MCO_VD_J11A12AL, MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.20 Time 9:50 p. 27

Run No. 21 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

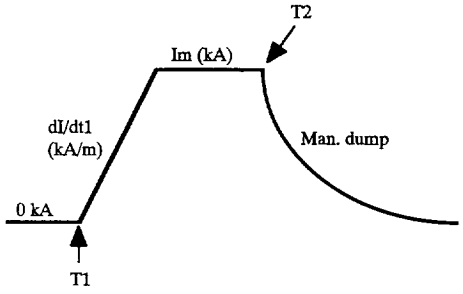
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:52 T_2 10:08 T_3 ____

Heater W T_d = . s

Results: Vinner=133V, Vouter=156V, Tau=19.4s

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL

CS Model Coil Experiment Log

Date 2000.4.20 Time 10:40 p. 28

Run No. 22 - 1
Procedure No. MC-B13
Operation Mode DC

Objective: AC loss measurement , Tau = 20 s

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

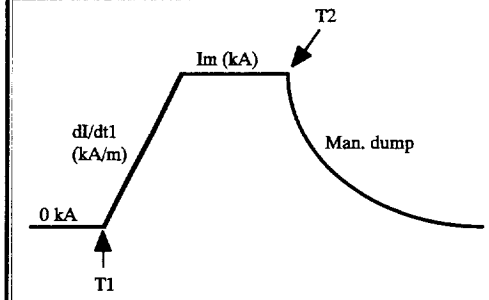
Facility condition

	Power Supply	Resistor
CSMC	50kA	30 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 41.4 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:40 T_2 11:52 T_3 ____

Heater W T_d = s

Results: Vinner=596V, Vouter=699V, Tau=17.8s

Remarks: Low pass filter: 1Hz
MC__VD_J01B02BL, MC_VD_J05B06BL,
MCO_VD_J11B12BL, MCO_VD_J11A12AL,
MCO_VD_J12A13BL
Breaker worked on anexpected. The investigation with manufacturor was done.

CS Model Coil Experiment Log

Date 2000.4.22 Time 9:21 p. 29

Run No. 23 - 1
Procedure No. MC-A3a
Operation Mode No Current

Objective: Calorimetric calibration for AC loss measurement. Heat slug test.

Coolant condition (before this run): All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	0.6 g/s	~	g/s
Pressure	~	0.6 MPa		

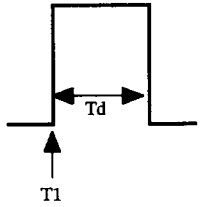
Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:21 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.22 Time 10:05 p. 30

Run No. 23 - 2
Procedure No. MC-A3a
Operation Mode No Current

Objective: Calorimetric calibration for AC loss measurement. Heat slug test.

Coolant condition (before this run): all

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

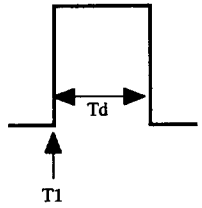
Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:05 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.22 Time 10:48 p. 31

Run No. 23 - 3

Procedure No. MC-A3a

Operation Mode No Current

Objective: Calorimetric calibration for AC loss measurement. Heat slug test.

Coolant condition (before this run): all

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

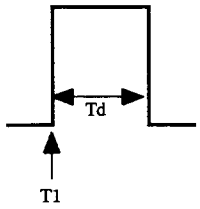
Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern: Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:48 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.22 Time 11:33 p. 32

Run No. 23 - 4

Procedure No. MC-A3a

Operation Mode No Current

Objective: Calorimetric calibration for AC loss measurement. Heat slug test.

Coolant condition (before this run): all

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

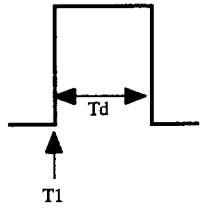
Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern: Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:33 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.22 Time 12:19 p. 33

Run No. 23 - 5
Procedure No. MC-A3a
Operation Mode No Current

Objective: Calorimetric calibration for AC loss measurement. Heat slug test.

Coolant condition (before this run): all

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

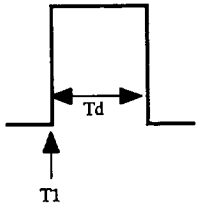
Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 12:19 T_2 ____ T_3 ____

Heater W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.22 Time 13:59 p. 34

Run No. 23 - 6
Procedure No. MC-A3a
Operation Mode No Current

Objective: Calorimetric calibration for AC loss measurement. Heat slug test.

Coolant condition (before this run): All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

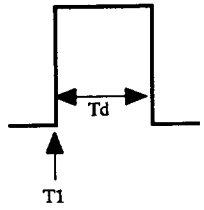
Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:59 T_2 ____ T_3 ____

Heater W T_d = 120 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.22 Time 15:02 p. 35

Run No. 23 - 7
Procedure No. MC-A3a
Operation Mode No Current

Objective: Calorimetric calibration for AC loss measurement. Heat slug test.

Coolant condition (before this run)

All			
Temperature	~ 4.6 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

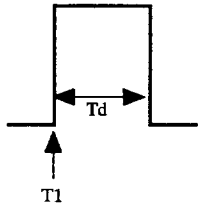
Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:02 T_2 ____ T_3 ____

Heater W T_d = 180 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.24 Time 10:05 p. 36

Run No. 24 - 1
Procedure No.
Operation Mode No Current

Objective: Measurement of heat transfer for Tcs experiment

Coolant condition (before this run)

All			
Temperature	~ 4.6 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

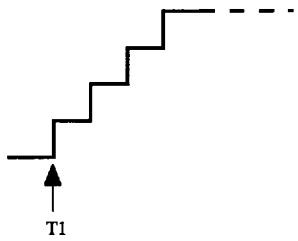
Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s				
Pre-trigger	0.3k				

Current pattern Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:05 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.24 Time 13:12 p. 37

Run No. 24 - 2

Procedure No.

Operation Mode No Current

Objective: Measurement of heat transfer for Tcs experiment

Coolant condition (before this run)

All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

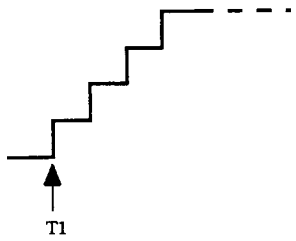
Data Acquisition System (DAS) CSMC-DC test1

ADC384L ADC384H ADC64L ADC64H ADC32H

Sampling 1s

Pre-trigger 0.3k

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:12 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.24 Time ____ p. 38

Run No. 24 - 3

Procedure No.

Operation Mode No Current

Objective: Measurement of heat transfer for Tcs experiment

Coolant condition (before this run)

All

Temperature	~	4.6 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

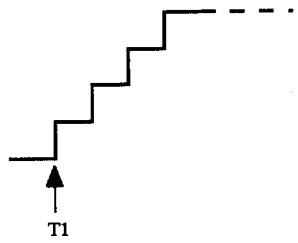
Data Acquisition System (DAS) CSMC-DC test1

ADC384L ADC384H ADC64L ADC64H ADC32H

Sampling 1s

Pre-trigger 0.3k

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.24 Time _____ p. 39

Run No. 24 - 4
Procedure No. _____
Operation Mode No Current

Objective
Measurement of heat transfer for Tcs experiment

Coolant condition (before this run)

All			
Temperature	~ 4.6 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

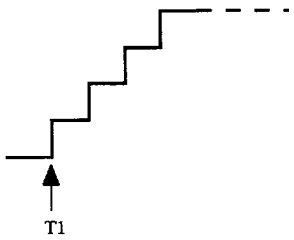
Facility condition

	Power Supply	Resistor
CSMC	No	No
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s				
Pre-trigger	0.3k				

Current pattern Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.4.25 Time 9:55 p. 40

Run No. 25 - 1
Procedure No. MC-A7
Operation Mode DC

Objective
Daily check

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

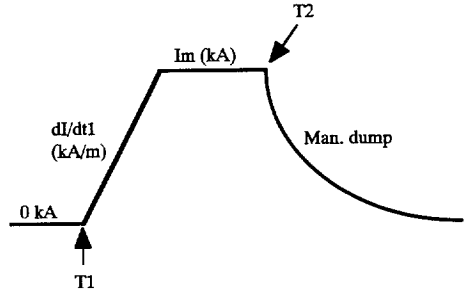
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 9:55 T_2 10:17 T_3 _____

Heater W T_d = s

Results
Vinner=129V, Vouter=155V, Tau=19.3s

Remarks
Low pass filter: 1Hz on DAS
MC__VD_J01B02BL, MC_VD_J05B06BL, MCO_VD_J11B12BL, MCO_VD_J11A12AL, MCO_VD_J12A13BL, MCI_VD_01A, MCI_VD_01B
Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B, MCI_VD_05A, MCI_VD_05B, MCI_VD_07A, MCI_VD_07B, MCO_VD_11A, MCO_VD_11B, MCO_VD_15A, MCO_VD_15B, MCO_VD_17A, MCO_VD_17B, MCO_VD_18A, MCO_VD_18B

CS Model Coil Experiment Log

Date 2000.4.25 Time 10:55 p. 41

Run No. 26 - 1

Procedure No. MC-B6

Operation Mode DC

Objective: AC loss measurement , Tau = 20 s

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

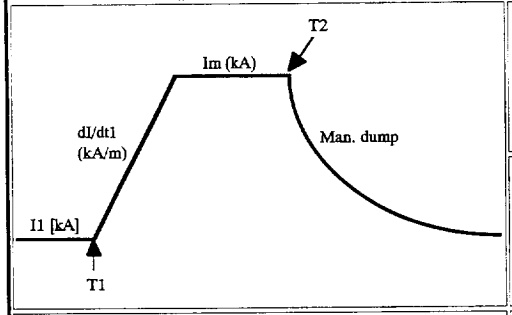
Facility condition

	Power Supply	Resistor
CSMC	50kA	30 m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:55 T_2 11:59 T_3 ____

Heater W T_d = s

Results: Vinner=516.5V, Vouter=620V, Tau=17.8s

Remarks: Low pass filter: 1Hz on DAS
MC__VD_J01B02BL, MC_VD_J05B06BL, MCO_VD_J11B12BL, MCO_VD_J11A12AL, MCO_VD_J12A13BL, MCI_VD_01A, MCI_VD_01B
Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B, MCI_VD_05A, MCI_VD_05B, MCI_VD_07A, MCI_VD_07B, MCO_VD_11A, MCO_VD_11B, MCO_VD_15A, MCO_VD_15B, MCO_VD_17A, MCO_VD_17B, MCO_VD_18A, MCO_VD_18B

CS Model Coil Experiment Log

Date 2000.4.25 Time 13:16 p. 42

Run No. 27 - 1

Procedure No. MC-B9

Operation Mode DC

Objective: 100% Charge

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

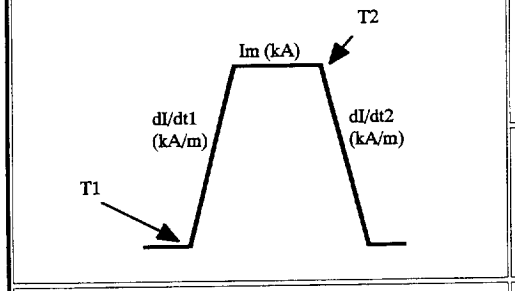
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Trapezoidal



CSMC I_m = 46 kA I_1 = 14:31 kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:16 T_2 14:31 T_3 ____

Heater W T_d = s

Results:

Remarks: Low pass filter: 1Hz on DAS
MC__VD_J01B02BL, MC_VD_J05B06BL, MCO_VD_J11B12BL, MCO_VD_J11A12AL, MCO_VD_J12A13BL, MCI_VD_01A, MCI_VD_01B

CS Model Coil Experiment Log

Date 2000.4.26 Time 9:35 p. 43

Run No. 28 - 1

Procedure No. MC-A7

Operation Mode DC

Objective: Make 5.3 K temp on 1st and 2nd layer

Coolant condition (before this run)

	1-2layer	others
Temperature	~ 5.3 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

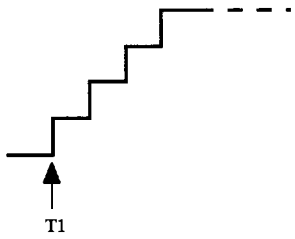
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0		0		

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:35 T_2 ____ T_3 ____

Heater W T_d = s

Results

MCI_TS_01AI=5.32K at heat input 162.5W

Remarks

Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:1Hz on DAS
MCI_VB_01B02B, MCI_VB_01A02A

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B

CS Model Coil Experiment Log

Date 2000.4.26 Time 10:20 p. 44

Run No. 29 - 1

Procedure No. MC-A7

Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	1-2 layer	others
Temperature	~ 5.3 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

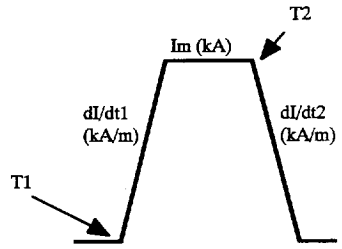
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:23 T_2 10:43 T_3 ____

Heater W T_d = s

Results

Joint voltage was inconsistent. Instrumentation wires revised.

Heater for 1-2 layer was off on 14:20

Remarks

Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:1Hz on DAS
MCI_VB_01B02B, MCI_VB_01A02A

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B

CS Model Coil Experiment Log

Date 2000.4.26 Time 14:32 p. 45

Run No. 30 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	1-2layer	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

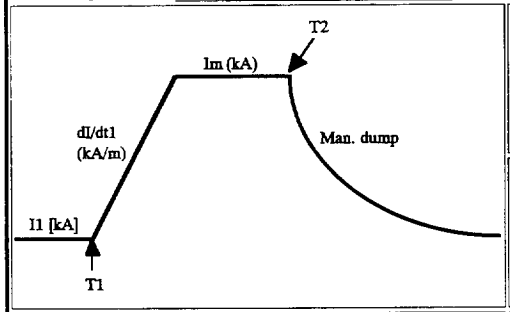
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:32 T_2 15:08 T_3 ____

Heater W T_d = s

Results: Vimer=131V, Vouter=157V, Tau=19.4s

Remarks:
Heater for 1-2layer was off on14:20
Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:1Hz on DAS
MCI_VB_01B02B, MCI_VB_01A02A

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B

CS Model Coil Experiment Log

Date 2000.4.26 Time 16:07 p. 46

Run No. 31 - 1
Procedure No. MC-B11
Operation Mode DC

Objective: Check noise filters

Coolant condition (before this run)

	1-2layer	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

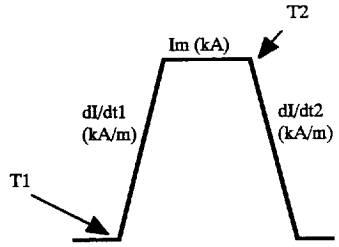
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:07 T_2 17:05 T_3 ____

Heater W T_d = s

Results:

Remarks:
Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:1Hz on DAS
MCI_VB_01B02B, MCI_VB_01A02A

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B

CS Model Coil Experiment Log

Date 2000.4.26 Time 18:00 p. 47

Run No. 32 - 1

Procedure No. MC-A7

Operation Mode No Current

Objective: Heat slug test on 1st and 2nd layers.

Coolant condition (before this run)

	1-2layer		others
Temperature	~ K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

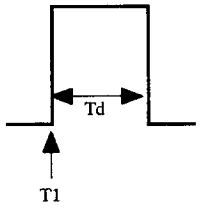
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.3k	0.3k			

Current pattern: Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 18:00 T_2 ____ T_3 ____

Heater W T_d = 120 s

Results

Remarks

Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:1Hz on DAS
MCI_VB_01B02B, MCI_VB_01A02A

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B

CS Model Coil Experiment Log

Date 2000.4.27 Time 9:20 p. 48

Run No. 33 - 1

Procedure No. ____

Operation Mode No Current

Objective: Heat up 5.3 K on 1st and 2nd layers

Coolant condition (before this run)

	1-2lyers		other
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

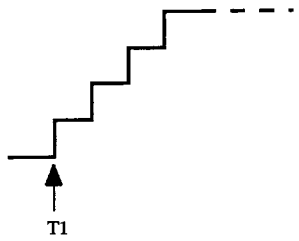
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0		0		

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:20 T_2 ____ T_3 ____

Heater W T_d = s

Results: MCI_TS_01AI=5.3K at 163W

Remarks

CS Model Coil Experiment Log

Date 2000.4.27 Time 10:00 p. 49

Run No. 34 - 1
Procedure No. MC-A7
Operation Mode Pulse

Objective: Daily check

Coolant condition (before this run)

	1-2Layer	others
Temperature	~ 5.3 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

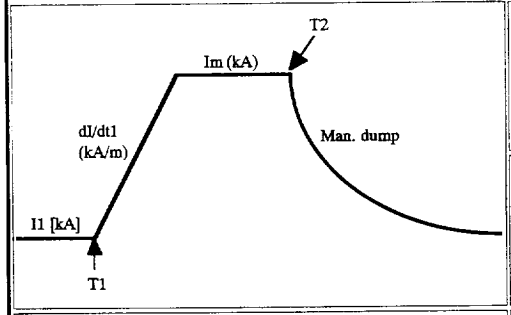
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:00 T_2 10:38 T_3 ____

Heater W T_d = s

Results: Vinner=134V, Vouter=156V, Tau=19.6s

Remarks:

CS Model Coil Experiment Log

Date 2000.4.27 Time 11:17 p. 50

Run No. 35 - 1
Procedure No. MC-C1
Operation Mode DC

Objective: Confirm 2 K operation margin

Coolant condition (before this run)

	1-2Lyers	others
Temperature	~ 5.3 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

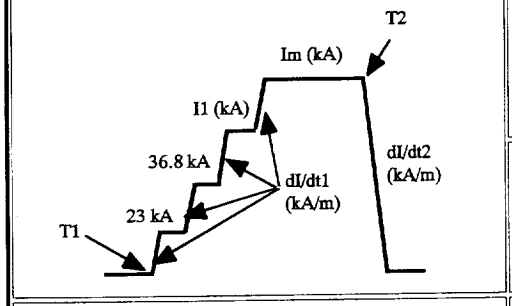
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Stepped Trapezoidal



CSMC I_m = 46 kA I_1 = 41.4 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:22 T_2 14:54 T_3 ____

Heater W T_d = s

Results: 2 K operation margin at 13 T was confirmed.

Remarks:

CS Model Coil Experiment Log

Date 2000.4.27 Time 16:24 p. 51

Run No. 36 - 1
Procedure No. MC-C2
Operation Mode DC

Objective: Confirm 2 K operation margin

Coolant condition (before this run)

	1-2Lys	others
Temperature	~ 5.3 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

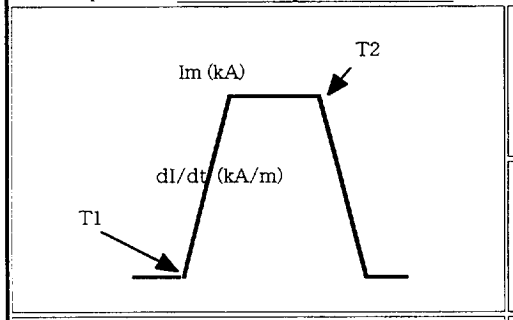
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Trapezoidal



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:24 T_2 17:48 T_3 ____

Heater W T_d = s

Results
2K operation margin at 13T was confirmed.

Remarks
Ando charge

Heater for 1-2 layer was off on 19:15

CS Model Coil Experiment Log

Date 2000.4.28 Time 9:59 p. 52

Run No. 37 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	1-2layer	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

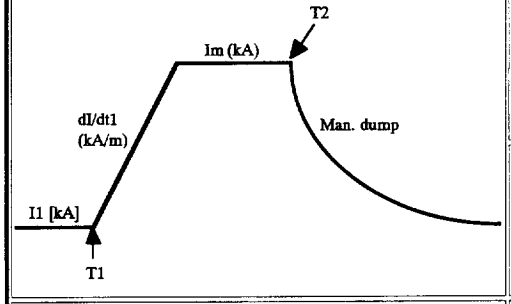
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:59 T_2 10:43 T_3 ____

Heater W T_d = s

Results
Vinner=129V, Vouter=156V, Tau=19.3s

Remarks
Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B, MCI_VD_02A, MCI_VD_02B

CS Model Coil Experiment Log

Date 2000.4.28 Time 11:28 p. 53

Run No. 38 - 1
Procedure No. MC-D1
Operation Mode DC

Objective: Tcs measurement on 1st layers at 13 T

Coolant condition (before this run)

	1-2 Ly	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

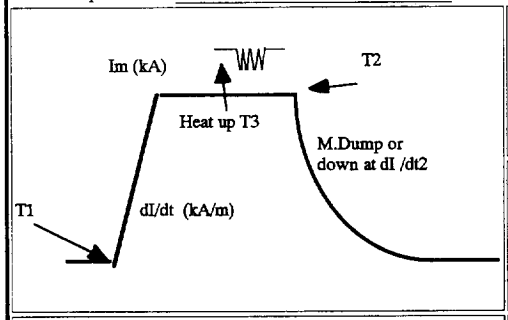
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:28 T_2 ____ T_3 ____

Heater W T_d = s

Results

Hold at 23kA for lunch.

13:35 46kA hold.

Heat up on 1-2 layer was next run.

Remarks

Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B, MCI_VD_02A, MCI_VD_02B

CS Model Coil Experiment Log

Date 2000.4.28 Time 14:00 p. 54

Run No. 38 - 2
Procedure No. MC-D1
Operation Mode DC

Objective: Tcs measurement on 1st layers at 13 T, Heat up on 1-2 layer

Coolant condition (before this run)

	1-2	others
Temperature	~ K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

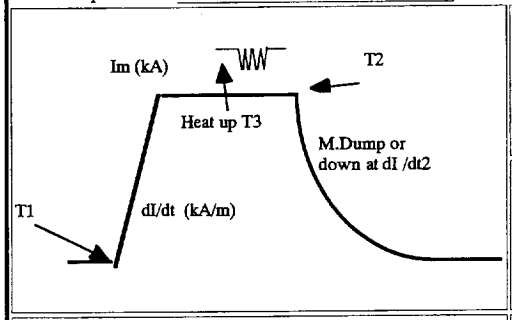
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0		0		

Current pattern Tcs



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 18:05 T_3 14:00

Heater W T_d = s

Results

17:52 309W heater power

Remarks

Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B, MCI_VD_02A, MCI_VD_02B

CS Model Coil Experiment Log

Date 2000.5.1 Time 9:37 p. 55

Run No. 39 - 1

Procedure No.

Operation Mode No Current

Objective: Heat up on 1st and 2nd layers

Coolant condition (before this run)

	1-2 lyaer	others
Temperature	~ K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

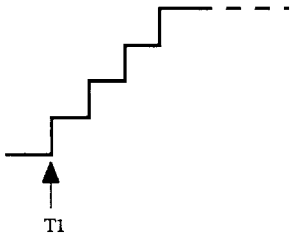
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0		0		

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:37 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B, MCI_VD_02A, MCI_VD_02B

CS Model Coil Experiment Log

Date 2000.5.1 Time 10:33 p. 56

Run No. 40 - 1

Procedure No. MC-A7

Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	1-2 layer	others
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

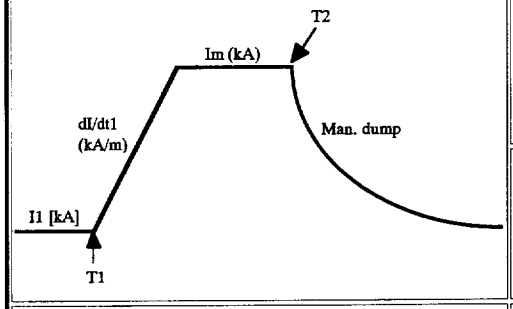
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	1k	0.3k	1k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:33 T_2 11:05 T_3 ____

Heater W T_d = s

Results

Vinner=129V, Vouter=156V, Tau=19.3s

Remarks

Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B, MCI_VD_02A, MCI_VD_02B

CS Model Coil Experiment Log

Date 2000.5.1 Time 11:51 p. 57

Run No. 41 - 1

Procedure No. MC-D2

Operation Mode DC

Objective: Tcs measurement on 1st layers at 40 kA

Coolant condition (before this run)

	1-2Layers	others
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

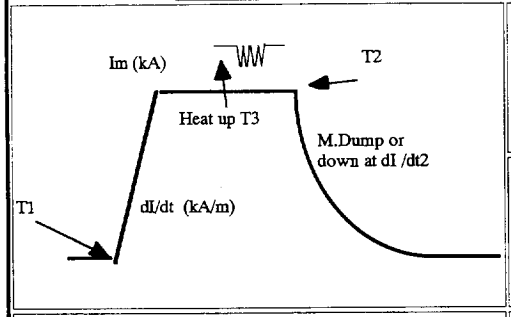
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern Tcs



CSMC I_m = 40 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:51 T_2 ____ T_3 ____

Heater W T_d = s

Results

Hold at 23kA for lunch.
13:24 40kA hold.
Heat up on 1-2 layer was next run.

Remarks

Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B, MCI_VD_02A, MCI_VD_02B

CS Model Coil Experiment Log

Date 2000.5.1 Time 13:50 p. 58

Run No. 41 - 2

Procedure No. MC-D2

Operation Mode DC

Objective: Tcs measurement on 1st layers at 40 kA, Heat up on 1st and 2nd layers

Coolant condition (before this run)

	1-2Layers	Others
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

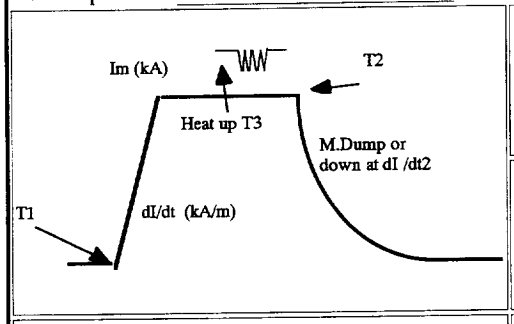
Facility condition

	Power Supply	Resistor
CSMC	50kA	30 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0	1k	0	1k	

Current pattern Tcs



CSMC I_m = kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 16:49 T_3 13:52

Heater W T_d = s

Results

Quench. Normal zone was traveling on 40kA.
Manual dump after Tcs measurement
Vinner=679V, Vouter=578V, Tau=17.8s

Remarks

Low pass filter: 0.1Hz on DAS
MCI_VD_01A, MCI_VD_01B, MCI_VD_J02B01AL, MCI_VD_J06B05AL, MCI_VD_J12B11AL

Low pass filter:10Hz on Amplifire
MCI_VD_01A, MCI_VD_01B, MCI_VD_02A, MCI_VD_02B

CS Model Coil Experiment Log

Date 2000.5.2 Time 13:27 p. 59

Run No. 42 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

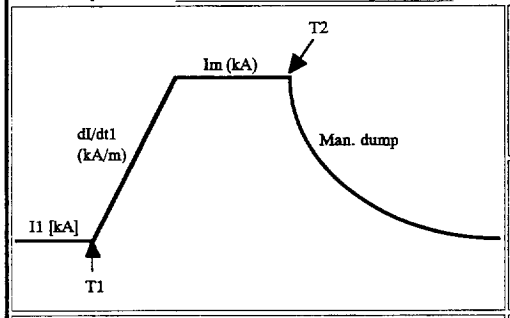
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:31 T_2 14:06 T_3 ____

Heater W T_d = s

Results: Vinner=132V, Vouter=157V, Tau=19.4s

Remarks:

CS Model Coil Experiment Log

Date 2000.5.2 Time 14:43 p. 60

Run No. 43 - 1
Procedure No. MC-B7
Operation Mode DC

Objective: Confirm coil performace at 13 T, 46 kA after quench

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

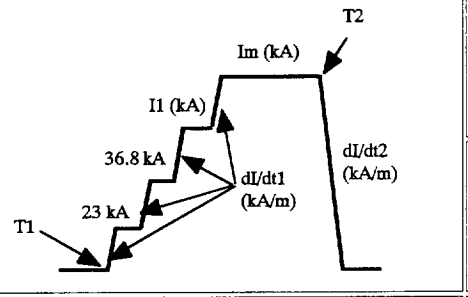
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Stepped Trapezoidal



CSMC I_m = 46 kA I_1 = 41.4 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:45 T_2 17:00 T_3 ____

Heater W T_d = s

Results:

Remarks:

CS Model Coil Experiment Log

Date 2000.5.3 Time 10:08 p. 61

Run No. 44 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	1-2layer	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

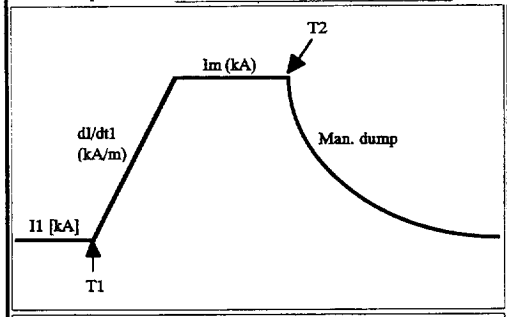
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:13 T_2 10:49 T_3 ____

Heater W T_d = s

Results: Vinner=131V, Vouter=157V, Tau=19.6s

Remarks:

CS Model Coil Experiment Log

Date 2000.5.3 Time 11:28 p. 62

Run No. 45 - 1
Procedure No. MC-B9M
Operation Mode DC

Objective: President charge and Tcs measurement at 30 kA on 1st layer

Coolant condition (before this run)

	1-2layer	others
Temperature	~ K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

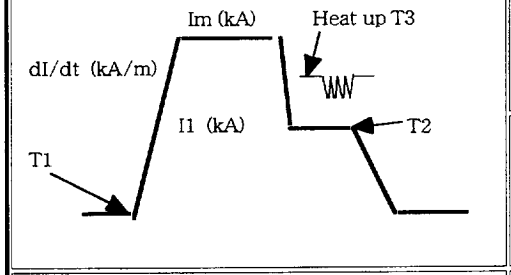
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Stepped Trapezoidal



CSMC I_m = 30 kA I_1 = 30 kA
dI/dt_1 = 4 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:28 T_2 ____ T_3 ____

Heater W T_d = s

Results:

Remarks:

CS Model Coil Experiment Log

Date 2000.5.3 Time 14:20 p. 63

Run No. 46 - 1
Procedure No. MC-D3
Operation Mode DC

Objective: Tcs measurement at 30 kA on 1st layer

Coolant condition (before this run)

	1-2layer		other
Temperature	~ K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.5 MPa		

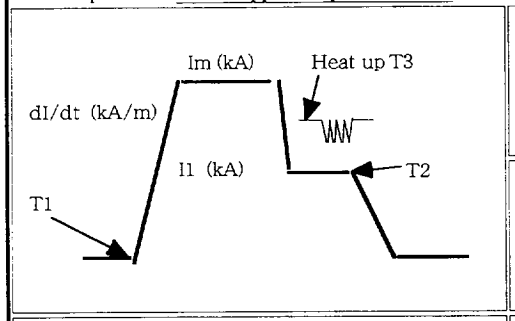
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0		0		

Current pattern Stepped Trapezoidal



CSMC I_m = kA I_1 = 30 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 15:53 T_3 16:46

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.3 Time ____ p. 64

Run No. 46 - 2
Procedure No. MC-D3
Operation Mode DC

Objective: Tcs measurement at 30 kA on 1st layer. Energize heater MCI_HR_IN.

Coolant condition (before this run)

	1-2Layers		Others
Temperature	~ K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.5 MPa		

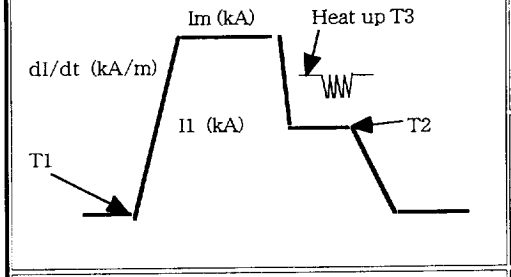
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0		0		

Current pattern Stepped Trapezoidal



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.3 Time _____ p. 65

Run No. 46 - 3

Procedure No. MC-D3

Operation Mode DC

Objective

Tcs measurement at 30 kA on 1st layer. Energize heater MCI_HR_01AI1 and MCI_HR_01AI2.

Coolant condition (before this run)

	1-2Layers		others
Temperature	~ K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.5 MPa		

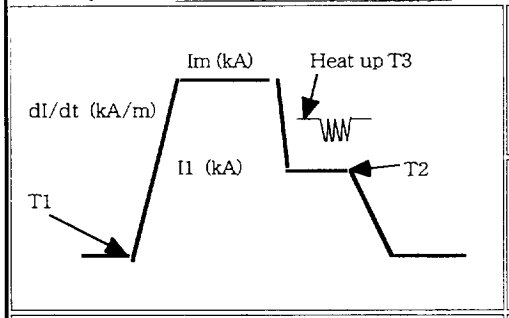
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0	2k	0	10k	10k

Current pattern Stepped Trapezoidal



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.4 Time 9:40 p. 66

Run No. 47 - 1

Procedure No. _____

Operation Mode No Current

Objective

Heater test

Coolant condition (before this run)

	1-2Layers		Others
Temperature	~ K	~	4.4 K
Mass Flow Rate	~ 4 g/s	~	7 g/s
Pressure	~ 0.5 MPa		

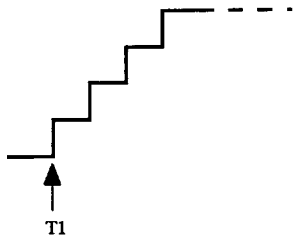
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s				
Pre-trigger	0				

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 9:40 T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.4 Time 12:42 p. 67

Run No. 47 - 2

Procedure No.

Operation Mode No Current

Objective: Valve HC-12ABX (outlet of 1st and 2nd layers) test.

Coolant condition (before this run)

	1-2Layers	Others
Temperature	~ K	~ 4.4 K
Mass Flow Rate	~ 4 g/s	~ 7 g/s
Pressure	~ 0.5 MPa	

Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s				
Pre-trigger	0				

Current pattern No current

CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.4 Time 14:11 p. 68

Run No. 47 - 3

Procedure No.

Operation Mode No Current

Objective: Discharge heater

Coolant condition (before this run)

	1-2layers	Others
Temperature	~ K	~ 4.4 K
Mass Flow Rate	~ 4 g/s	~ 7 g/s
Pressure	~ 0.5 MPa	

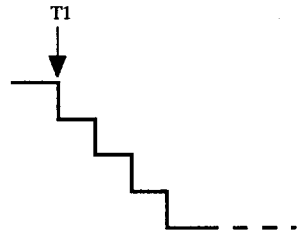
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s				
Pre-trigger	0				

Current pattern Heater discharge



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:11 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.4 Time _____ p. 69

Run No. 48 - 1
Procedure No. _____
Operation Mode No Current

Objective
Heat slug test on 17th layer.

Coolant condition (before this run)

	1-2Layers	Others
Temperature	~ K	~ 4.4 K
Mass Flow Rate	~ 4 g/s	~ 7 g/s
Pressure	~ 0.5 MPa	

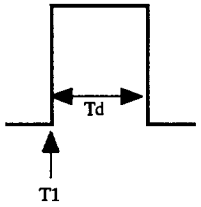
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.06k	0.3k			

Current pattern Heater pulse



CSMC I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater 1000 W T_d = 10 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.4 Time 17:07 p. 70

Run No. 48 - 2
Procedure No. _____
Operation Mode No Current

Objective
Heat slug test on 17th layer.

Coolant condition (before this run)

	1-2Layers	Others
Temperature	~ K	~ 4.4 K
Mass Flow Rate	~ 4 g/s	~ 7 g/s
Pressure	~ 0.5 MPa	

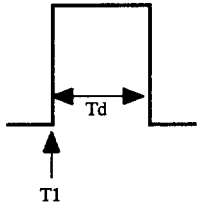
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.06k	0.3k			

Current pattern Heater pulse



CSMC I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 17:07 T_2 _____ T_3 _____

Heater 1000 W T_d = 30 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.4 Time _____ p. 71

Run No. 48 - 3

Procedure No. _____

Operation Mode No Current

Objective: Heat slug test on 17th layer.

Coolant condition (before this run)

	1-2Layers	Others
Temperature	~ K	~ 4.4 K
Mass Flow Rate	~ 4 g/s	~ 7 g/s
Pressure	~ 0.5 MPa	

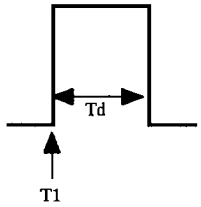
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	100ms			
Pre-trigger	0.06k	0.3k			

Current pattern: Heater pulse



CSMC I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater 1000 W T_d = 60 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.5 Time 9:44 p. 72

Run No. 49 - 1

Procedure No. _____

Operation Mode DC

Objective: Heat 1st layer up to 7 K.

Coolant condition (before this run)

	1-2 layer	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

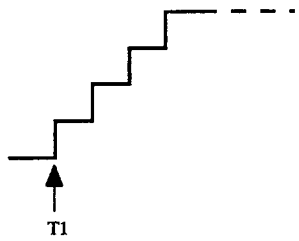
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s				
Pre-trigger	0.3k				

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 9:44 T_2 _____ T_3 _____

Heater 250 W T_d = s

Results: 9:57 250W heat up

Remarks

CS Model Coil Experiment Log

Date 2000.5.5 Time 10:39 p. 73

Run No. 50 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	1-2layer	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 3 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

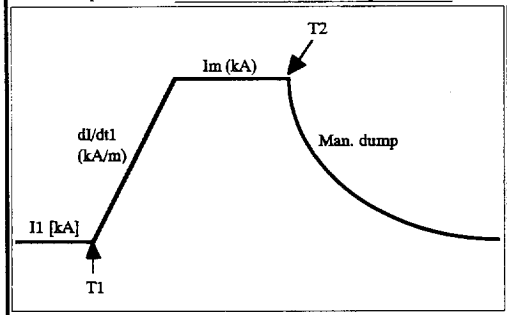
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:39 T_2 11:10 T_3 ____

Heater W T_d = s

Results: Vinner=134V, Vouter=156V, Tau=19.4s

Remarks:

CS Model Coil Experiment Log

Date 2000.5.5 Time 11:46 p. 74

Run No. 51 - 1
Procedure No. MC-D3
Operation Mode DC

Objective: Tcs measurement at 30 kA on 1st layer

Coolant condition (before this run)

	1-2layers	Others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 3 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

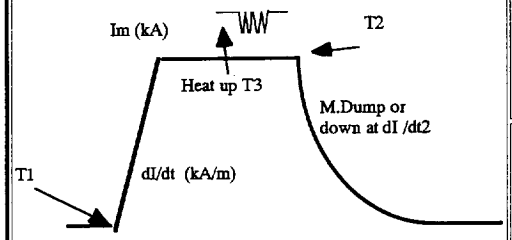
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Tcs



CSMC I_m = 30 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:46 T_2 ____ T_3 ____

Heater W T_d = s

Results:
12:20 30 kA hold.
Heat up on 1-2 layer was next run.

Remarks:

CS Model Coil Experiment Log

Date 2000.5.5 Time 13:30 p. 75

Run No. 51 - 2
Procedure No. MC-D3
Operation Mode DC

Objective: Tcs measurement at 30 kA on 1st layer. Heat up 1st layer.

Coolant condition (before this run)

	1-2layers	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 3 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

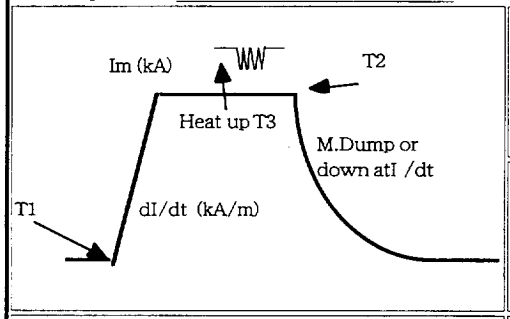
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern Tcs



CSMC I_m = 30 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 16:32 T_3 13:33

Heater W T_d = s

Results
16:28 706 W heat up
Quench
Manual dump after quench
Vinner=476V, Vouter=539V, Tau=18.2s

Remarks

CS Model Coil Experiment Log

Date 2000.5.8 Time 9:30 p. 76

Run No. 52 - 1
Procedure No. ____
Operation Mode DC

Objective: Heat 1st layer up to 8.9 K

Coolant condition (before this run)

	1-2layer	other
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

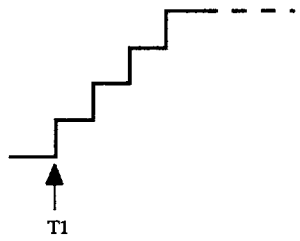
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0		0		

Current pattern Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:30 T_2 ____ T_3 ____

Heater 555 W T_d = s

Results
8.8K at 555W

Remarks

CS Model Coil Experiment Log

Date 2000.5.8 Time 10:57 p. 77

Run No. 53 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	1-2layer	others
Temperature	~ 8.9 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

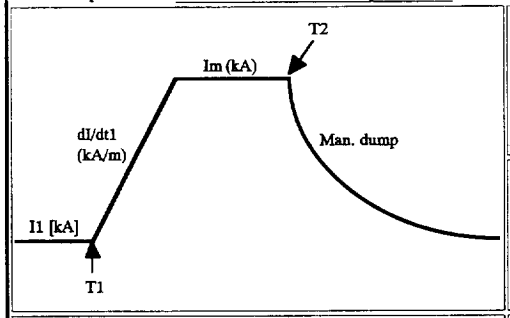
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:57 T_2 11:22 T_3 ____

Heater W T_d = s

Results
Vinner=131V, Vouter=157V, Tau=19.4s

Remarks

CS Model Coil Experiment Log

Date 2000.5.8 Time 11:51 p. 78

Run No. 54 - 1
Procedure No. MC-I1-1
Operation Mode DC

Objective: Ic measurement at 9.1 K, 1st layer

Coolant condition (before this run)

	1-2layer	others
Temperature	~ 9.1 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

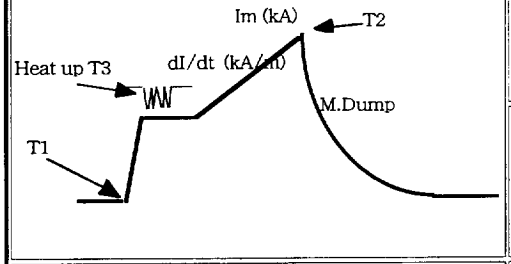
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.1k	2k	0.1k	10k	10k

Current pattern: Ic



CSMC I_m = 39.5 kA I_1 = kA
dI/dt_1 = 0.2 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:51 T_2 14:20 T_3 13:05

Heater W T_d = s

Results
MCI_TS_01AI=9.1K at 580W
Vinner=564V, Vouter=671V, Tau=17.8s

Remarks

CS Model Coil Experiment Log

Date 2000.5.8 Time 15:27 p. 79

Run No. 55 - 1

Procedure No. MC-D6

Operation Mode DC

Objective: Tcs measurement at 1 kA on 1st layer

Coolant condition (before this run)

	1-2layer	others
Temperature	~ K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

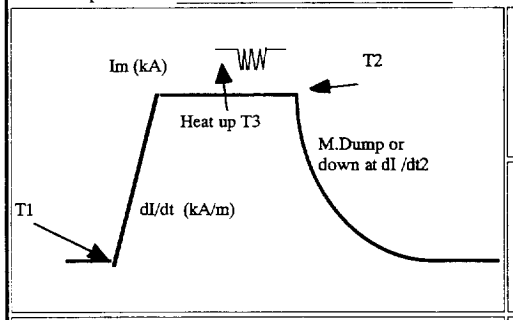
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Tcs



CSMC I_m = 1 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:27 T_2 18:15 T_3 15:37

Heater W T_d = s

Results: 18:09 862W heat up.

Remarks:

CS Model Coil Experiment Log

Date 2000.5.9 Time ____ p. 80

Run No. 56 - 1

Procedure No. ____

Operation Mode DC

Objective: Heater test for Tcs on 11th layer

Coolant condition (before this run)

	11Lyr	others
Temperature	~ 12.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

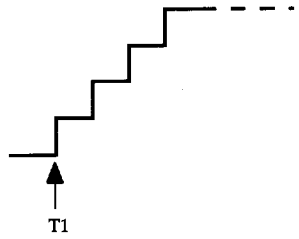
Facility condition

	Power Supply	Resistor
CSMC	No	
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s				
Pre-trigger	0				

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater 455 W T_d = s

Results: MCO_TC_11AI=12.48K at 455W

Remarks:

CS Model Coil Experiment Log

Date 2000.5.9 Time 11:32 p. 81

Run No. 57 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	11Lyr	others
Temperature	~ 8.17 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

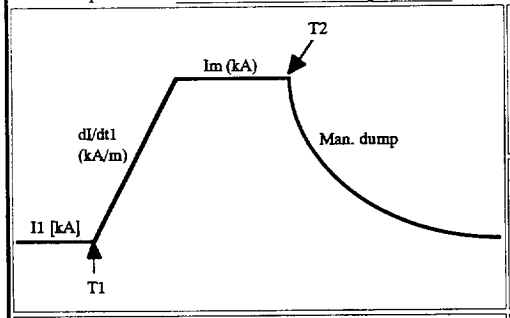
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.1k	2k	0.1k	10k	10k

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:32 T_2 11:53 T_3 ____

Heater W T_d = s

Results
Vinner=129V, Vouter=156V, Tau=19.3s

11:59 heater off

Remarks

CS Model Coil Experiment Log

Date 2000.5.9 Time 13:03 p. 82

Run No. 58 - 1
Procedure No. MC-D19
Operation Mode DC

Objective: Tcs measurement at 46 kA on 11th layer and heat up 11th layer

Coolant condition (before this run)

	11-12layr	others
Temperature	~ K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

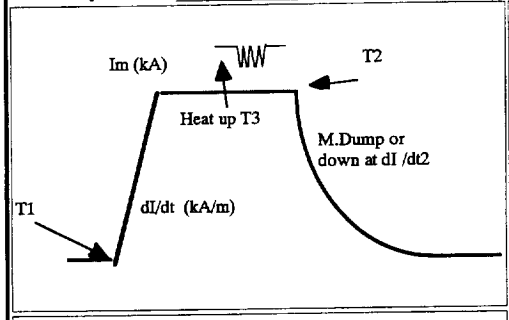
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0	2k	0	10k	10k

Current pattern: Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:21 T_2 15:37 T_3 14:29

Heater W T_d = s

Results
15:36 420W heat up.
Quench. Manual dump after quench.
Vinner=692V, Vouter=782V, Tau=17.4s

Remarks

CS Model Coil Experiment Log

Date 2000.5.9 Time 16:50 p. 83

Run No. 59 - 1
Procedure No. MC-B8
Operation Mode DC

Objective: Confirm the coil performance after quench

Coolant condition (before this run)

	11layer	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

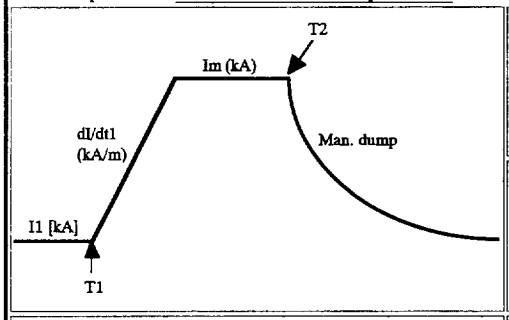
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern: Manual dump



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:50 T_2 18:06 T_3 ____

Heater W T_d = s

Results: Vinner=660V, Vouter=785V, Tau=17.0s

Remarks:

CS Model Coil Experiment Log

Date 2000.5.10 Time 9:37 p. 84

Run No. 60 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	11-12layr	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

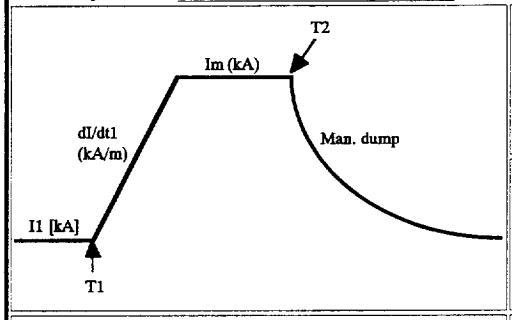
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:37 T_2 9:59 T_3 ____

Heater W T_d = s

Results: Vinner=131V, Vouter=157V, Tau=19.5s

Remarks:

CS Model Coil Experiment Log

Date 2000.5.10 Time 10:32 p. 85

Run No. 61 - 1

Procedure No. MC-B8

Operation Mode DC

Objective: AC loss measurement at 46 kA. Tau = 20 s.

Coolant condition (before this run)

	11-12laye	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

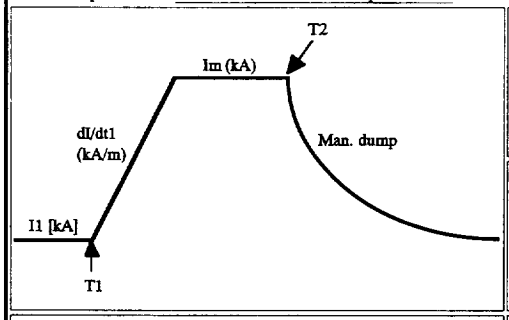
Facility condition

	Power Supply	Resistor
CSMC	50kA	30 m-hom
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern: Manual dump



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:32 T_2 11:49 T_3 ____

Heater W T_d = s

Results: Vinner=597V, Vouter=778V, Tau=17.5s

Remarks:

CS Model Coil Experiment Log

Date 2000.5.10 Time 13:35 p. 86

Run No. 62 - 1

Procedure No. MC-D20

Operation Mode DC

Objective: Tcs measurement at 40 kA on 11th layer

Coolant condition (before this run)

	11-12layr	others
Temperature	~ 6.8 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

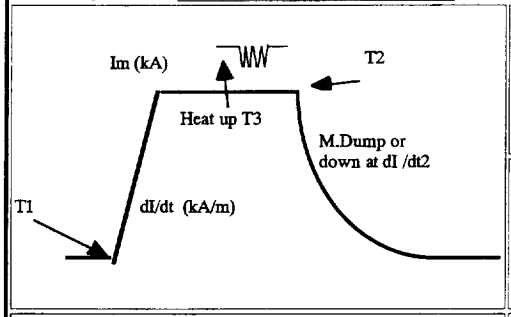
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Tcs



CSMC I_m = 40 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:35 T_2 ____ T_3 ____

Heater W T_d = s

Results: Heat up on 11 layer was next run.

Remarks:

CS Model Coil Experiment Log

Date 2000.5.10 Time 14:04 p. 87

Run No. 62 - 2
Procedure No. MC-D20
Operation Mode DC

Objective: Heat up 11th layer for Tcs measurement at 40 kA

Coolant condition (before this run)

	11-12ly	other
Temperature	~ K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

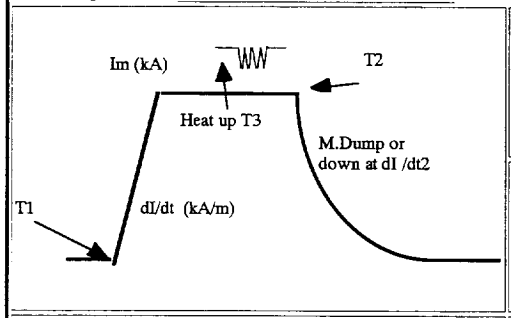
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0	2k	0	10k	10k

Current pattern Tcs



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:35 T_2 16:16 T_3 13:41

Heater W T_d = s

Results
16:13 435W heat up
Quench. Manual dump after quench.
Vinner=572V, Vouter=680V, Tau=17.6s

Remarks

CS Model Coil Experiment Log

Date 2000.5.11 Time 9:38 p. 88

Run No. 63 - 1
Procedure No. MC-A7
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	11-12Lyrs	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

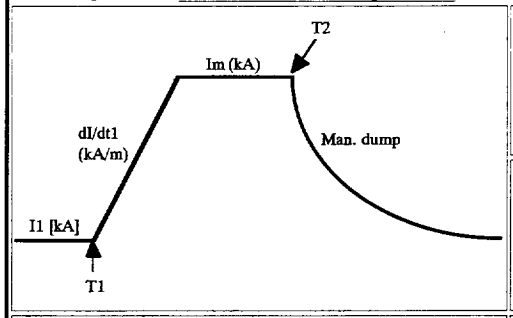
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:42 T_2 10:11 T_3 ____

Heater W T_d = s

Results
Vinner=131V, Vouter=156V, Tau=19.5s

Remarks

CS Model Coil Experiment Log

Date 2000.5.11 Time 10:48 p. 89

Run No. 64 - 1

Procedure No. MC-B4

Operation Mode DC

Objective: AC loss measurement at 23 kA, Tau = 20 s.

Coolant condition (before this run)

	11-12laye	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

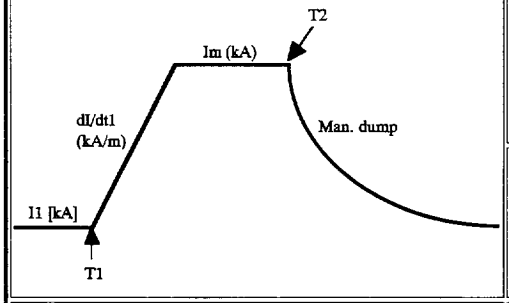
Facility condition

	Power Supply	Resistor
CSMC	50kA	30 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	10ms
Pre-trigger	0.3k	2k	0.3k	10k	10k

Current pattern: Manual dump



CSMC I_m = 23 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:49 T_2 11:40 T_3 ____

Heater W T_d = s

Results: Vinner=322V, Vouter=387V, Tau=18.7s

Remarks:

CS Model Coil Experiment Log

Date 2000.5.11 Time 13:42 p. 90

Run No. 65 - 1

Procedure No. MC-D24

Operation Mode DC

Objective: Tcs measurement at 1 kA on 11th layer

Coolant condition (before this run)

	11-12ly	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

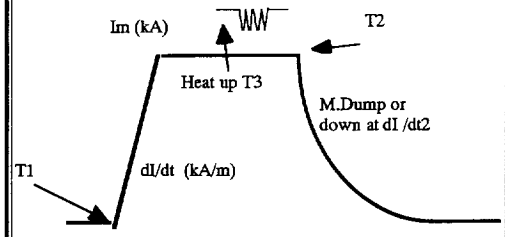
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern: Tcs



CSMC I_m = 1 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:42 T_2 ____ T_3 ____

Heater W T_d = s

Results: Heat up on 11 layer was next run.

Remarks:

CS Model Coil Experiment Log

Date 2000.5.11 Time 15:28 p. 91

Run No. 65 - 2
Procedure No. MC-D24
Operation Mode DC

Objective: Heat up 11th layer for Tcs mesurment at 1 kA

Coolant condition (before this run)

	11-12ly	others
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.5 MPa	

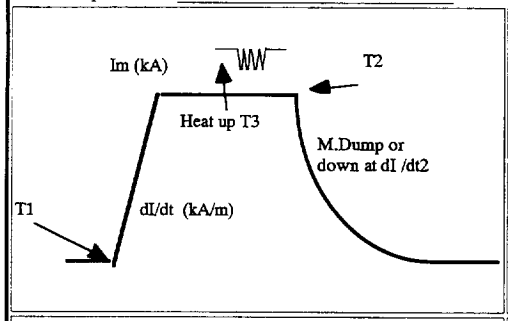
Facility condition

	Power Supply	Resistor
CSMC	50kA	30m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0		0		

Current pattern Tcs



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 17:20 T_3 15:00

Heater W T_d = s

Results
17:17 630W heat up

Remarks

CS Model Coil Experiment Log

Date 2000.5.12 Time 9:20 p. 92

Run No. 66 - 1
Procedure No. MC-E1-1
Operation Mode DC

Objective: Daily check and AC loss measurement, Tau = 30 s

Coolant condition (before this run)

	All	
Temperature	~ 4.5 K	~ K
Mass Flow Rate	~ 10 g/s	~ g/s
Pressure	~ 0.6 MPa	

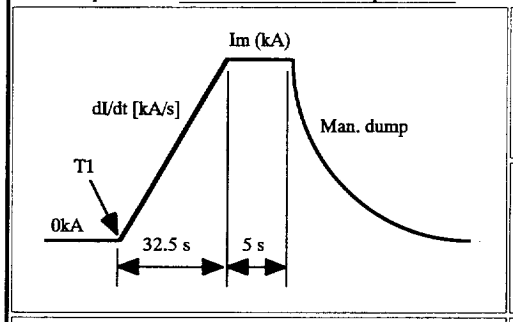
Facility condition

	Power Supply	Resistor
CSMC	50kA	20 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	1ms	
Pre-trigger	0	2k	0.3k	2k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:30 T_2 10:00 T_3 ____

Heater W T_d = s

Results
Vinner = 96 V, Vouter= 112.6 V, Tau= 27.3 s

Remarks
No filter

CS Model Coil Experiment Log

Date 2000.5.12 Time 10:20 p. 93

Run No. 67 – 1
Procedure No. MC-E1-2
Operation Mode DC

Objective: AC loss measurement, Tau = 30 s

Coolant condition (before this run)

ALL				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

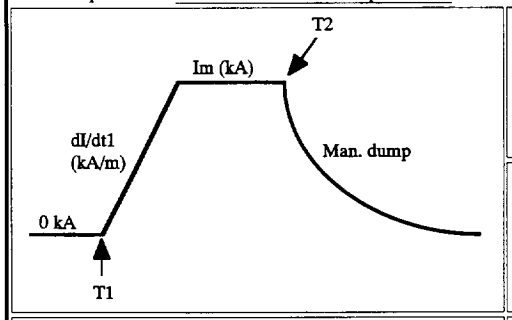
Facility condition

	Power Supply	Resistor
CSMC	50kA	20 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern: Manual dump



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:30 T_2 11:40 T_3 ____

Heater W T_d = s

Results: Vinner = 232 V, Vouter = 279 V, Tau = 26.4 s

Remarks: No filter

CS Model Coil Experiment Log

Date 2000.5.12 Time 13:10 p. 94

Run No. 68 – 1
Procedure No. MC-E1-3
Operation Mode DC

Objective: AC loss measurement, Tau = 30 s

Coolant condition (before this run)

ALL				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

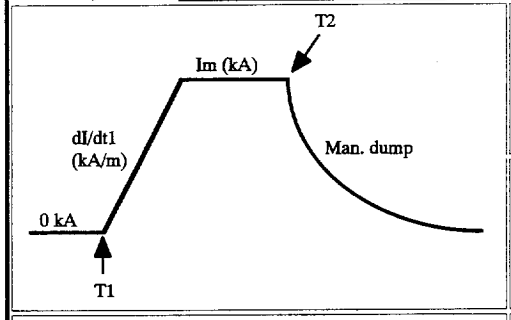
Facility condition

	Power Supply	Resistor
CSMC	50kA	20 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern: Manual dump



CSMC I_m = 29.9 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:10 T_2 14:35 T_3 ____

Heater W T_d = s

Results: Vinner = 310 V, Vouter = 364 V, Tau = 26.0 s

Remarks: No filter

CS Model Coil Experiment Log

Date 2000.5.12 Time 15:15 p. 95

Run No. 69 - 1

Procedure No. MC-E1-4

Operation Mode DC

Coolant condition (before this run)

ALL

Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

Objective

AC loss measurement, Tau = 30 s

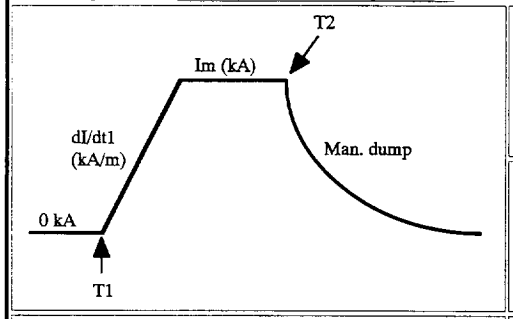
Facility condition

	Power Supply	Resistor
CSMC	50kA	20 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:15 T_2 16:22 T_3 ____

Heater W T_d = s

Results

Vinner = 372 V, Vouter = 448 V, Tau = 25.6 s

Remarks

No filter

CS Model Coil Experiment Log

Date 2000.5.16 Time 9:40 p. 96

Run No. 70 - 1

Procedure No. MC-E2-1

Operation Mode DC

Coolant condition (before this run)

ALL

Temperature	~ 4.45 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.54 MPa			

Objective

Daily check

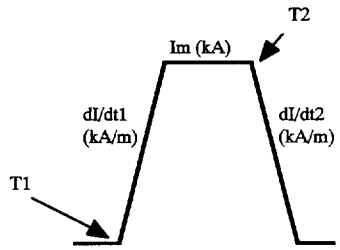
Facility condition

	Power Supply	Resistor
CSMC	50kA	40 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s		1s		
Pre-trigger	0.3k		0.3k		

Current pattern Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:45 T_2 10:10 T_3 ____

Heater W T_d = s

Results

Output of MCO_VD_ALL was twice lager than expected. Adjustment was done after this run.

Remarks

Low pass filter
MCO_VD_JT11B12B:0.1Hz, MCI_VD_01B02B:0.1Hz

CS Model Coil Experiment Log

Date 2000.5.16 Time 10:24 p. 97

Run No. 71 - 1
Procedure No. MC-E2-1
Operation Mode DC

Objective: Daily check & AC loss measurement, Tau = 15 s

Coolant condition (before this run)

	ALL		
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.54 MPa		

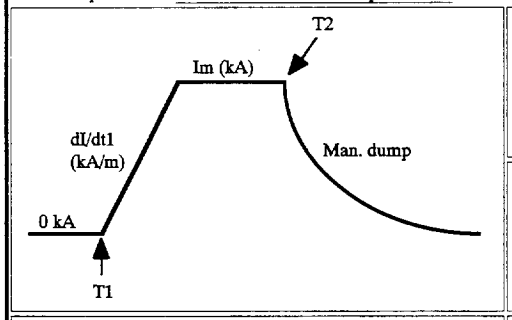
Facility condition

	Power Supply	Resistor
CSMC	50kA	40 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:24 T_2 10:55 T_3 ____

Heater W T_d = s

Results: Vinner = 173 V, Vouter = 208 V, Tau = 14.6 s

Remarks: Low pass filter MCO_VD_JT11B12B:0.1Hz, MCI_VD_01B02B:0.1Hz

CS Model Coil Experiment Log

Date 2000.5.16 Time 11:29 p. 98

Run No. 72 - 1
Procedure No. MC-E2-2
Operation Mode DC

Objective: AC loss measurement, Tau = 15 s

Coolant condition (before this run)

	ALL		
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.54 MPa		

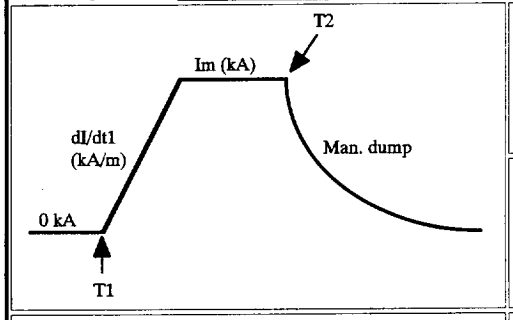
Facility condition

	Power Supply	Resistor
CSMC	50kA	40 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern: Manual dump



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:29 T_2 12:20 T_3 ____

Heater W T_d = s

Results: Vinner = 436 V, Vouter = 518 V, Tau = 14.0 s

Remarks: Low pass filter MCO_VD_JT11B12B:0.1Hz, MCI_VD_01B02B:0.1Hz

CS Model Coil Experiment Log

Date 2000.5.16 Time 13:05 p. 99

Run No. 73 - 1
Procedure No. MC-E2-3
Operation Mode DC

Objective: AC loss measurement, Tau = 15 s

Coolant condition (before this run)

ALL			
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.54 MPa		

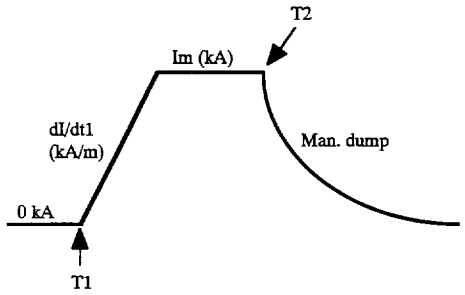
Facility condition

	Power Supply	Resistor
CSMC	50kA	40 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern Manual dump



CSMC I_m = 29.9 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:07 T_2 14:08 T_3 ____

Heater W T_d = s

Results: Vinner = 566 V, Vouter = 675 V, Tau = 13.7 s

Remarks: Low pass filter MCO_VD_JT11B12B:0.1Hz, MCI_VD_01B02B:0.1Hz

CS Model Coil Experiment Log

Date 2000.5.16 Time 14:55 p. 100

Run No. 74 - 1
Procedure No. MC-E2-4
Operation Mode DC

Objective: AC loss measurement, Tau = 15 s

Coolant condition (before this run)

ALL			
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.54 MPa		

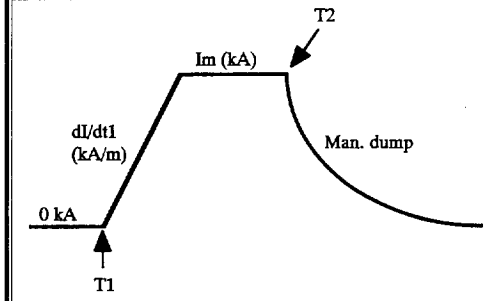
Facility condition

	Power Supply	Resistor
CSMC	50kA	40 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:57 T_2 16:12 T_3 ____

Heater W T_d = s

Results: Vinner = 698 V, Vouter = 832 V, Tau = 13.6 s

Remarks: Low pass filter MCO_VD_JT11B12B:0.1Hz, MCI_VD_01B02B:0.1Hz

CS Model Coil Experiment Log

Date 2000.5.18 Time 9:40 p. 101

Run No. 75 - 1
Procedure No. MC-E5-1
Operation Mode DC

Objective: Daily check& AC loss measurement, Tau = 10 s

Coolant condition (before this run)

	ALL		
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.52 MPa		

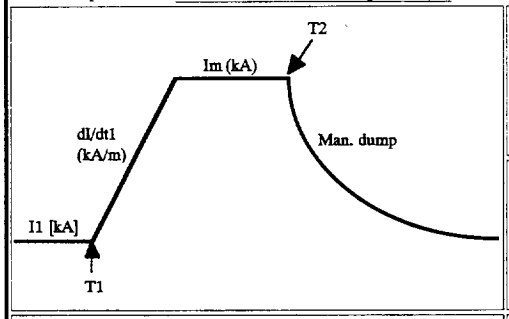
Facility condition

	Power Supply	Resistor
CSMC	50kA	66 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:43 T_2 10:20 T_3 ____

Heater W T_d = s

Results: Vinner= 245V, Vouter= 276V, Tau=9.35s

Remarks: Low pass filter :0.1Hz
MCO_VD_JT11B12B, MCI_VD_01B02B

CS Model Coil Experiment Log

Date 2000.5.18 Time 10:57 p. 102

Run No. 76 - 1
Procedure No. MC-E5-2
Operation Mode DC

Objective: AC loss measurement, Tau = 10 s

Coolant condition (before this run)

	ALL		
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.52 MPa		

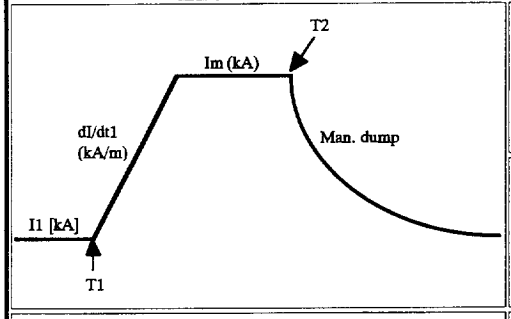
Facility condition

	Power Supply	Resistor
CSMC	50kA	66 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern Manual dump



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:57 T_2 11:48 T_3 ____

Heater W T_d = s

Results: Vinner= 687V, Vouter= 805V, Tau=9.0s

Remarks: Low pass filter :0.1Hz
MCO_VD_JT11B12B, MCI_VD_01B02B

CS Model Coil Experiment Log

Date 2000.5.18 Time 13:08 p. 103

Run No. 77 - 1
Procedure No. MC-E5-3
Operation Mode DC

Objective: AC loss measurement, Tau = 10 s

Coolant condition (before this run)

ALL			
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.52 MPa		

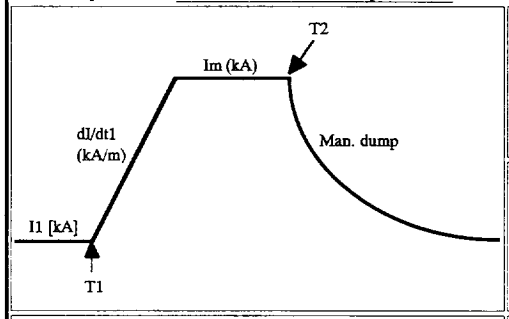
Facility condition

	Power Supply	Resistor
CSMC	50kA	66 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern: Manual dump



CSMC I_m = 29.9 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:10 T_2 14:15 T_3 ____

Heater W T_d = s

Results
Vinner= 895V, Vouter= 1048V, Tau=8.9s

Remarks
Low pass filter :0.1Hz
MCO_VD_JT11B12B, MCI_VD_01B02B

CS Model Coil Experiment Log

Date 2000.5.18 Time 15:06 p. 104

Run No. 78 - 1
Procedure No. MC-E5-4
Operation Mode DC

Objective: AC loss measurement, Tau = 10 s

Coolant condition (before this run)

ALL			
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.52 MPa		

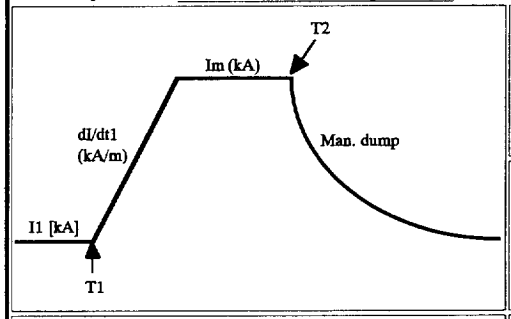
Facility condition

	Power Supply	Resistor
CSMC	50kA	66 m-ohm
CSIC		

Data Acquisition System (DAS) MC DC Test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	0.3k	2k	0.3k	2k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:06 T_2 16:15 T_3 ____

Heater W T_d = s

Results
Vinner= 1104V, Vouter= 1292V, Tau=8.75s

Remarks
Low pass filter :0.1Hz
MCO_VD_JT11B12B, MCI_VD_01B02B

CS Model Coil Experiment Log

Date 2000.5.19 Time 9:35 p. 105

Run No. 79 - 1

Procedure No. MC-E4-1

Operation Mode DC

Objective: Daily check and AC loss measurement, Tau = 6 s

Coolant condition (before this run)

	ALL		
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.55 MPa		

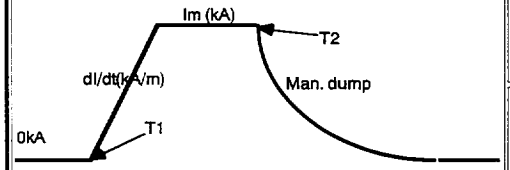
Facility condition

	Power Supply	Resistor
CSMC	50kA	106 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	10ms	1s	10ms	
Pre-trigger	60	2k	60	2k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:44 T_2 10:16 T_3 ____

Heater W T_d = s

Results: Vinner= 440V, Vouter= 515V, Tau=5.9s

Remarks: Low pass filter :0.1Hz
MCO_VD_JT11B12B, MCI_VD_01B02B

CS Model Coil Experiment Log

Date 2000.5.19 Time 11:00 p. 106

Run No. 80 - 1

Procedure No. MC-E4-2

Operation Mode DC

Objective: AC loss measurement, Tau = 6 s

Coolant condition (before this run)

	ALL		
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.55 MPa		

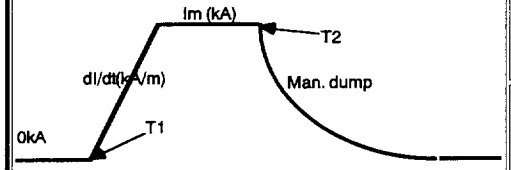
Facility condition

	Power Supply	Resistor
CSMC	50kA	106 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	5ms	1s	5ms	
Pre-trigger	60	5k	60	4k	

Current pattern: Manual dump



CSMC I_m = 23 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:02 T_2 11:50 T_3 ____

Heater W T_d = s

Results: Vinner= 1099V, Vouter= 1282V, Tau=5.6s

Remarks: Low pass filter :0.1Hz
MCO_VD_JT11B12B, MCI_VD_01B02B

384H and 64H Das Ts&Pre trigger was changed from this run.

CS Model Coil Experiment Log

Date 2000.5.19 Time 13:00 p. 107

Run No. 81 - 1
Procedure No. MC-E4-3
Operation Mode DC

Objective: AC loss measurement, Tau = 6 s

Coolant condition (before this run)

ALL			
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.55 MPa		

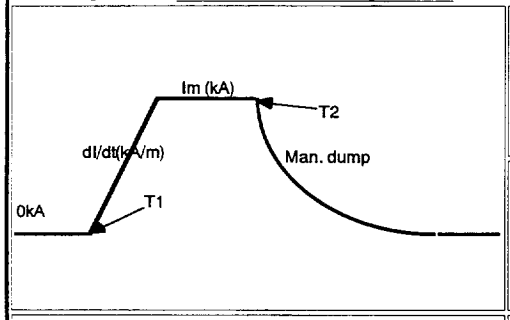
Facility condition

	Power Supply	Resistor
CSMC	50kA	106 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	5ms	1s	5ms	
Pre-trigger	60	5k	60	4k	

Current pattern Manual dump



CSMC I_m = 29.9 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:11 T_2 14:03 T_3 ____

Heater W T_d = s

Results: Vinner=1429V, Vouter=1669V, Tau=5.5s

Remarks: Low pass filter :0.1Hz
MCO_VD_JT11B12B, MCI_VD_01B02B

CS Model Coil Experiment Log

Date 2000.5.19 Time 14:54 p. 108

Run No. 82 - 1
Procedure No. MC-E4-4
Operation Mode DC

Objective: AC loss measurement, Tau = 6 s

Coolant condition (before this run)

ALL			
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.55 MPa		

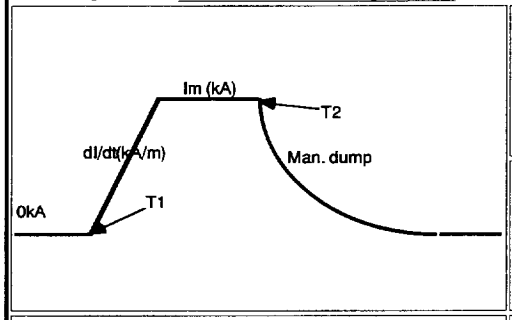
Facility condition

	Power Supply	Resistor
CSMC	50kA	106 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	5ms	1s	5ms	
Pre-trigger	60	5k	60	4k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 Å@14:58 T_2 16:02 T_3 ____

Heater W T_d = s

Results: Vinner=1762V, Vouter=2059V, Tau=5.4s

Remarks: Low pass filter :0.1Hz
MCO_VD_JT11B12B, MCI_VD_01B02B

CS Model Coil Experiment Log

Date 2000.5.19 Time 16:52 p. 109

Run No. 83 - 1
Procedure No. MC-E4-5
Operation Mode DC

Objective: AC loss measurement, Tau = 6 s

Coolant condition (before this run): ALL

Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.55 MPa		

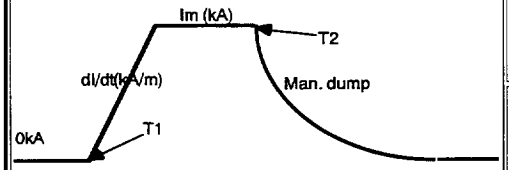
Facility condition

	Power Supply	Resistor
CSMC	50kA	106 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1s	5ms	1s	5ms	
Pre-trigger	60	5k	60	4k	

Current pattern: Manual dump



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:56 T_2 18:13 T_3 ____

Heater W T_d = s

Results
Vinner=2205V, Vouter=2579V, Tau=5.29s

Max. peak voltage was achieved

Remarks
Low pass filter :0.1Hz
MCO_VD_JT11B12B, MCI_VD_01B02B

CS Model Coil Experiment Log

Date 2000.5.23 Time 10:47 p. 110

Run No. 84 - 1
Procedure No. MC-F1-2
Operation Mode Pulse

Objective: Verification of the coil performance at Mode A. 5 kA initial check for sensors and balanced voltages.

Coolant condition (before this run): 1A

Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 12.3 g/s	~	g/s
Pressure	~ 0.52 MPa		

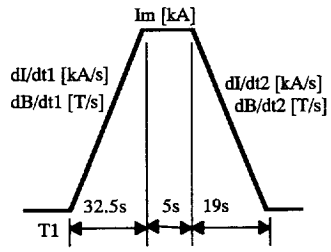
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 5 kA I_1 = kA
dI/dt_1 = 0.15 kA/m kA/s dB/dt_1 = 0.04 T/s
dI/dt_2 = -0.26 kA/m kA/s dB/dt_2 = -0.07 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:47 T_2 10:47 T_3 ____

Heater W T_d = s

Results
1A outlet temprature rise : 0.1 K
1A inlet pressure rise : 0.019 MPa
1A outlet mass flow change : 0.3 g/s
DAS trigger did not respond (i.e. no transient data).

Remarks
Hold duration = 5 s.
0.1 Hz extra filters have been removed for MCI_VD_JT01B02B and MCO_VD_JT11B12B.
Amplifier gains have been changed; x0.005 for MCI_VD_ALL and MCO_VD_ALL. Amplifier filter: OFF
Amplifier gains have been changed; x0.1 for each layer voltages (total 36 ch). Amplifier filter: OFF

CS Model Coil Experiment Log

Date 2000.5.23 Time 13:15 p. 111

Run No. 85 - 1

Procedure No. MC-F1-2

Operation Mode Pulse

Objective: Verification of the coil performance at Mode A. 5 kA check for sensors and balanced voltages.

Coolant condition (before this run)

1A			
Temperature	~ 4.45 K	~	K
Mass Flow Rate	~ 12 g/s	~	g/s
Pressure	~ 0.52 MPa		

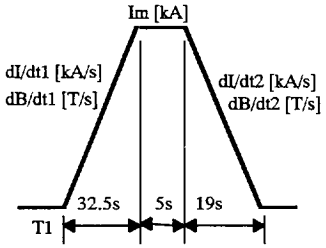
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 5 kA I_1 = kA

dI/dt_1 = 0.15 kA/m kA/s dB/dt_1 = 0.04 T/s

dI/dt_2 = -0.26 kA/m kA/s dB/dt_2 = -0.07 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:16 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 0.1 K
1A inlet pressure rise : 0.017 MPa
1A outlet mass flow change : 0.2 g/s

Remarks

Hold duration = 5 s.

CS Model Coil Experiment Log

Date 2000.5.23 Time 13:43 p. 112

Run No. 86 - 1

Procedure No. MC-F1-3

Operation Mode Pulse

Objective: Verification of the coil performance at Mode A. 5 kA check for sensors and balanced voltages.

Coolant condition (before this run)

1A			
Temperature	~ K	~	K
Mass Flow Rate	~ g/s	~	g/s
Pressure	~ MPa		

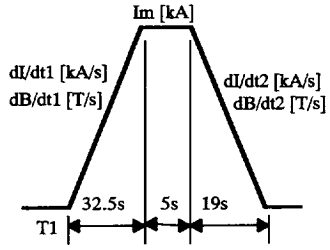
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 5 kA I_1 = kA

dI/dt_1 = 0.15 kA/m kA/s dB/dt_1 = 0.04 T/s

dI/dt_2 = -0.26 kA/m kA/s dB/dt_2 = -0.07 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:43 T_2 14:42 T_3 ____

Heater W T_d = s

Results

Current from JT60F went 'fast down,' but BDS-3 closed and 5-kA persistent current flowed.
Current went down by using 50-kA power supply.

1A outlet temprature rise : 0.058 K
1A inlet pressure rise : 0.0084 MPa
1A outlet mass flow change : 0.1 g/s

Remarks

In the test plan, this shot was 'fast down' with 5-s hold duration.

CS Model Coil Experiment Log

Date 2000.5.23 Time 15:25 p. 113

Run No. 87 - 1

Procedure No. MC-F1-4

Operation Mode Pulse

Objective: Verification of the coil performance at Mode A. 10 kA check for sensors and balanced voltages.

Coolant condition (before this run)

1A			
Temperature	~ 4.46 K	~	K
Mass Flow Rate	~ 12.1 g/s	~	g/s
Pressure	~ 0.53 MPa		

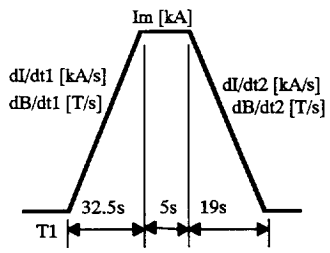
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 10 kA I_1 = kA

dI/dt_1 = 0.31 kA/m kA/s dB/dt_1 = 0.09 T/s

dI/dt_2 = 0.53 kA/m kA/s dB/dt_2 = -0.15 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:25 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 0.25 K
1A inlet pressure rise : 0.038 MPa
1A outlet mass flow change : 0.2 g/s

Remarks

500-Hz low pass filters were installed for all channels in the ADC64.

CS Model Coil Experiment Log

Date 2000.5.23 Time 16:07 p. 114

Run No. 88 - 1

Procedure No. MC-F1-5

Operation Mode Pulse

Objective: Verification of the coil performance at Mode A. 10 kA check for sensors and balanced voltages. tau ~ 10 s.

Coolant condition (before this run)

1A			
Temperature	~ 4.46 K	~	K
Mass Flow Rate	~ 12.1 g/s	~	g/s
Pressure	~ 0.53 MPa		

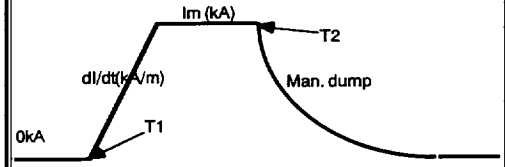
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA

dI/dt_1 = 0.31 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:08 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 0.23 K
1A inlet pressure rise : 0.0365 MPa
1A outlet mass flow change : 0.2 g/s
Vouter : 346 V
Vinner : 297 V
Tau : 9.3 s

Remarks

Hold duration = 5 s.

CS Model Coil Experiment Log

Date 2000.5.23 Time 16:46 p. 115

Run No. 89 - 1

Procedure No. MC-F1-7

Operation Mode Pulse

Objective: Verification of the coil performance at Mode A. 20 kA charge and AC loss measurement (Mode A).

Coolant condition (before this run)

	1A		
Temperature	~ 4.47 K	~	K
Mass Flow Rate	~ 12.1 g/s	~	g/s
Pressure	~ 0.54 MPa		

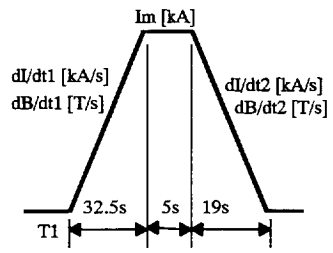
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 20 kA I_1 = kA

dI/dt_1 = 0.62 kA/m kA/s dB/dt_1 = 0.18 T/s

dI/dt_2 = -1.05 kA/m kA/s dB/dt_2 = 0.30 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:46 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 0.67 K
1A inlet pressure rise : 0.1 MPa
1A outlet mass flow change : 1.2 g/s

Remarks

CS Model Coil Experiment Log

Date 2000.5.23 Time 17:30 p. 116

Run No. 90 - 1

Procedure No. MC-F1-9

Operation Mode Pulse

Objective: Verification of the coil performance at Mode A. 30 kA charge and AC loss measurement (Mode A).

Coolant condition (before this run)

	1A		
Temperature	~ 4.47 K	~	K
Mass Flow Rate	~ 12.1 g/s	~	g/s
Pressure	~ 0.54 MPa		

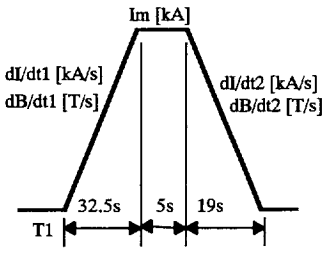
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 30 kA I_1 = kA

dI/dt_1 = 0.92 kA/m kA/s dB/dt_1 = 0.26 T/s

dI/dt_2 = -1.58 kA/m kA/s dB/dt_2 = -0.45 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:32 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 1.25 K
1A inlet pressure rise : 0.202 MPa
1A outlet mass flow change : 2.0 g/s

Remarks

CS Model Coil Experiment Log

Date 2000.5.23 Time 18:20 p. 117

Run No. 91 - 1

Procedure No. MC-F1-11

Operation Mode Pulse

Objective: Verification of the coil performance at Mode A. 40 kA charge and AC loss measurement (Mode A).

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

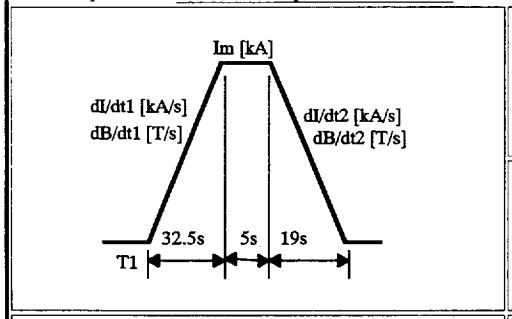
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 40 kA I_1 = kA

dI/dt_1 = 1.23 kA/m kA/s dB/dt_1 = 0.34 T/s

dI/dt_2 = -2.1 kA/m kA/s dB/dt_2 = -0.59 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 18:20 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 1.9 K
1A inlet pressure rise : 0.335 MPa

Remarks

CS Model Coil Experiment Log

Date 2000.5.23 Time 19:09 p. 118

Run No. 92 - 1

Procedure No. MC-F1-12

Operation Mode Pulse

Objective: Verification of the coil performance at Mode A. 43 kA charge and AC loss measurement (Mode A).

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

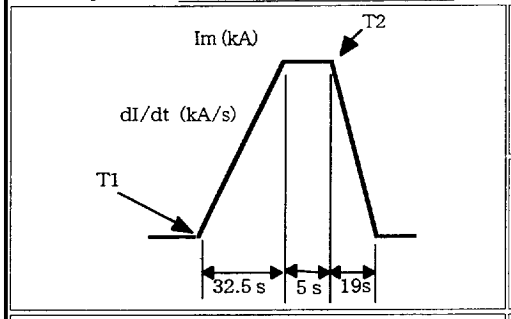
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 43 kA I_1 = kA

dI/dt_1 = 1.3 kA/m kA/s dB/dt_1 = 0.37 T/s

dI/dt_2 = -2.3 kA/m kA/s dB/dt_2 = -0.64 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 19:10 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 2.1 K
1A inlet pressure rise : 0.375 MPa

Remarks

CS Model Coil Experiment Log

Date 2000.5.23 Time 19:59 p. 119

Run No. 93 - 1
Procedure No. MC-F1-13
Operation Mode Pulse

Objective
Verification of the coil performance at Mode A.
Verify 0.4 T/s operation.
46 kA charge and AC loss measurement (Mode A).

Coolant condition (before this run)

	All			
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

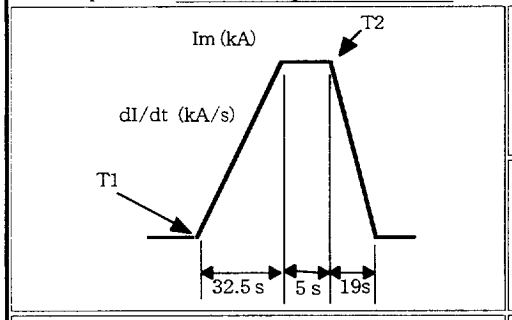
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = -2.4 kA/m kA/s dB/dt_2 = -0.68 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:59 T_2 ____ T_3 ____

Heater W T_d = s

Results
1A outlet temprature rise : 2.31 K
1A inlet pressure rise : 0.421 MPa

Remarks
0.4 T/s and -0.68 T/s operations were succeeded!!

CS Model Coil Experiment Log

Date 2000.5.24 Time 10:21 p. 120

Run No. 94 - 1
Procedure No. MC-F1-4
Operation Mode Pulse

Objective
Verification of the coil performance at Mode B.
10 kA initial check for sensors and balanced voltages.

Coolant condition (before this run)

	1A			
Temperature	~	4.43 K	~	K
Mass Flow Rate	~	12.3 g/s	~	g/s
Pressure	~	0.52 MPa		

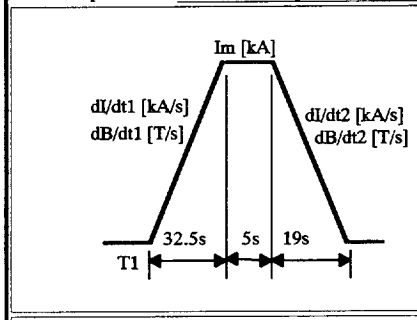
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 0.31 kA/m kA/s dB/dt_1 = 0.09 T/s
dI/dt_2 = -0.53 kA/m kA/s dB/dt_2 = -0.15 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:21 T_2 ____ T_3 ____

Heater W T_d = s

Results
1A outlet temprature rise : 0.25 K
1A inlet pressure rise : 0.039 MPa
Im (flat top) : 10 28 kA
Vinner : 150 V
Vouter : 185 V

Remarks
Amplifier gain has been changed; x1 for CSMC current lead voltages (FAC_VD_CLMP and FAC_VD_CLMN), x10 for JT60F power supply voltage (FAC_VD_JT60F).

CS Model Coil Experiment Log

Date 2000.5.24 Time 10:58 p. 121

Run No. 95 - 1
Procedure No. MC-F1-5
Operation Mode Pulse

Objective
Verification of the coil performance at Mode B.
10 kA manual dump (Mode B).

Coolant condition (before this run)

	1A		
Temperature	~ 4.43 K	~	K
Mass Flow Rate	~ 12.3 g/s	~	g/s
Pressure	~ 0.52 MPa		

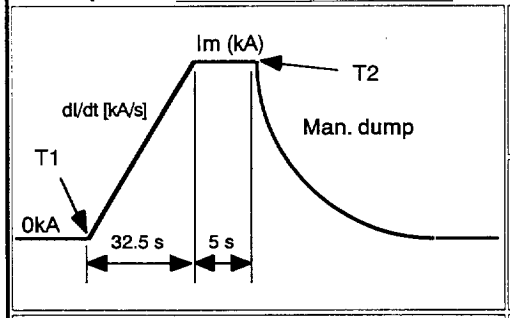
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 0.31 kA/m kA/s dB/dt_1 = 0.087 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:58 T_2 ____ T_3 ____

Heater W T_d = s

Results
1A outlet temprature rise : 0.23 K
1A inlet pressure rise : 0.0355 MPa
Vouter : 358 V
Vinner : 307.7 V
Tau : 9.35 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.24 Time 11:43 p. 122

Run No. 96 - 1
Procedure No. MC-F3-1
Operation Mode Pulse

Objective
Verification of the coil performance at Mode B.
37 kA manual dump (Mode B).

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

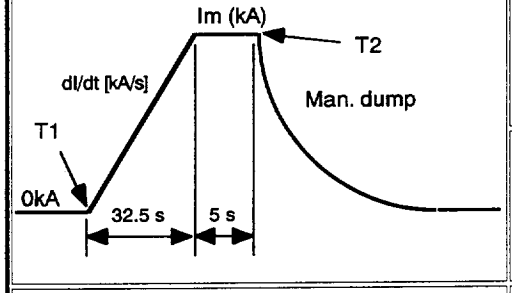
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 37 kA I_1 = kA
dI/dt_1 = 1.14 kA/m kA/s dB/dt_1 = 0.32 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:43 T_2 ____ T_3 ____

Heater W T_d = s

Results
1A outlet temprature rise : 1.54 K
1A inlet pressure rise : 0.259 MPa
Vouter : 1,305 V
Vinner : 1,120 V
Tau : 8.7 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.24 Time 13:40 p. 123

Run No. 97 – 1

Procedure No. MC-F3-2

Operation Mode Pulse

Objective: Verification of the coil performance at Mode B. 46 kA manual dump (Mode B). Verify -1.2 T/s operation.

Coolant condition (before this run): All

Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

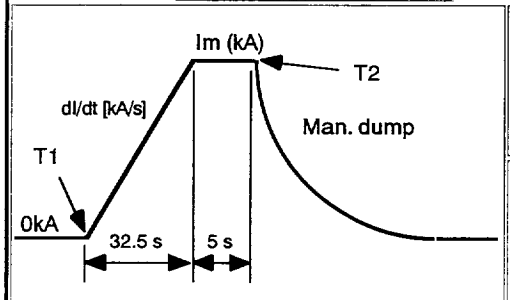
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = 1.42 kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:40 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 2.25 K
1A inlet pressure rise : 0.403 MPa
Vouter : 1,626 V
Vinner : 1,388 V
Tau : 8.5 s

Remarks

-1.2 T/s operation was succeeded without quench!!

CS Model Coil Experiment Log

Date 2000.5.24 Time 14:34 p. 124

Run No. 98 – 1

Procedure No. MC-F4-1

Operation Mode Pulse

Objective: Verification of the coil performance at Mode C. AC loss measurement.

Coolant condition (before this run): 1A

Temperature	~ 4.45 K	~	K	
Mass Flow Rate	~ 12.2 g/s	~	g/s	
Pressure	~ 0.52 MPa			

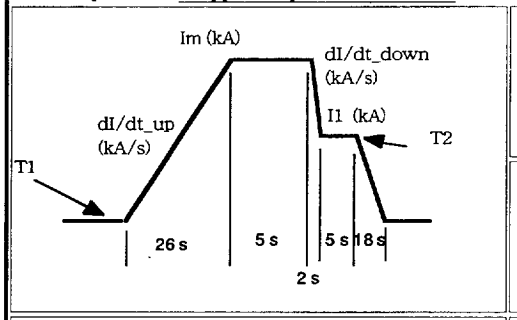
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Stepped Trapezoidal (Mode C)



CSMC I_m = 10 kA I_1 = 5 kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:40 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 0.25 K
1A inlet pressure rise : 0.039 MPa
Vouter : 600 V
Vinner : 500 V

Remarks

CS Model Coil Experiment Log

Date 2000.5.24 Time 15:21 p. 125

Run No. 99 - 1

Procedure No. MC-F4-2

Operation Mode Pulse

Objective: Verification of the coil performance at Mode C. AC loss measurement.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

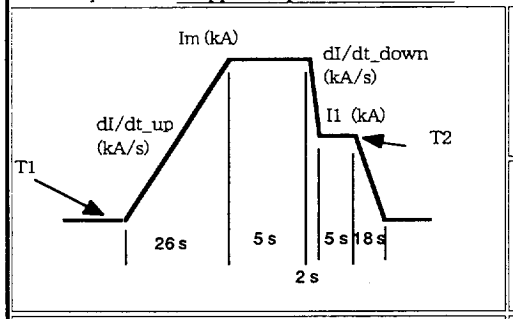
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Stepped Trapezoidal (Mode C)



CSMC I_m = 37 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:21 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 1.57 K
1A inlet pressure rise : 0.266 MPa
Vouter : 840 V
Vinner : 700 V

Remarks

CS Model Coil Experiment Log

Date 2000.5.24 Time 16:15 p. 126

Run No. 100 - 1

Procedure No. MC-F4-4

Operation Mode Pulse

Objective: Verification of the coil performance at Mode C. AC loss measurement.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

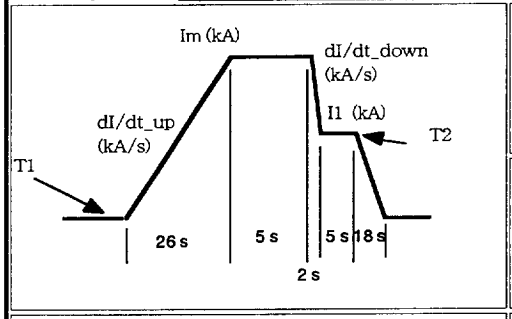
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Stepped Trapezoidal (Mode C)



CSMC I_m = 43 kA I_1 = 38 kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:15 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 2.00 K
1A inlet pressure rise : 0.356 MPa
Vouter : 690 V
Vinner : 820V

Remarks

CS Model Coil Experiment Log

Date 2000.5.24 Time 17:09 p. 127

Run No. 101 - 1
Procedure No. MC-F4-3
Operation Mode Pulse

Objective
Verification of the coil performance at Mode C. AC loss measurement.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

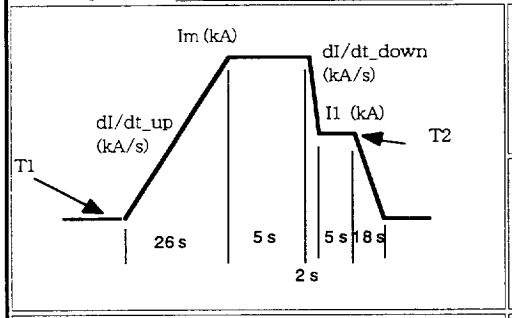
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Stepped Trapezoidal (Mode C)



CSMC I_m = 46 kA I_1 = 41 kA
dI/dt_1 = kA/m kA/s dB/dt_1 = 0.5 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:09 T_2 ____ T_3 ____

Heater W T_d = s

Results
1A outlet temprature rise : 2.25 K
1A inlet pressure rise : 0.409 MPa
Vouter : 820 V
Vinner : 680 V

Remarks

CS Model Coil Experiment Log

Date 2000.5.24 Time 18:03 p. 128

Run No. 102 - 1
Procedure No. MC-F5-1
Operation Mode Pulse

Objective
Verification of the coil performance at Mode E. AC loss measurement in bipolar trapezoidal field.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

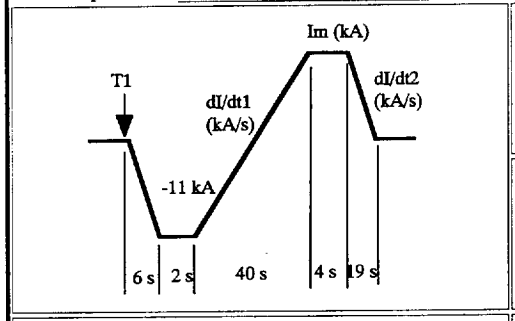
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Bipolar (Mode E)



CSMC I_m = 11 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:03 T_2 ____ T_3 ____

Heater W T_d = s

Results
1A outlet temprature rise : 0.68 K
1A inlet pressure rise : 0.115 MPa
Vouter : V
Vinner : V

Remarks

CS Model Coil Experiment Log

Date 2000.5.24 Time 18:50 p. 129

Run No. 103 - 1

Procedure No. MC-F5-2

Operation Mode Pulse

Objective: Verification of the coil performance at Mode E. AC loss measurement in bipolar trapezoidal field.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

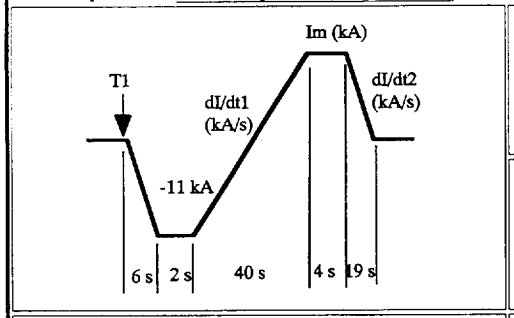
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Bipolar (Mode E)



CSMC I_m = 35 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 18:50 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 1.77 K
1A inlet pressure rise : 0.316 MPa
Vouter : V
Vinner : V

Remarks

CS Model Coil Experiment Log

Date 2000.5.25 Time ____ p. 130

Run No. 104 - 1

Procedure No. ____

Operation Mode No Current

Objective: 1st layer inlet temperature (MCI_TS_01I) goes up to 6 K.

Coolant condition (before this run): 1A

Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

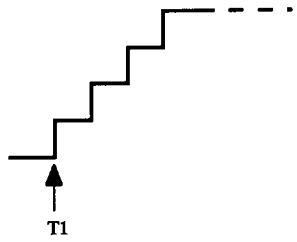
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater 324 W T_d = s

Results

MCI_HR_01AI1+MCI_HR_01AI2 : 324 W
MCI_TS_01AI : 5.99 K
MCI_TS_01AO : 5.85 K
MCI_TS_01BO : 5.84 K

Remarks

CS Model Coil Experiment Log

Date 2000.5.25 Time 10:24 p. 131

Run No. 105 - 1

Procedure No. MC-F1-5

Operation Mode Pulse

Objective: 10 kA initial check for sensors and balanced voltages.

Coolant condition (before this run)

1A			
Temperature	~ 5.99 K	~	K
Mass Flow Rate	~ g/s	~	g/s
Pressure	~ MPa		

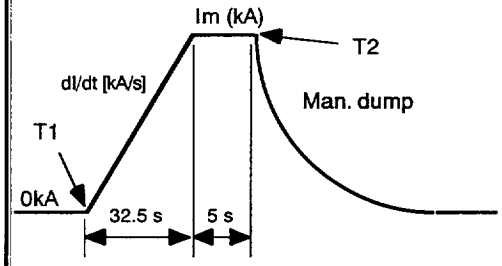
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:24 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 0.15 K
1A inlet pressure rise : 0.037 MPa
Vouter : 358 V
Vinner : 306 V
Tau : 9.3 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.25 Time 11:00 p. 132

Run No. 106 - 1

Procedure No. MC-G2-8

Operation Mode Pulse

Objective: CSMC 1st layer ramp rate limitation test at 6 K, up to 35 kA.

Coolant condition (before this run)

1A			
Temperature	~ K	~	K
Mass Flow Rate	~ g/s	~	g/s
Pressure	~ MPa		

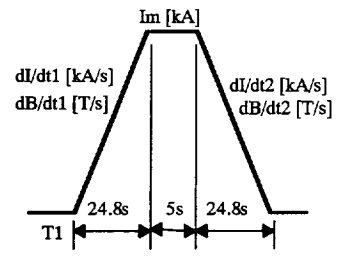
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 35 kA I_1 = kA

dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = -1.4 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:00 T_2 ____ T_3 ____

Heater W T_d = s

Results

No quench.
1A outlet temprature rise : 1.17 K
1A inlet pressure rise : 0.24 MPa
Vouter : 548 V
Vinner : 410 V

Remarks

CS Model Coil Experiment Log

Date 2000.5.25 Time 11:42 p. 133

Run No. 107 - 1

Procedure No. MC-G2-9

Operation Mode Pulse

Objective: CSMC 1st layer ramp rate limitation test at 6 K, up to 40 kA.

Coolant condition (before this run)

1A				
Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

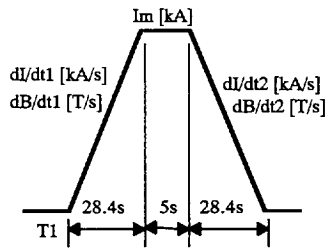
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 40 kA I_1 = kA

dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = -1.4 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:42 T_2 ____ T_3 ____

Heater W T_d = s

Results

No quench.
1A outlet temprature rise : 1.40 K
1A inlet pressure rise : 0.282 MPa
Vouter : 460 V
Vinner : 380 V

Remarks

CS Model Coil Experiment Log

Date 2000.5.25 Time 14:09 p. 134

Run No. 108 - 1

Procedure No. MC-G2-7

Operation Mode Pulse

Objective: CSMC 1st layer ramp rate limitation test at 6 K, up to 46 kA.

Coolant condition (before this run)

1A				
Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

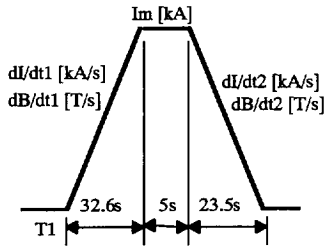
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = 2.0 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:09 T_2 ____ T_3 ____

Heater W T_d = s

Results

No quench.
1A outlet temprature rise : 1.88 K
1A inlet pressure rise : 0.37 MPa
Vouter : 640 V
Vinner : 546 V

Remarks

Before this run, noise filters for current lead voltages (FAC_VD_CLMP and FAC_VD_CLMN) had been removed.

CS Model Coil Experiment Log

Date 2000.5.25 Time _____ p. 135

Run No. 109 - 1

Procedure No. _____

Operation Mode No Current

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Objective

1st layer inlet temperature (MCI_TS_01I) goes up to 6.5 K.

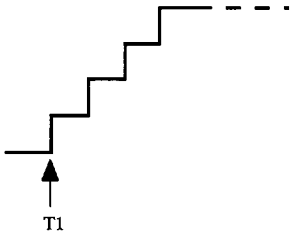
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater 465 W T_d = s

Results

MCI_HR_01AI1+MCI_HR_01AI2 : 465 W
MCI_TS_01AI : 6.52 K
MCI_TS_01AO : 6.34 K
MCI_TS_01BO : 6.31 K

Remarks

CS Model Coil Experiment Log

Date 2000.5.25 Time 15:44 p. 136

Run No. 110 - 1

Procedure No. MC-G18-1

Operation Mode Pulse

Coolant condition (before this run)

1A

Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

Objective

CSMC 1st layer ramp rate limitation test at 6.5 K, up to 35 kA.

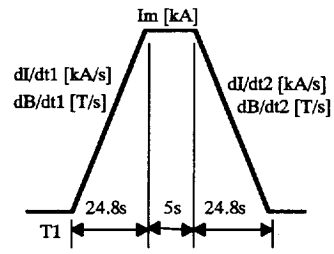
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 35 kA I_1 = kA

dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = -1.4 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 15:44 T_2 _____ T_3 _____

Heater W T_d = s

Results

No quench.
1A outlet temprature rise : 1.22 K
1A inlet pressure rise : 0.243 MPa
Vouter : 380 V
Vinner : 460 V

Remarks

CS Model Coil Experiment Log

Date 2000.5.25 Time 16:29 p. 137

Run No. 111 - 1
Procedure No. MC-G18-2
Operation Mode Pulse

Objective
CSMC 1st layer ramp rate limitation test at 6.5 K, up to 40 kA.

Coolant condition (before this run)

All				
Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

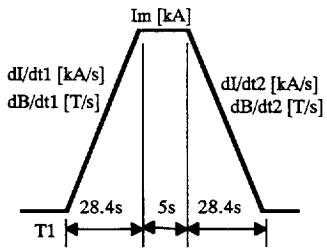
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = -1.4 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:29 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
1A outlet temprature rise : 1.44 K
1A inlet pressure rise : 0.282 MPa
Vouter : 460 V
Vinner : 380 V

Remarks

CS Model Coil Experiment Log

Date 2000.5.25 Time 17:14 p. 138

Run No. 112 - 1
Procedure No. MC-G18-3
Operation Mode Pulse

Objective
CSMC 1st layer ramp rate limitation test at 6.5 K, up to 46 kA.

Coolant condition (before this run)

1A&1B				
Temperature	~ 6.51 K	~	K	
Mass Flow Rate	~ 9.9 g/s	~	g/s	
Pressure	~ 0.64 MPa			

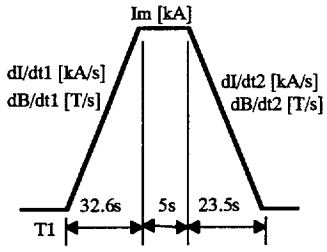
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = -2.0 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:14 T_2 ____ T_3 ____

Heater W T_d = s

Results
1B quenched at 45 kA.
1A outlet temperature rise : K
1B outlet temperature rise : K
1A inlet pressure rise : 0.725 MPa
1A outlet pressure rise : 1.174 MPa
Vouter : 1,612 V
Vinner : 1,362 V
Tau : 8.46 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.25 Time 19:17 p. 139

Run No. 113 - 1

Procedure No. MC-F1-13

Operation Mode Pulse

Objective: Confirm the coil performance after quench

Coolant condition (before this run): all

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

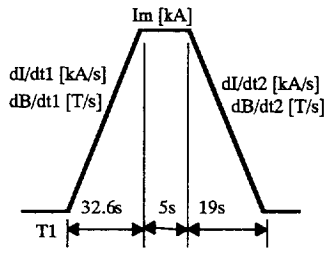
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = -2.4 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 19:17 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A outlet temprature rise : 1.95 K
1A inlet pressure rise : 0.357 MPa
Vouter : V
Vinner : V

Remarks

CS Model Coil Experiment Log

Date 2000.5.26 Time ____ p. 140

Run No. 114 - 1

Procedure No. ____

Operation Mode No Current

Objective: Increase inlet temperature of 1st and 2nd layer by resistive heaters (MCI_HR_01A1 and MCI_HR_01A2) up to 6.5 K.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

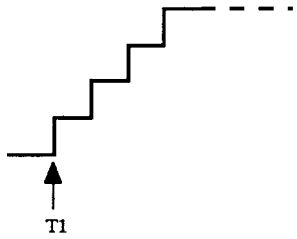
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater 235 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.26 Time 10:19 p. 141

Run No. 115 - 1

Procedure No. MC-F1-5

Operation Mode Pulse

Objective: Check of protection system by 10 kA manual dump.

Coolant condition (before this run)

1st				
Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

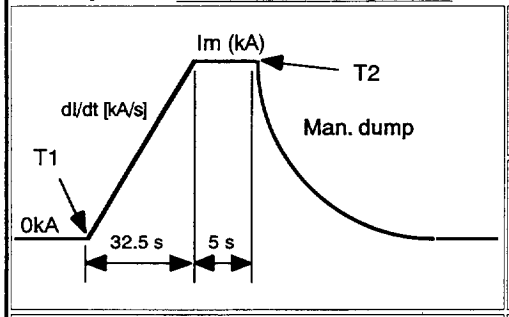
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:19 T_2 ____ T_3 ____

Heater W T_d = s

Results: NG. Fast down.

Remarks:

CS Model Coil Experiment Log

Date 2000.5.26 Time 10:58 p. 142

Run No. 116 - 1

Procedure No. MC-F1-5

Operation Mode Pulse

Objective: Check of protection system by 10 kA manual dump.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

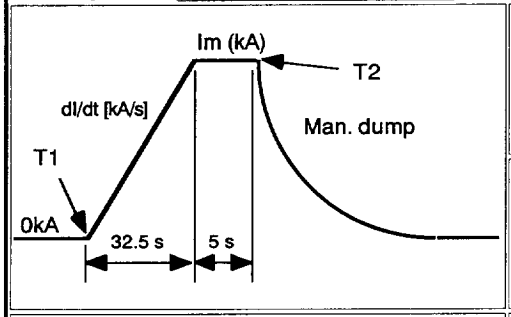
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = 0.6 T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:58 T_2 ____ T_3 ____

Heater W T_d = s

Results:
1A outlet temprature rise : K
1A inlet pressure rise : MPa
5A outlet temperature rise :
5B outlet temperature rise :
Vouter : V
Vinner : V
Tau : s

Remarks:

CS Model Coil Experiment Log

Date 2000.5.26 Time 11:38 p. 143

Run No. 117 - 1
Procedure No. MC-G18-4
Operation Mode Pulse

Objective
CSMC 1st layer ramp rate limitation test at 6.5 K and 0.6 T/s up to 40 kA.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

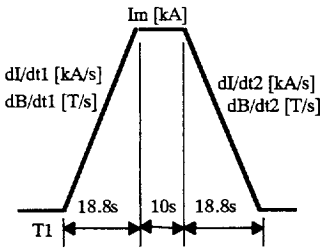
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = 2.4 kA/m kA/s dB/dt_1 = 0.6 T/s
dI/dt_2 = -2.4 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:38 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
1A outlet temprature rise : 1.92 K
1A inlet pressure rise : 0.36 MPa
Vouter : 760 V
Vinner : 590 V

Remarks

CS Model Coil Experiment Log

Date 2000.5.26 Time 13:13 p. 144

Run No. 118 - 1
Procedure No. MC-G18-5
Operation Mode Pulse

Objective
CSMC 1st layer ramp rate limitation test at 6.5 K and 0.6 T/s up to 40 kA.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

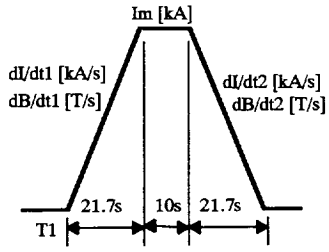
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 2.4 kA/m kA/s dB/dt_1 = 0.6 T/s
dI/dt_2 = -2.4 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:13 T_2 ____ T_3 ____

Heater W T_d = s

Results
1B quenched at 41.3 kA. After 1B quench, 1A also quenched.
Imax = 44.9 kA
1B outlet temperature rise : 32 K
1A inlet pressure rise : 1.055 MPa
1A outlet maximum pressure : 2.2 MPa
1A outlet pressure rise : 1.557 MPa
Vouter : 1,572.2 V
Vinner : 1,333.5 V
Tau : 8.56 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.26 Time 15:10 p. 145

Run No. 119 - 1

Procedure No.

Operation Mode No Current

Objective: Increase inlet temperature of 5th layer up to 9 K by resistive heater (MCO_HR_05AI1 and MCO_HR_05AI2).

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

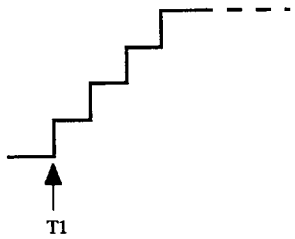
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS): CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:10 T_2 ____ T_3 ____

Heater 430 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.26 Time 16:58 p. 146

Run No. 120 - 1

Procedure No. MC-G19-1

Operation Mode Pulse

Objective: CSMC 5th layer ramp rate limitation test at 9.0 K and 0.6 T/s up to 35 kA.

Coolant condition (before this run): 5A6B

Temperature	~	9.0 K	~	K
Mass Flow Rate	~	6.1 g/s	~	g/s
Pressure	~	MPa		

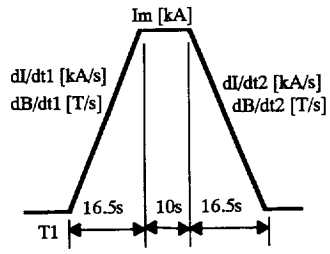
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS): CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 35 kA I_1 = kA

dI/dt_1 = 2.4 kA/m kA/s dB/dt_1 = 0.6 T/s

dI/dt_2 = -2.4 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:58 T_2 ____ T_3 ____

Heater W T_d = s

Results

Quench at 34.8 kA
Balanced voltage VB0506
5A outlet temprature rise : 0.82 K
5A inlet pressure rise : 0.253 MPa
Vouter : 1236 V
Vinner : 1056 V
Tau : 8.75 s

Remarks

Quench from the joint JB05A06B?

CS Model Coil Experiment Log

Date 2000.5.26 Time _____ p. 147

Run No. 121 - 1

Procedure No. _____

Operation Mode No Current

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Objective

Increase inlet temperature of 5th layer up to 9 K by resistive heater (MCO_HR_05AI1 and MCO_HR_05AI2).

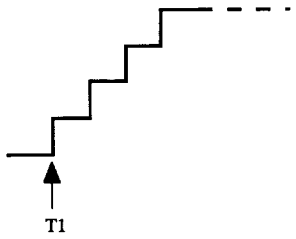
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.26 Time 18:51 p. 148

Run No. 122 - 1

Procedure No. MC-G19-3

Operation Mode Pulse

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Objective

CSMC 5th layer ramp rate limitation test at 9.0 K and 0.6 T/s up to 46 kA.

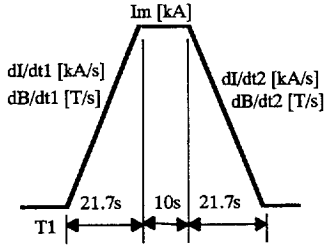
Facility condition

	Power Supply	Resistor
CSMC	JT60F	63 m-ohm
CSIC		

Data Acquisition System (DAS) CSMC-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = 2.4 kA/m kA/s dB/dt_1 = 0.6 T/s

dI/dt_2 = -2.4 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 18:51 T_2 _____ T_3 _____

Heater W T_d = s

Results

Quench at 38.4 kA
5A outlet temprature rise : 6.34 K
5A inlet pressure rise : 0.582 MPa
Vouter : 1464 V
Vinner : 1245 V
Tau : 8.48 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 10:00 p. 149

Run No. 123 - 1
Procedure No. CI-A1
Operation Mode DC

Objective: Calibration and adjustment of sensors and data acquisition systems.

Coolant condition (before this run)

Insert			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10.8 g/s	~	g/s
Pressure	~ 0.55 MPa		

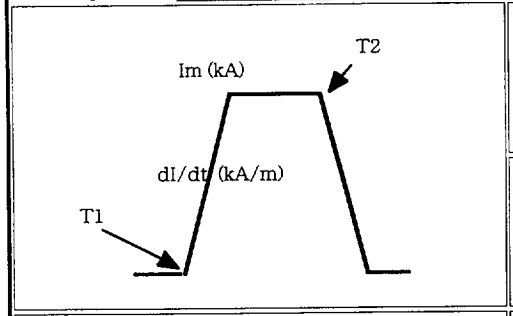
Facility condition

	Power Supply	Resistor
CSMC	60kA	0.72 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Trapezoidal



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:00 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 10:37 p. 150

Run No. 124 - 1
Procedure No. CI-A2
Operation Mode DC

Objective: 5 kA manual dump. Check for protection system.

Coolant condition (before this run)

Insert			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10.8 g/s	~	g/s
Pressure	~ 0.55 MPa		

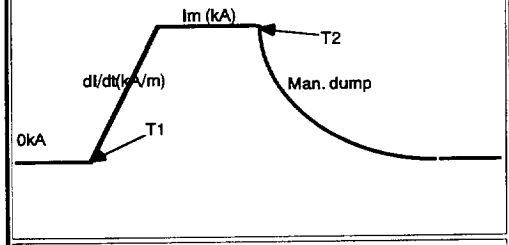
Facility condition

	Power Supply	Resistor
CSMC	60kA	0.72 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Manual dump



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:37 T_2 ____ T_3 ____

Heater W T_d = s

Results
V = 2.52 V
Tau = 1.1 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 11:08 p. 151

Run No. 125 - 1
Procedure No. CI-A2
Operation Mode DC

Objective: Check for protection system.

Coolant condition (before this run)

Insert			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ g/s	~	g/s
Pressure	~ 0.55 MPa		

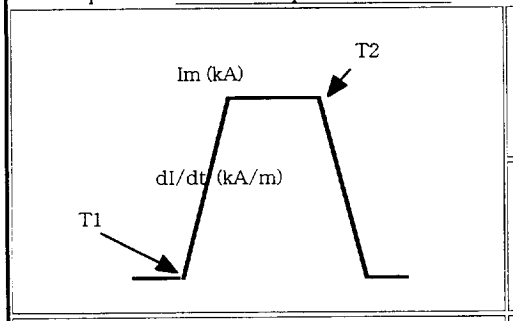
Facility condition

	Power Supply	Resistor
CSMC	60kA	0.72 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Trapezoidal



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:08 T_2 ____ T_3 ____

Heater W T_d = s

Results
BH_01 = 0.17 T
ICS_VD_JT = 4.3 n-ohm
ICS_VD_JB = 2.2 n-ohm

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 11:32 p. 152

Run No. 126 - 1
Procedure No. CI-A2
Operation Mode DC

Objective: Check for protection system.

Coolant condition (before this run)

Insert			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ g/s	~	g/s
Pressure	~ 0.55 MPa		

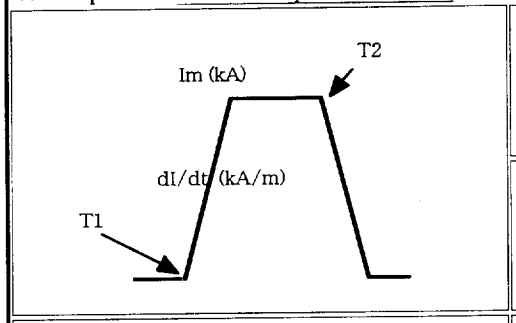
Facility condition

	Power Supply	Resistor
CSMC	60kA	0.72 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Trapezoidal



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:32 T_2 ____ T_3 ____

Heater W T_d = s

Results
BH_01 = 0.17 T
ICS_VD_JT = 4.4 n-ohm
ICS_VD_JB = 2.6 n-ohm

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 13:10 p. 153

Run No. 127 - 1

Procedure No. CI-A4m

Operation Mode DC

Objective: Measurement of basic coil performance and joint resistance.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

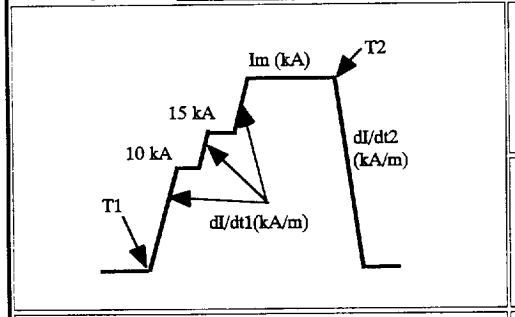
Facility condition

	Power Supply	Resistor
CSMC	60kA	0.72 m-ohm
CSIC		

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern: Stepped Trapezoidal



CSMC I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = -5 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:10 T_2 ____ T_3 ____

Heater W T_d = s

Results

at 20 kA,
BH_01 = 0.33 T
ICS_VD_JT = 4.4 n-ohm
ICS_VD_JB = 2.5 n-ohm

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 13:55 p. 154

Run No. 128 - 1

Procedure No. CI-A9

Operation Mode DC

Objective: 20 kA manual dump. Check for protection system and AC loss measurement. Tau ~ 1 s.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

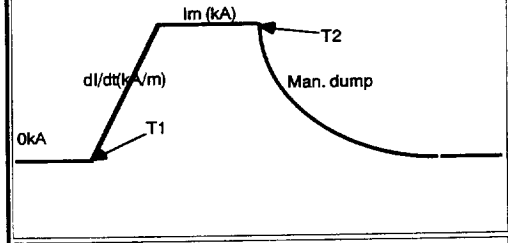
Facility condition

	Power Supply	Resistor
CSMC	60kA	0.72 m-ohm
CSIC		

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern: Manual dump



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:55 T_2 ____ T_3 ____

Heater W T_d = s

Results

V = 12.8 V
Tau = 1.0 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 14:51 p. 155

Run No. 129 - 1

Procedure No. CI-A6m

Operation Mode DC

Objective: Measurement of basic coil performance and joint resistance.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

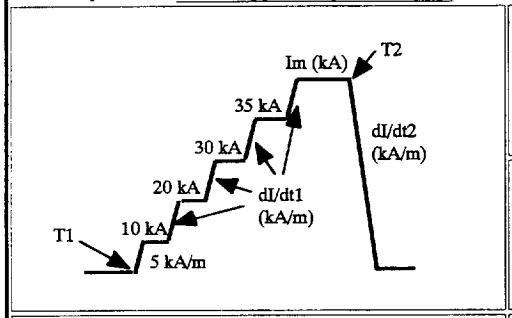
Facility condition

	Power Supply	Resistor
CSMC		
CSIC	60 kA	0.72 m-ohm

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Stepped Trapezoidal



CSMC I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = -5 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:51 T_2 ____ T_3 ____

Heater W T_d = s

Results

at 40 kA,
BH_01 = 0.66 T
ICS_VD_JT = 4.3 n-ohm
ICS_VD_JB = 2.4 n-ohm
SCB_VD_JIP = 1.0 n-ohm
FAC_VD_JIP = 0.9 n-ohm
FAC_VD_JIN = 6.1 n-ohm

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 16:05 p. 156

Run No. 130 - 1

Procedure No. CI-A8

Operation Mode DC

Objective: 40 kA Manual Dump. AC loss measurement. Tau ~ 1 s.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

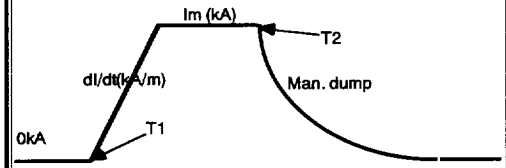
Facility condition

	Power Supply	Resistor
CSMC	60kA	0.72 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Manual dump



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:05 T_2 ____ T_3 ____

Heater W T_d = s

Results

V = 31 V
Tau = 0.91 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 17:06 p. 157

Run No. 131 - 1
Procedure No. CI-A8
Operation Mode DC

Objective: Confirmation of the circuit breaker NB2-2.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

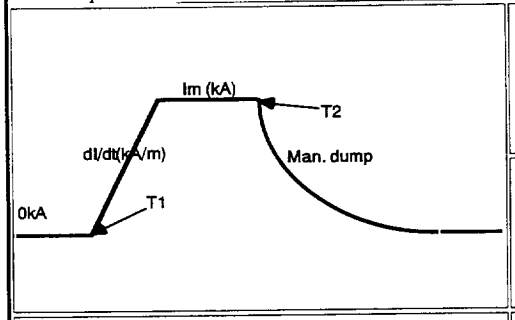
Facility condition

	Power Supply	Resistor
CSMC	60kA	0.72 m-ohm
CSIC		

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern: Manual dump



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:06 T_2 ____ T_3 ____

Heater W T_d = s

Results
V = 34 V
Tau = 0.93 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.30 Time 17:34 p. 158

Run No. 132 - 1
Procedure No. CI-A12
Operation Mode DC

Objective: Adjustment of quench detection system.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

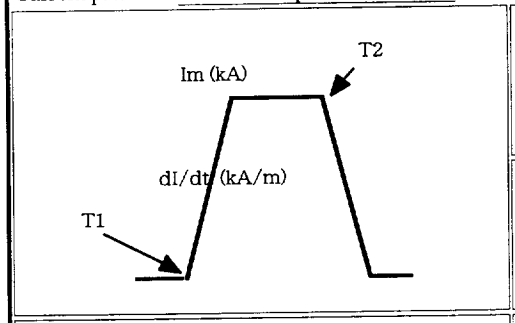
Facility condition

	Power Supply	Resistor
CSMC	60kA	0.72 m-ohm
CSIC		

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	2 ms	1 s	2 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern: Trapezoidal



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 50 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:34 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks
Unable to adjust the QDs because of short ramp up (or down) time.

CS Model Coil Experiment Log

Date 2000.5.31 Time 10:19 p. 159

Run No. 133 - 1

Procedure No. CI-B3-1

Operation Mode DC

Objective

Check the sensors and the protection system.
Charge up CSMC to 9.2 kA for background field.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

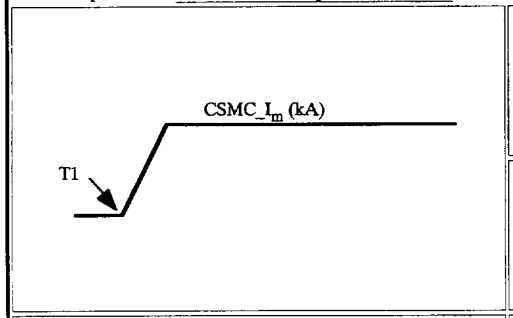
Facility condition

	Power Supply	Resistor
CSMC	50kA	
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern Back up field



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:19 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.31 Time 10:37 p. 160

Run No. 133 - 2

Procedure No. CI-B3-1

Operation Mode DC

Objective

Check the sensors and the protection system at 9.2 kA in CSMC.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

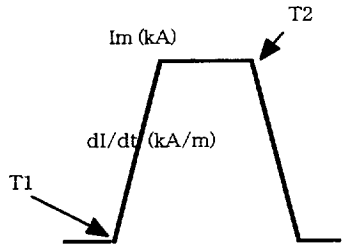
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:37 T_2 10:57 T_3 ____

Heater W T_d = s

Results

Remarks

CSMC current is remaining 9.2 kA.
High frequency cut noize filters were ON for the insert coil voltages (ICS_VD_ALL, ICS_VD_0102 ~ ICS_VD_1617, ICS_VD_JT, and ICS_VD_JB).

CS Model Coil Experiment Log

Date 2000.5.31 Time 11:11 p. 161

Run No. 133 - 3

Procedure No. CI-B3-2

Operation Mode DC

Objective: Check the sensors and the protection system at 9.2 kA in CSMC.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

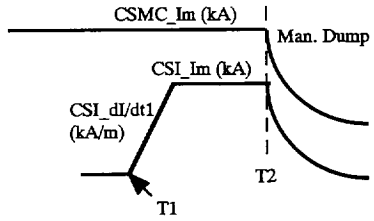
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:11 T_2 11:21 T_3 ____

Heater W T_d = s

Results

V_outer = 171 V
V_inner = 123 V
Tau_CSMC = 19.7 s
V_insert = 11.5 V
Tau_insert = 21.6 s

Remarks

CS Model Coil Experiment Log

Date 2000.5.31 Time 13:14 p. 162

Run No. 134 - 1

Procedure No. CI-B6

Operation Mode DC

Objective: Charge CSMC up to 9.2 kA for background field.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

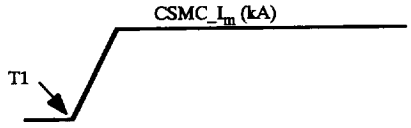
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	0.72 m-ohm

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern: Back up field



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:14 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.5.31 Time 13:35 p. 163

Run No. 134 - 2
Procedure No. CI-B6
Operation Mode DC

Objective: Charge CSIC up to 30 kA in 9.2-kA CSMC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

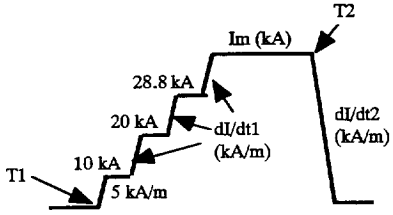
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	0.72 m-ohm

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern: Stepped Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s
dI/dt_2 = -5 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:35 T_2 14:26 T_3 ____

Heater W T_d = s

Results
at 30 kA in CSI (and 9.2 kA in CSMC),
BH_01 = 2.9 T
ICS_VD_JT = 4.4 n-ohm
ICS_VD_JB = 2.5 n-ohm
SCB_VD_JIP = 1.0 n-ohm

Remarks
Charge had been stopped at 28.8 kA because temperature (high pot.) had increased.
CSMC current is remaining 9.2 kA.

CS Model Coil Experiment Log

Date 2000.5.31 Time 14:46 p. 164

Run No. 135 - 1
Procedure No. CI-B7
Operation Mode DC

Objective: Charge CSMC up to 23 kA (50 %) for background field.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

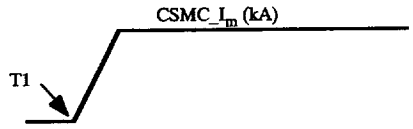
Facility condition

	Power Supply	Resistor
CSMC	50kA	
CSIC	60 kA	

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern: Back up field



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:46 T_2 ____ T_3 ____

Heater W T_d = s

Results
at 23 kA in CSMC (and 0 kA in CSI),
BH_01 = 6.07 T

Remarks
CSMC was charged up from 9.2 kA.

CS Model Coil Experiment Log

Date 2000.5.31 Time 15:11 p. 165

Run No. 135 - 2
Procedure No. CI-B7-1
Operation Mode DC

Objective
Charge CSIC up to 20 kA in 23-kA CSMC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

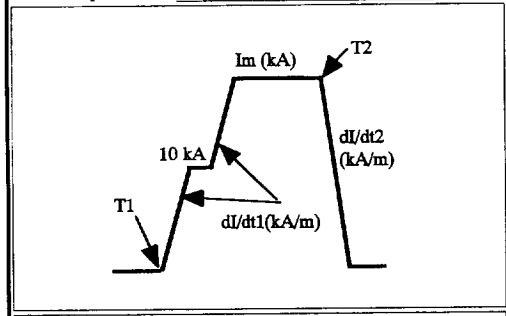
Facility condition

	Power Supply	Resistor
CSMC	50kA	
CSIC	60 kA	

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern Stepped Trapezoidal



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = -5 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:11 T_2 15:33 T_3 ____

Heater W T_d = s

Results
at 20 kA in CSI (and 23 kA in CSMC),
BH_01 = T
ICS_VD_JT = n-ohm
ICS_VD_JB = n-ohm
SCB_VD_JIP = n-ohm

Remarks
CSMC current was remaining 23 kA.

CS Model Coil Experiment Log

Date 2000.5.31 Time 15:45 p. 166

Run No. 135 - 3
Procedure No. CI-B7-2
Operation Mode DC

Objective
Manual dump simultaneously.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

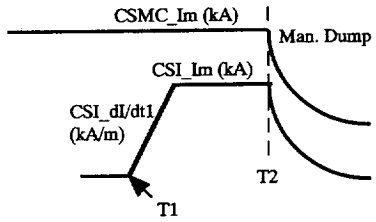
Facility condition

	Power Supply	Resistor
CSMC	50kA	
CSIC	60 kA	

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern Manual dump



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:45 T_2 ____ T_3 ____

Heater W T_d = s

Results
V_outer = 409 V
V_inner = 318 V
Tau_CSMC = 19.0 s
V_insert = 24.5 V, 13.0 V
Tau_insert = 19.2 s

Remarks
NB1 (CSMC circuit breaker) did not worked as usual.

CS Model Coil Experiment Log

Date 2000.6.1 Time 9:43 p. 167

Run No. 136 - 1

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

All

Temperature ~ 4.5 K ~ K

Mass Flow Rate ~ 10 g/s ~ g/s

Pressure ~ 0.6 MPa

Objective

Heater test for Tcs measurement.

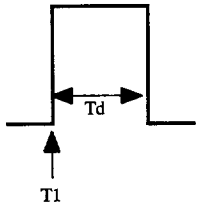
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:43 T_2 ____ T_3 ____

Heater 50 W T_d = 480 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.1 Time 10:41 p. 168

Run No. 137 - 1

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

All

Temperature ~ 4.5 K ~ K

Mass Flow Rate ~ 10 g/s ~ g/s

Pressure ~ 0.6 MPa

Objective

Heat slug test on CSIC.

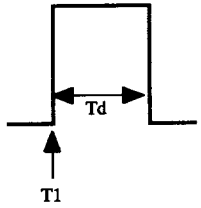
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:41 T_2 ____ T_3 ____

Heater 50 W T_d = 180 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.1 Time 13:08 p. 169

Run No. 138 - 1

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

All

Temperature ~ 4.5 K ~ K

Mass Flow Rate ~ 10 g/s ~ g/s

Pressure ~ 0.6 MPa

Objective

Heat slug test on CSIC.

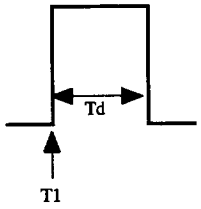
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:08 T_2 ____ T_3 ____

Heater 30 W T_d = 180 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.1 Time 13:26 p. 170

Run No. 138 - 2

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

All

Temperature ~ 4.5 K ~ K

Mass Flow Rate ~ 10 g/s ~ g/s

Pressure ~ 0.6 MPa

Objective

Heat slug test on CSIC.

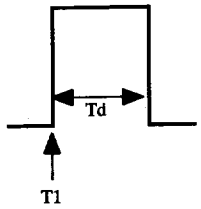
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:26 T_2 ____ T_3 ____

Heater 50 W T_d = 180 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.1 Time 13:45 p. 171

Run No. 138 - 3

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Objective

Heat slug test on CSIC.

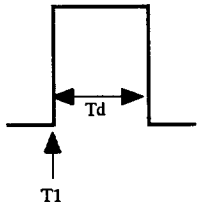
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:45 T_2 ____ T_3 ____

Heater 100 W T_d = 180 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.1 Time ____ p. 172

Run No. 139 - 1

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Objective

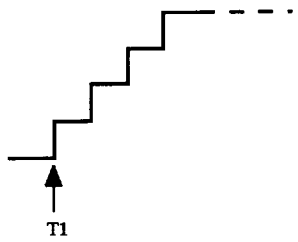
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater 412 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.1 Time 16:50 p. 173

Run No. 139 - 2

Procedure No.

Operation Mode No Current

Objective

Coolant condition (before this run)

All

Temperature ~ 4.5 K ~ K

Mass Flow Rate ~ 10 g/s ~ g/s

Pressure ~ 0.6 MPa

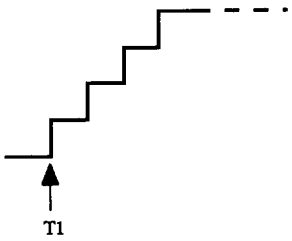
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:50 T_2 ____ T_3 ____

Heater 518 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.2 Time 9:22 p. 174

Run No. 140 - 1

Procedure No.

Operation Mode No Current

Objective

Heat slug test at 10 g/s/ch.

Coolant condition (before this run)

All

Temperature ~ 4.5 K ~ K

Mass Flow Rate ~ 10 g/s ~ g/s

Pressure ~ 0.6 MPa

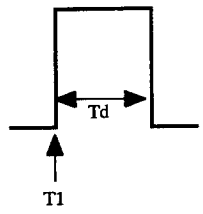
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:22 T_2 ____ T_3 ____

Heater 350 W T_d = 10 s

Results

ICS_HR_IN : 470 W - 10.6 s
Pin = 0.507 MPa
Pout = 0.459 MPa
TC_01 = 4.43 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.2 Time 10:06 p. 175

Run No. 140 - 2

Procedure No.

Operation Mode No Current

Objective: Heat slug test at 10 g/s/ch.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

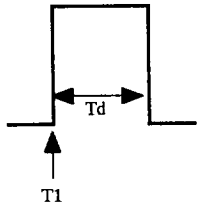
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:06 T_2 ____ T_3 ____

Heater 300 W T_d = 20 s

Results: Average input: 338 W (Peak 368 W) - 20.3 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.2 Time 10:52 p. 176

Run No. 140 - 3

Procedure No.

Operation Mode No Current

Objective: Heat slug test at 10 g/s/ch.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

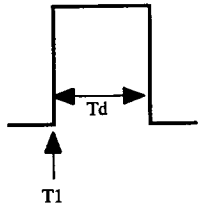
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:52 T_2 ____ T_3 ____

Heater 150 W T_d = 40 s

Results: 165 W - 40.6 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.2 Time 11:37 p. 177

Run No. 140 - 4

Procedure No.

Operation Mode No Current

Objective: Heat slug test at 10 g/s/ch.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

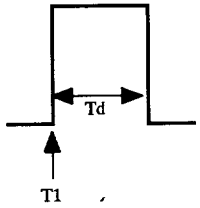
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern: Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:37 T_2 ____ T_3 ____

Heater 100 W T_d = 60 s

Results: 89.2 W - 60.4 s

Remarks:

CS Model Coil Experiment Log

Date 2000.6.2 Time 13:10 p. 178

Run No. 141 - 1

Procedure No.

Operation Mode No Current

Objective: Energize heater ICS_HR_IN up to 18.5 K for Tcs measurement.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

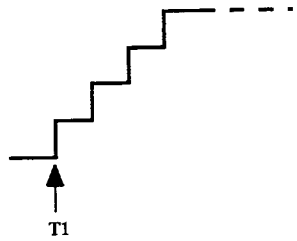
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:10 T_2 ____ T_3 ____

Heater 300 W T_d = s

Results:
ICS_HR_IN : 298 W
ICS_TC_01 : 19.65 K
Mass Flow Rate = 2.5 g/s

Remarks:

CS Model Coil Experiment Log

Date 2000.6.2 Time 16:15 p. 179

Run No. 142 - 1

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

All

Temperature ~ 4.5 K ~ K

Mass Flow Rate ~ 10 g/s ~ g/s

Pressure ~ 0.6 MPa

Objective

Heat slug test at 15 g/s.

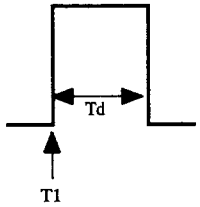
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:15 T_2 ____ T_3 ____

Heater 100 W T_d = 20 s

Results

Mass flow rate = 14.5 g/s
96.4 W - 20.2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.2 Time 16:51 p. 180

Run No. 142 - 2

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

All

Temperature ~ 4.5 K ~ K

Mass Flow Rate ~ 10 g/s ~ g/s

Pressure ~ 0.6 MPa

Objective

Heat slug test at 7 g/s.

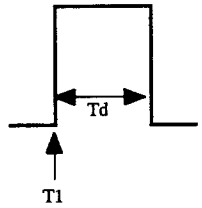
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms			
Pre-trigger	300	300			

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:51 T_2 ____ T_3 ____

Heater 100 W T_d = 10 s

Results

peak: 103 W
average: 99.2 W
10.5 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.5 Time 10:01 p. 181

Run No. 143 - 1
Procedure No. CI-B3
Operation Mode DC

Objective
Check protection system. Charge CSIC up to 9.2 kA for background field.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

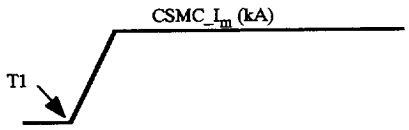
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	5 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern Back up field



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:01 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.5 Time 10:19 p. 182

Run No. 143 - 2
Procedure No. CI-B3-1
Operation Mode DC

Objective
Check protection system. Charge CSIC up to 5 kA in 9.2-kA CSMC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

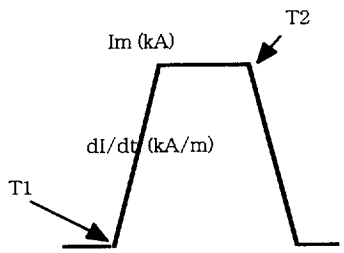
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:19 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.5 Time 10:30 p. 183

Run No. 143 - 3
Procedure No. CI-B3-2
Operation Mode DC

Objective: Check protection system. Manual dump simultaneously.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

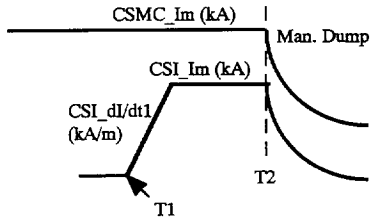
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:30 T_2 10:38 T_3 ____

Heater W T_d = s

Results
Vouter = 169.4 V
Vinner = 124.4 V
Tau_CSMC = 19.7 s
Vinsert = -12.75 V, -4.6 V
Tau_CSI = 19.32 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.5 Time 11:00 p. 184

Run No. 144 - 1
Procedure No. CI-B7
Operation Mode DC

Objective: Charge CSMC up to 23 kA for background field.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

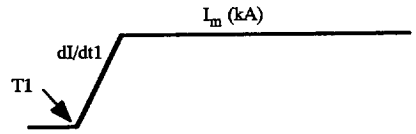
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern Ramp up



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:00 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.5 Time 11:42 p. 185

Run No. 144 - 2

Procedure No. CI-B7-2

Operation Mode DC

Objective: Manual dump CSIC from 20 kA in 23-kA CSMC.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

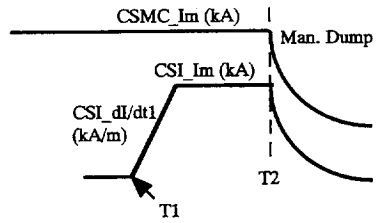
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern: Manual dump



CSMC I_m = 23 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:42 T_2 12:13 T_3 ____

Heater W T_d = s

Results

Vouter = 406 V
Vinner = 321 V
Tau_CSMC = 19.0 s
Vinsert = -30.3 V, -13.6 V
Tau_CSI = 18.7 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.5 Time 13:16 p. 186

Run No. 145 - 1

Procedure No. ____

Operation Mode DC

Objective: Charge CSMC up to 36.8 kA for background field.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

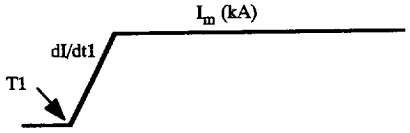
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	1 k	60	1 k	

Current pattern: Ramp up



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:16 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.5 Time 14:03 p. 187

Run No. 145 - 2

Procedure No. CI-B9-1

Operation Mode DC

Objective: Charge CSIC up to 40 kA (100 %) in 36.8-kA CSMC.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

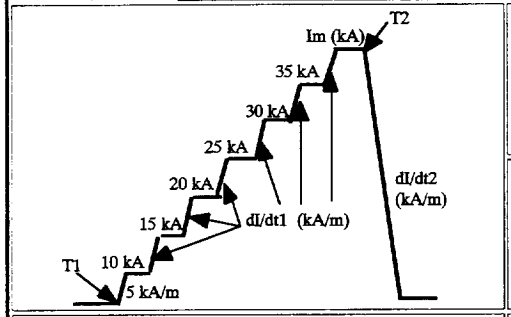
Facility condition

	Power Supply	Resistor
CSMC	50kA	
CSIC	60 kA	

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Stepped Trapezoidal



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = -5 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:03 T_2 15:12 T_3 ____

Heater W T_d = s

Results: Succeeded.

Remarks:

CS Model Coil Experiment Log

Date 2000.6.5 Time 15:30 p. 188

Run No. 145 - 3

Procedure No. CI-B9-2

Operation Mode DC

Objective: Charge CSIC up to 40 kA (100 %) in 36.8-kA CSMC.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

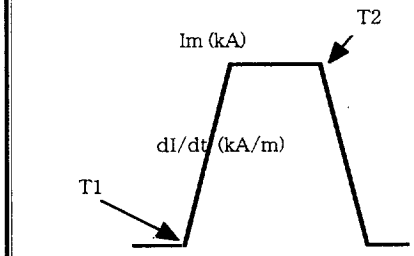
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = -5 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:30 T_2 15:43 T_3 ____

Heater W T_d = s

Results: Succeeded.

Remarks:

CS Model Coil Experiment Log

Date 2000.6.5 Time 16:08 p. 189

Run No. 146 - 1

Procedure No.

Operation Mode DC

Objective: Charge CSMC up to 44.5 kA for background field.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

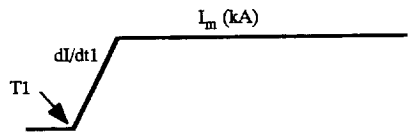
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:08 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks: ICS_VB_ALL (insert coil balanced voltage) and ICS_IC_CT2 (insert coil current) had been added to ADC32; 10 Hz sampling, 600 pretrigger, and 100 Hz filter.

CS Model Coil Experiment Log

Date 2000.6.5 Time 16:26 p. 190

Run No. 146 - 2

Procedure No. CI-B4-1

Operation Mode DC

Objective: 100 % charge of the CS insert coil (CSIC). Charge CSIC up to 40 kA (100 %) in 44.5-kA CSMC. CSIC operation under 13 T.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

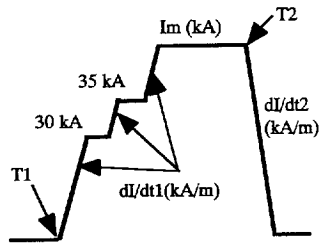
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Stepped Trapezoidal



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = -5 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:26 T_2 ____ T_3 ____

Heater W T_d = s

Results: Succeeded!!

Remarks

CS Model Coil Experiment Log

Date 2000.6.5 Time 17:24 p. 191

Run No. 146 - 3

Procedure No. CI-B4-2

Operation Mode DC

Objective: 100 % charge of the CS insert coil (CSIC). Charge CSIC up to 40 kA (100 %) in 44.5-kA CSMC. CSIC operation under 13 T.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

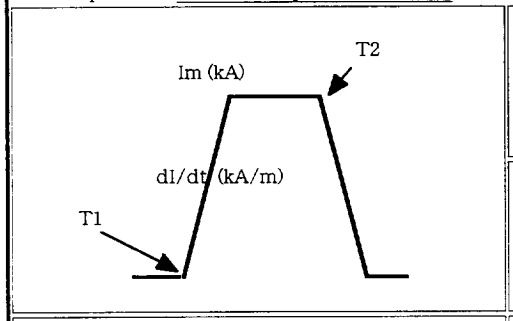
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = -5 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:24 T_2 ____ T_3 ____

Heater W T_d = s

Results: Succeeded!!

Remarks

CS Model Coil Experiment Log

Date 2000.6.5 Time 18:18 p. 192

Run No. 146 - 4

Procedure No. ____

Operation Mode DC

Objective: Discharge CSMC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

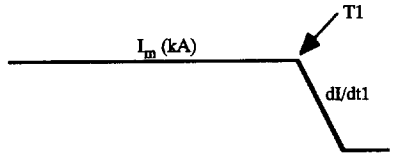
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 18:18 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.6 Time 13:24 p. 193

Run No. 147 - 1
Procedure No. CI-A1M
Operation Mode DC

Objective: Check for sensors, balanced voltages, and protection system.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

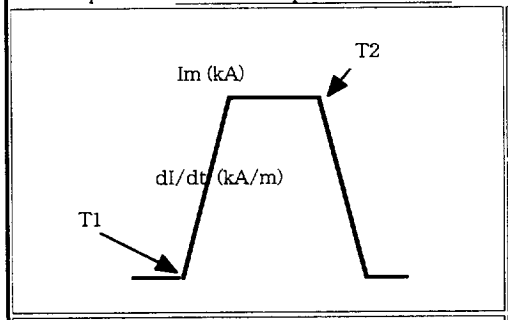
Facility condition

	Power Supply	Resistor
CSMC		
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	5 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = -5 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:24 T_2 ____ T_3 ____

Heater W T_d = s

Results
Voltage ICS_VD_0708 had gone out of range during sweep.

Remarks
500 Hz low pass filters had been inserted in MCI_VB_01B02B, MCI_VB_01A02A, STR_BH_***, FAC_IC_CT1, and FAC_IC_CT2. 100 Hz low pass filters had been inserted for other signals in ADC64.

10 Hz low pass filters had turned on for CS insert voltages (ICS_VD_***).

CS Model Coil Experiment Log

Date 2000.6.6 Time 13:49 p. 194

Run No. 147 - 2
Procedure No. CI-A1M2
Operation Mode DC

Objective: Re-check for sensors, balanced voltages, and protection system.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

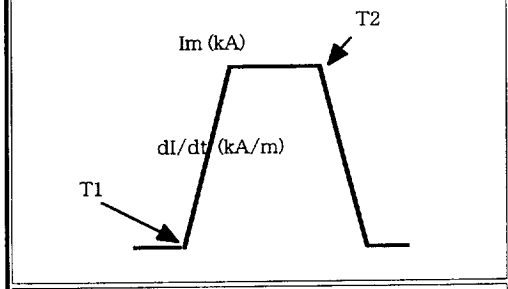
Facility condition

	Power Supply	Resistor
CSMC		
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 0.5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:49 T_2 ____ T_3 ____

Heater W T_d = s

Results
Voltage ICS_VD_0708 had confirmed.

Remarks

CS Model Coil Experiment Log

Date 2000.6.6 Time 14:20 p. 195

Run No. 148 - 1

Procedure No.

Operation Mode DC

Objective: Charge CSMC up to 9.2 kA for background field.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

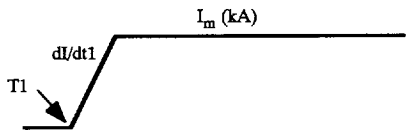
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:20 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.6 Time 14:46 p. 196

Run No. 148 - 2

Procedure No. CI-B3-2

Operation Mode DC

Objective: Check for sensors, balanced voltages, and protection system.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

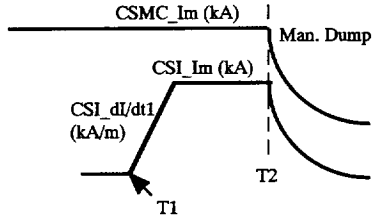
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:46 T_2 14:56 T_3 ____

Heater W T_d = s

Results

Vouter = 169.0 V
Vinner = 124.8 V
Tau_CSMC = 19.6 s
Vinsert = -12.2 V, 5.2 V
Tau_CSI = 19.32 s

Remarks

Some incident had occured in the DAS from 14:59:47 to 15:04:05.

CS Model Coil Experiment Log

Date 2000.6.6 Time 15:48 p. 197

Run No. 149 - 1
Procedure No. CI-C1
Operation Mode DC

Objective: 40 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 44.5 kA for background field.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

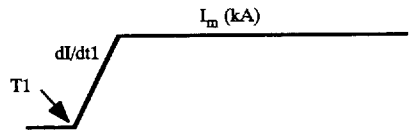
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:48 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.6 Time 16:57 p. 198

Run No. 149 - 2
Procedure No. CI-C1-1
Operation Mode DC

Objective: 40 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 40 kA under 12.5 T.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

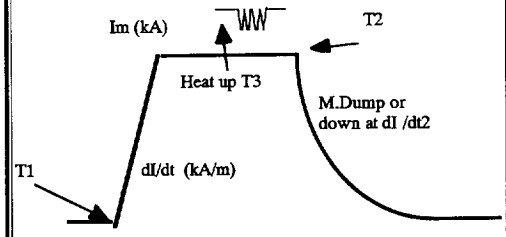
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:57 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.6 Time 17:31 p. 199

Run No. 149 - 3
Procedure No. CI-C1-1a
Operation Mode DC

Objective
40 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energize heater ICS_HR_IN.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

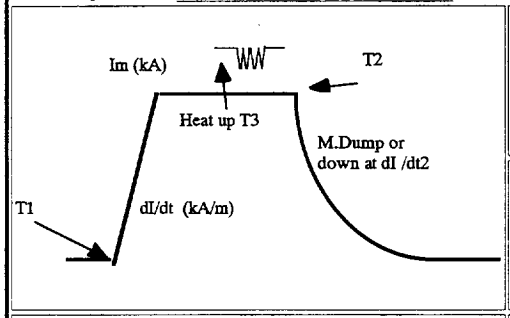
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = -50 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 19:08 T_3 17:31

Heater W T_d = s

Results
No quench in CSI. Fast down safely.
Temperature corresponds to 0.1 micro-V/cm was approx. 7.5 K (ICS_TC_04H and 05H).

Remarks
TC_04H and 05H are CGRs. Influence of magnetic field should be considered. It is not taken into account for '7.5 K.'

CS Model Coil Experiment Log

Date 2000.6.6 Time 19:29 p. 200

Run No. 149 - 4
Procedure No.
Operation Mode DC

Objective
Discharge CSMC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

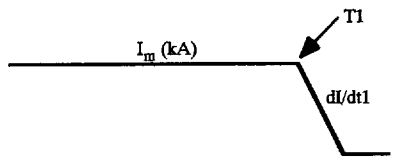
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:29 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.6 Time _____ p. 201

Run No. 150 - 1

Procedure No. _____

Operation Mode No Current

Objective: DAS Maintainance.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: No current

CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater W T_d = s

Results: Maintainance of hard disk was completed.

Remarks:

CS Model Coil Experiment Log

Date 2000.6.7 Time 9:44 p. 202

Run No. 151 - 1

Procedure No. CI-B3

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

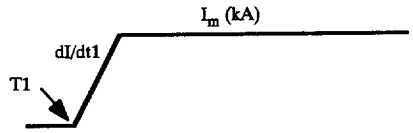
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 9:44 T_2 _____ T_3 _____

Heater W T_d = s

Results:

Remarks: 1 Hz low pass filter was inserted to ICS_VB_ALL2 (ADC64).

CS Model Coil Experiment Log

Date 2000.6.7 Time 10:01 p. 203

Run No. 151 - 2

Procedure No. CI-B3

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

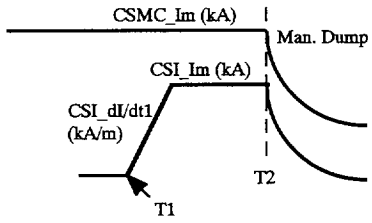
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 10:01 T_2 10:09 T_3 _____

Heater W T_d = s

Results

Vouter = 169 V
Vinner = 125 V
Tau_CSMC = 19.6 s
Vinsert = 12.3 V, 5.2 V
Tau_CSI = 18.9 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.7 Time 10:42 p. 204

Run No. 152 - 1

Procedure No. MC-B6

Operation Mode DC

Objective: CSMC AC loss measurement at 80 % (36.8 kA). Tau ~ 20 s.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

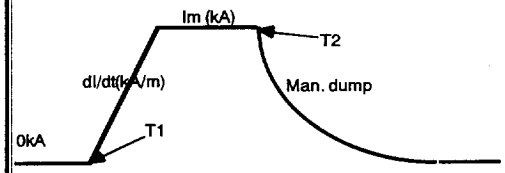
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 10:42 T_2 11:54 T_3 _____

Heater W T_d = s

Results

Vouter = 624 V
Vinner = 526 V
Tau_CSMC = 18.0 s
1A inlet pressure rise = 0.099 MPa
1A outlet temperature rise = 0.61 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.7 Time 13:15 p. 205

Run No. 153 - 1
Procedure No. CI-C1-6
Operation Mode DC

Objective
30 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 45.3 kA.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

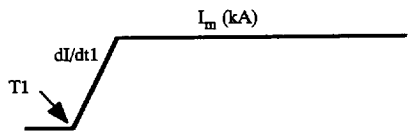
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:15 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.7 Time 14:24 p. 206

Run No. 153 - 2
Procedure No. CI-C1-6
Operation Mode Pulse

Objective
30 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 30 kA.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

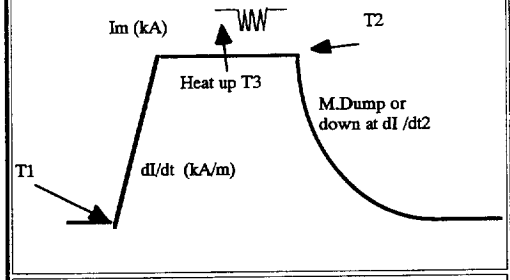
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:24 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.7 Time _____ p. 207

Run No. 153 – 3
Procedure No. CI-C1-6
Operation Mode DC

Objective
30 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energize heater ICS_HR_IN.

Coolant condition (before this run)

CSI			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 11.3 g/s	~	g/s
Pressure	~ 0.55 MPa		

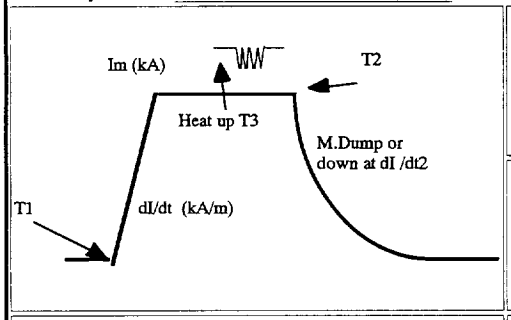
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = -50 kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 16:55 T_3 15:03

Heater W T_d = s

Results
No quench in CSI. Fast down safely.
Temperature corresponds to 0.1 micro-V/cm was approx. 8.0 K (ICS_TC_04H and 05H).

Remarks
TC_04H and 05H are CGRs. Influence of magnetic field should be considered. It is not taken into account for '7.5 K.'

CS Model Coil Experiment Log

Date 2000.6.7 Time 17:50 p. 208

Run No. 154 – 1
Procedure No. _____
Operation Mode DC

Objective
Temperature calibration for ICS_TC_04H and ICS_TC_05H at ~8 K.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

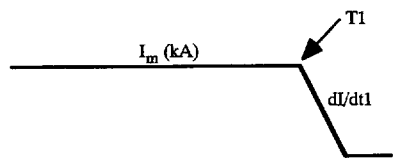
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 17:50 T_2 _____ T_3 _____

Heater W T_d = s

Results
Energize ICS_HR_IN up to 240 W at 16:55.

Remarks

CS Model Coil Experiment Log

Date 2000.6.8 Time 9:38 p. 209

Run No. 155 - 1

Procedure No. CI-B3

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

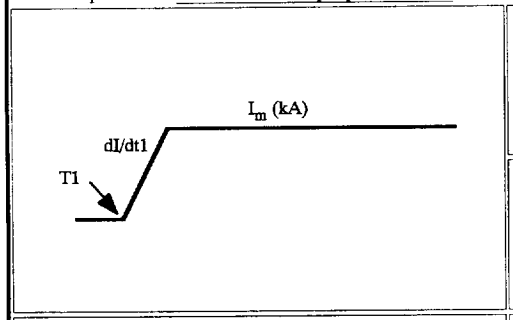
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:38 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.8 Time 9:56 p. 210

Run No. 155 - 2

Procedure No. CI-B3

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

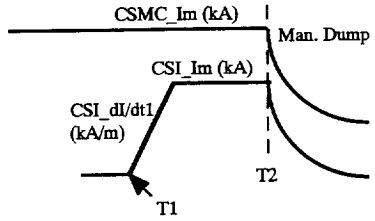
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:56 T_2 10:04 T_3 ____

Heater W T_d = s

Results

Vouter = 169 V
Vinner = 125 V
Tau_CSMC = 19.7 s
Vinsert = 12.3 V, 5.2 V
Tau_CSI = 18.8 s
1A inlet pressure rise = 0.013 MPa
1A outlet temperature rise = 0.07 K
CSI outlet temperatrure rise = 0.04 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.8 Time 10:33 p. 211

Run No. 156 - 1

Procedure No.

Operation Mode No Current

Objective: Heat CSIC up to ~8 K. Energize ICS_HR_IN.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

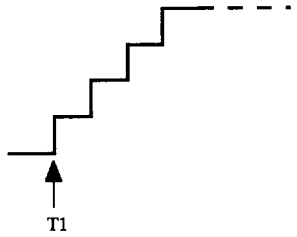
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS): CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:33 T_2 ____ T_3 ____

Heater 222 W T_d = s

Results

ICS_HR_IN : 222 W
CS_TC_01 : 7.96 K
ICS_TC_04H : 7.64 K
ICS_TC_05H : 7.67 K
ICS_TC_02 : 7.31 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.8 Time 13:10 p. 212

Run No. 157 - 1

Procedure No. CI-C1-6

Operation Mode DC

Objective: 20 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 45.8 kA.

Coolant condition (before this run): CSI

Temperature	~	7.96 K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

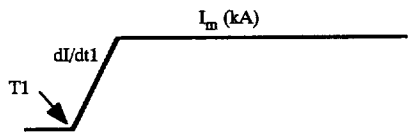
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 45.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:10 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.8 Time 14:26 p. 213

Run No. 157 - 2

Procedure No. CI-C1-6

Operation Mode DC

Objective: 20 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 20 kA.

Coolant condition (before this run)

CSI				
Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

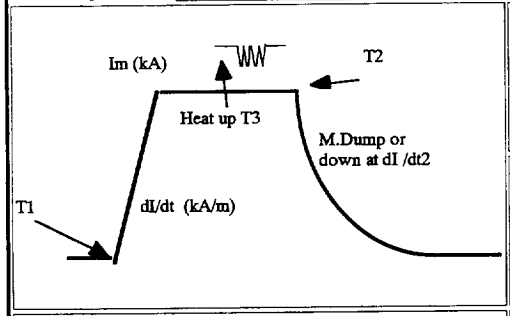
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 45.8 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:26 T_2 ____ T_3 ____

Heater W T_d = s

Results

CSI dI/dt was 5 kA/m between 0 and 15 kA, and 1 kA/m between 15 kA and 20 kA.

Remarks

CS Model Coil Experiment Log

Date 2000.6.8 Time ____ p. 214

Run No. 157 - 3

Procedure No. CI-C1-6

Operation Mode DC

Objective: 20 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energize heater ICS_HR_IN.

Coolant condition (before this run)

CSI				
Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

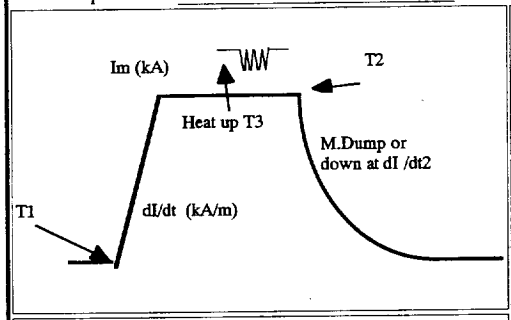
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 45.8 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 16:18 T_3 14:48

Heater W T_d = s

Results

No quench in CSI. Fast down safely.
CSMC current remained 45.8 kA.
Temperature corresponds to 0.1 micro-V/cm was approx. 8.71 K (ICS_TC_04H and 05H).

Remarks

Calibrated temperature is 8.94 K.

CS Model Coil Experiment Log

Date 2000.6.8 Time 16:36 p. 215

Run No. 158 - 1
Procedure No. CI-D2
Operation Mode DC

Objective
CSIC Ic measurement at 8.9 K - 13 T.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

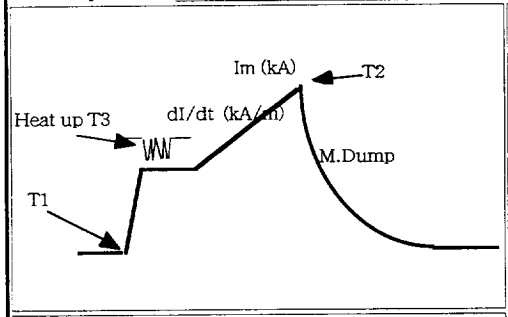
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ic



CSMC I_m = 45.8 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA
dI/dt_1 = 2 kA/m kA/s
dI/dt_2 = 0.2 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:36 T_2 ____ T_3 no heater

Heater W T_d = s

Results
No quench in CSI. Fast down safely.
CSMC current remained 45.8 kA.
Current corresponds to 0.1 micro-V/cm was approx.
18.95 kA at 8.81 K (9.04 K in correlated value).

Remarks

CS Model Coil Experiment Log

Date 2000.6.8 Time 17:47 p. 216

Run No. 158 - 2
Procedure No. CI-D2
Operation Mode DC

Objective
Discharge CSMC.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

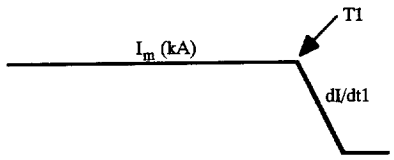
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 45.8 kA I_1 = kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:47 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.9 Time 9:56 p. 217

Run No. 159 - 1

Procedure No. CI-B3

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

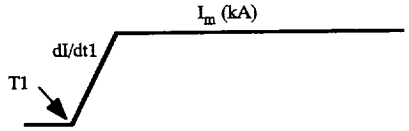
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:56 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.9 Time 10:14 p. 218

Run No. 159 - 2

Procedure No. CI-B3

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

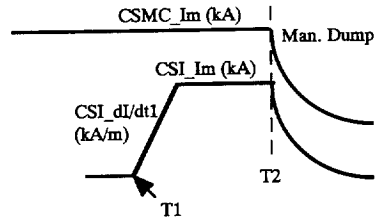
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:14 T_2 10:20 T_3 ____

Heater W T_d = s

Results

Vouter = 169.2 V
Vinner = 125.1 V
Tau_CSMC = 19.6 s
Vinsert = 12.2 V, 5.2 V
Tau_CSI = 19.4 s
1A inlet pressure rise = 0.013 MPa
1A outlet temperature rise = 0.07 K
CSI outlet temperatrure rise = 0.03 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.9 Time 10:40 p. 219

Run No. 160 - 1

Procedure No.

Operation Mode No Current

Objective: Heat CSIC up to ~8.5 K. Energize ICS_HR_IN.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

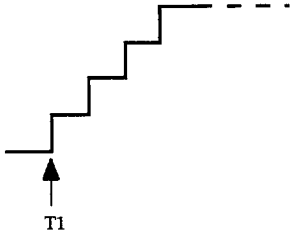
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS): CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:40 T_2 ____ T_3 ____

Heater 270 W T_d = s

Results: 270 W, 8.57 K (ICS_TC_04H)

Remarks:

CS Model Coil Experiment Log

Date 2000.6.9 Time 13:14 p. 220

Run No. 161 - 1

Procedure No. CI-C1-4

Operation Mode DC

Objective: 10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 46 kA.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

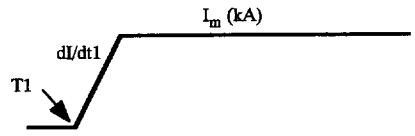
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:14 T_2 ____ T_3 ____

Heater W T_d = s

Results:

Remarks: 18th 100 % charge.

CS Model Coil Experiment Log

Date 2000.6.9 Time 14:32 p. 221

Run No. 161 – 2
Procedure No. CI-C1-4
Operation Mode DC

Objective
10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 10 kA.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

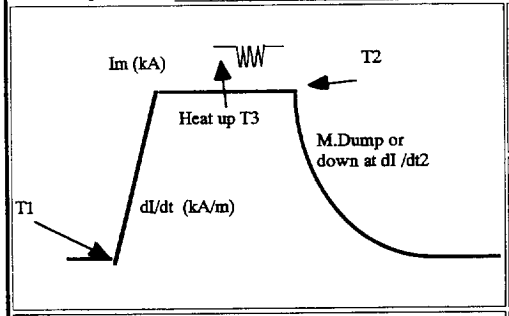
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:32 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.9 Time ____ p. 222

Run No. 161 – 3
Procedure No. CI-C1-4
Operation Mode DC

Objective
10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energize heater ICS_HR_IN.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

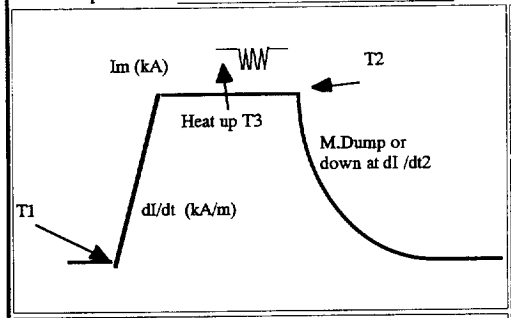
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = -50 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 14:58 T_3 ____

Heater W T_d = s

Results
Inlet flow choking occurred, CSI current down. No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.9 Time 15:21 p. 223

Run No. 161 - 4

Procedure No. CI-C1-4

Operation Mode DC

Objective: Retry 10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 10 kA.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

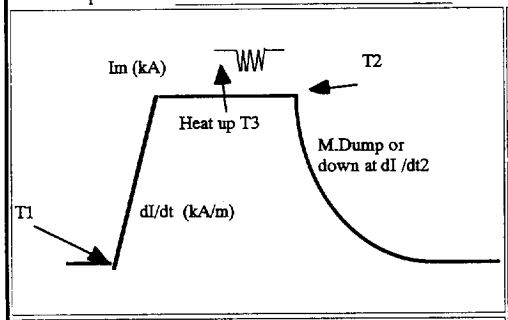
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:21 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.9 Time 15:41 p. 224

Run No. 161 - 5

Procedure No. CI-C1-4

Operation Mode DC

Objective: Retry 10 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energize heater ICS_HR_IN.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

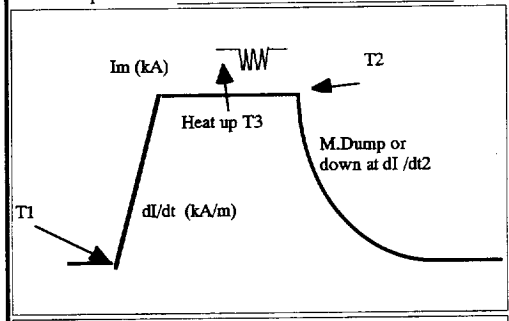
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 17:13 T_3 15:41

Heater W T_d = s

Results

No quench in CSI. Fast down safely.
CSMC current remained 46 kA.
Temperature corresponds to 0.1 micro-V/cm was approx. 9.49 K (ICS_TC_04H and 05H). Calibrated value is 9.72 K.

Remarks

CS Model Coil Experiment Log

Date 2000.6.9 Time _____ p. 225

Run No. 161 - 6
Procedure No. CI-C1-4
Operation Mode DC

Objective
CSMC is remaining 46 kA - 13 T - 640 MJ. Watch coolant condition.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern No current

CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.9 Time 17:31 p. 226

Run No. 162 - 1
Procedure No. CI-D3
Operation Mode DC

Objective
CSIC Ic measurement at 9.5 K - 13 T.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

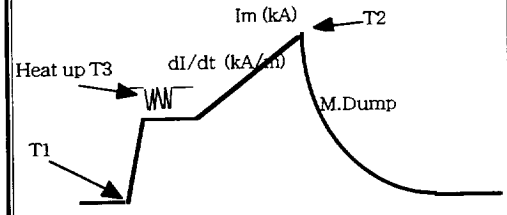
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ic



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 17:31 T_2 18:21 T_3 No

Heater W T_d = s

Results
No quench in CSI. Fast down safely.
CSMC current remained 46 kA.
Current corresponds to 0.1 micro-V/cm was approx. 9.0 kA at 9.83K (calibrated value).

Remarks

CS Model Coil Experiment Log

Date 2000.6.9 Time 18:23 p. 227

Run No. 162 - 2
Procedure No. CI-D3
Operation Mode DC

Objective: Discharge CSMC

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

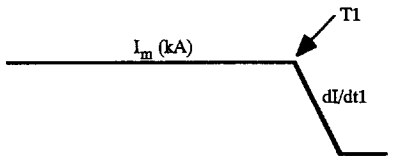
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	50 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60		

Current pattern: Ramp down



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:23 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.12 Time 9:45 p. 228

Run No. 163 - 1
Procedure No. CI-B3-2
Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.

Coolant condition (before this run): all

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

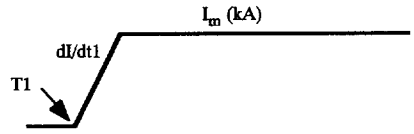
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:45 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.12 Time 10:02 p. 229

Run No. 163 - 2
Procedure No. CI-B3-2
Operation Mode DC

Objective
Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.

Coolant condition (before this run)
all

Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

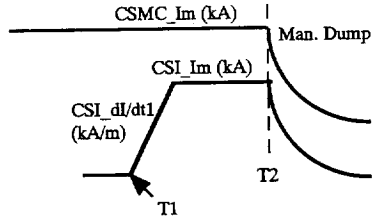
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:02 T_2 10:10 T_3 ____

Heater W T_d = s

Results
Vouter = 168 V
Vinner = 124 V
Tau_CSMC = 19.8 s
Vinsert = 12.3 V, 5.2 V
Tau_CSI = 18.8 s
1A inlet pressure rise = 0.013 MPa
1A outlet temperature rise = 0.07 K
CSI outlet tempera trure rise = 0.03 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.12 Time ____ p. 230

Run No. 164 - 1
Procedure No. CI-C5
Operation Mode DC

Objective
1 kA - 0 T Tcs measurement for the CS insert coil (CSIC). Energize heater ICS_HR_IN.

Coolant condition (before this run)
all

Temperature	~ K	~	K	
Mass Flow Rate	~ g/s	~	g/s	
Pressure	~ 0.6 MPa			

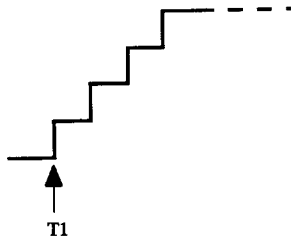
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results
13:00
ICS_HR_IN 415 W
ICS_TC_04H 13.47 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.12 Time 13:11 p. 231

Run No. 164 - 2
Procedure No. CI-C5
Operation Mode DC

Objective
1 kA - 0 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 1 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

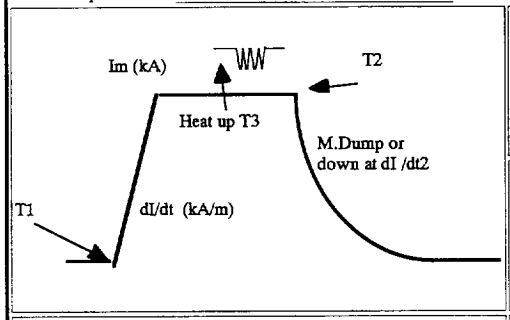
Facility condition

	Power Supply	Resistor
CSMC		
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 1 kA I_1 = kA
dI/dt_1 = 0.5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.12 Time ____ p. 232

Run No. 164 - 3
Procedure No. CI-C5
Operation Mode DC

Objective
1 kA - 0 T Tcs measurement for the CS insert coil (CSIC). Energize heater ICS_HR_IN.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

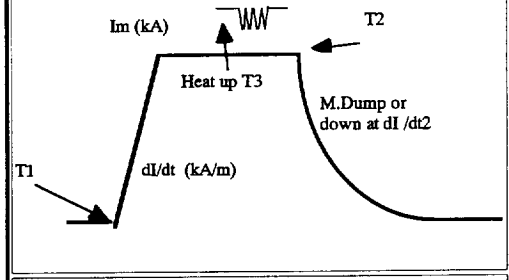
Facility condition

	Power Supply	Resistor
CSMC		
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 1 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = -0.5 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 15:27 T_3 ____

Heater W T_d = s

Results
Tcs(1 kA - 0 T) = 17.1 K (0.1 micro-V/cm def.)

Remarks

CS Model Coil Experiment Log

Date 2000.6.12 Time 16:15 p. 233

Run No. 165 - 1
Procedure No. CI-C6
Operation Mode DC

Objective
1 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSMC up to 46 kA - 13 T.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

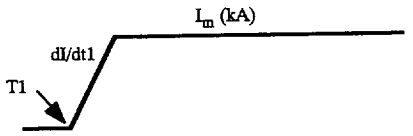
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:15 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks
19th 100 % charge.

CS Model Coil Experiment Log

Date 2000.6.12 Time 17:28 p. 234

Run No. 165 - 2
Procedure No. CI-C6
Operation Mode DC

Objective
1 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Charge CSIC up to 1 kA.

Coolant condition (before this run)

CSI			
Temperature	~ 11.1 K	~	K
Mass Flow Rate	~ 5.1 g/s	~	g/s
Pressure	~ 0.7 MPa		

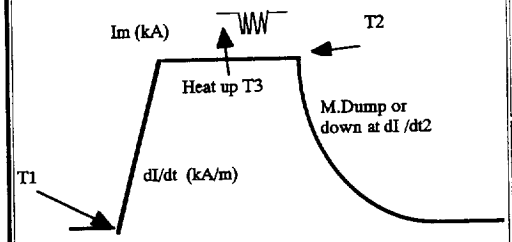
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 1 kA I_1 = kA
dI/dt_1 = 0.5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:28 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.12 Time _____ p. 235

Run No. 165 - 3
Procedure No. CI-C6
Operation Mode DC

Objective
1 kA - 13 T Tcs measurement for the CS insert coil (CSIC). Energize heater ICS_HR_IN.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

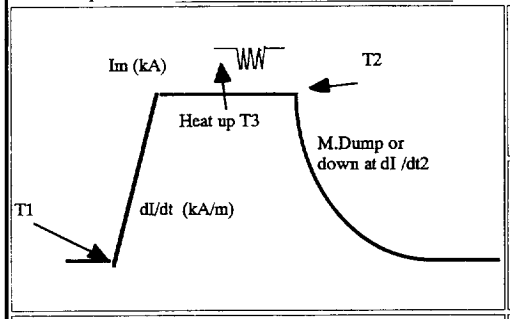
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 1 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 18:53 T_3 _____

Heater W T_d = s

Results
Tcs(1 kA - 13 T) = 10.9 K (0.1 micro-V/cm def.)

Remarks
CSMC current remains 46 kA for the next run.

CS Model Coil Experiment Log

Date 2000.6.12 Time 18:57 p. 236

Run No. 166 - 1
Procedure No. CI-B10
Operation Mode DC

Objective
Manual dump from 100 % charge for the circuit breaker test and AC loss measurement.
Discharge CSMC to 44.5 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

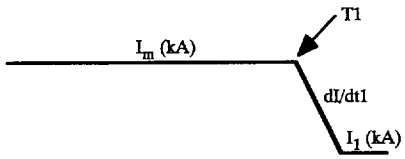
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 46 kA I_1 = 44.5 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 18:57 T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.12 Time 19:21 p. 237

Run No. 166 - 2

Procedure No. CI-B10

Operation Mode DC

Objective: Manual dump from 100 % charge for the circuit breaker test and AC loss measurement. Charge CSIC up to 40 kA and dump simultaneously.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

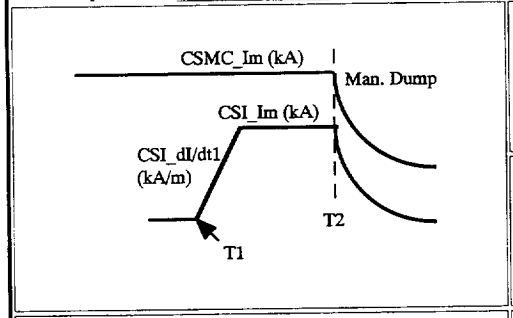
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 19:21 T_2 20:11 T_3 ____

Heater W T_d = s

Results

Vouter = 775 V
Vinner = 625 V
Tau_CSMC = 17.5 s
Vinsert > 50 V
Tau_CSI = 18.2 s
1A inlet pressure rise = 0.154 MPa
1A outlet temperature rise = 0.835 K
CSI outlet temperature rise = 0.535 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.13 Time 9:46 p. 238

Run No. 167 - 1

Procedure No. CI-B3-2

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

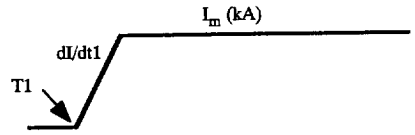
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:46 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.13 Time 10:06 p. 239

Run No. 167 - 2

Procedure No. CI-B3-2

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSIC up to 5 kA, and dump simultaneously.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

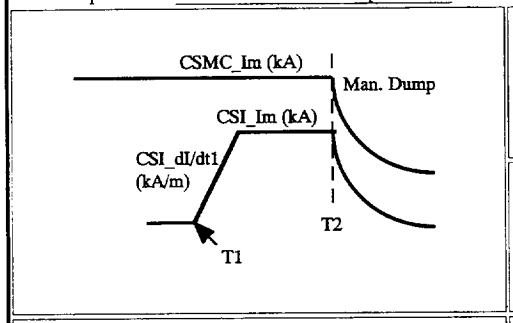
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:06 T_2 10:14 T_3 ____

Heater W T_d = s

Results

Vouter = 168 V
Vinner = 124 V
Tau_CSMC = 19.7 s
Vinsert =12.3 V, 5.2 V
Tau_CSI =18.8 s
1A inlet pressure rise = 0.013 MPa
1A outlet temperature rise =0.08 K
CSI outlet temperatrure rise = 0.04 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.13 Time ____ p. 240

Run No. 168 - 1

Procedure No. ____

Operation Mode No Current

Objective: Heat CSIC up to ~8 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

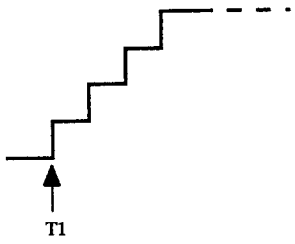
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater 253 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.13 Time 13:10 p. 241

Run No. 169 - 1

Procedure No. CI-C7

Operation Mode DC

Objective: 10.8 T - 40 kA Tcs measurement for CSIC. Charge CSMC up to 39.1 kA.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

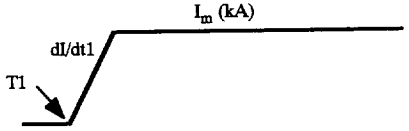
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 39.1 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:10 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.13 Time 14:21 p. 242

Run No. 169 - 2

Procedure No. CI-C7

Operation Mode DC

Objective: 10.8 T - 40 kA Tcs measurement for CSIC. Charge CSI up to 40 kA.

Coolant condition (before this run): Insert

Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

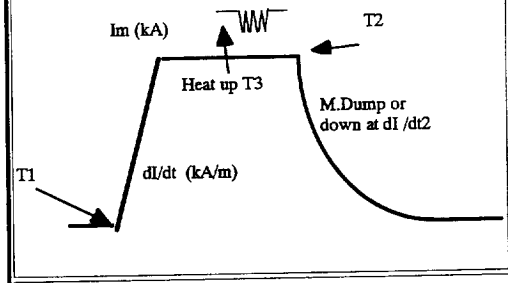
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Tcs



CSMC I_m = 39.1 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:21 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.13 Time _____ p. 243

Run No. 169 - 3
Procedure No. CI-C7
Operation Mode DC

Objective
10.8 T - 40 kA Tcs measurement for CSIC.
Energize ICS_HR_IN.

Coolant condition (before this run)

Insert				
Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

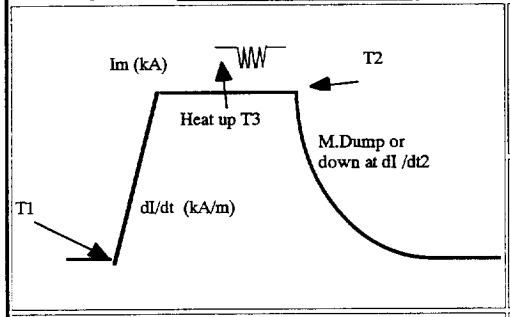
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 39.1 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = -50 kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 15:42 T_3 _____

Heater W T_d = s

Results
Tcs(40 kA - 10.8 T) = 8.8 K (0.1 micro-V/cm def.)

Remarks

CS Model Coil Experiment Log

Date 2000.6.13 Time _____ p. 244

Run No. 170 - 1
Procedure No. CI-D10
Operation Mode DC

Objective
Heat CSIC up to ~9.2 K.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

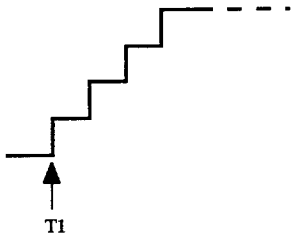
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = 39.1 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.13 Time 17:07 p. 245

Run No. 170 - 2
Procedure No. CI-D10
Operation Mode DC

Objective
CSIC Ic measurement at 10.8 T, 9 K.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

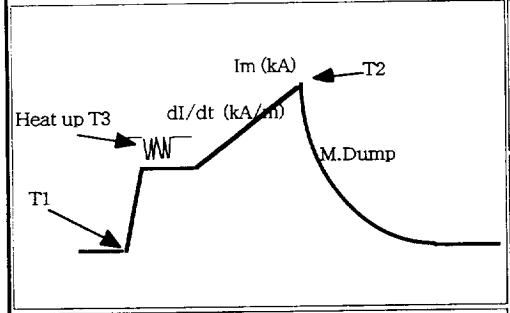
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ic



CSMC I_m = 39.1 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = 0.2 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:07 T_2 ____ T_3 ____

Heater W T_d = s

Results
Ic(10.8 T, K)=kA
No quench. Fast down.

Remarks

CS Model Coil Experiment Log

Date 2000.6.13 Time ____ p. 246

Run No. 170 - 3
Procedure No. CI-D10
Operation Mode DC

Objective
Temperature sensor calibration. Heat CSIC up to 9.5 K.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

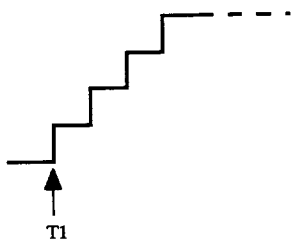
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Tcs

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = 39.1 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 9:55 p. 247

Run No. 171 - 1
Procedure No. CI-B3-2
Operation Mode DC

Objective
Daily check for sensors and protection systems.
Charge CSMC up to 9.2 kA and CSIC up to 5 kA.
Dump simultaneously.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

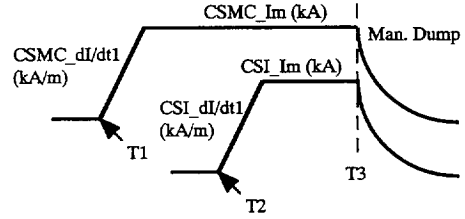
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5.0 kA I_1 = kA
dI/dt_1 = 5.0 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:55 T_2 10:13 T_3 10:20

Heater W T_d = s

Results
Vouter = 170 V
Vinner = 124 V
Tau_CSMC = 19.7 s
Vinsert = 12.6 V, 5.2 V
Tau_CSI = 18.7 s
1A inlet pressure rise = 0.013 MPa
1A outlet temperature rise = 0.07 K
CSI outlet temperatrure rise = 0.03 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 10:48 p. 248

Run No. 172 - 1
Procedure No. CI-G16
Operation Mode DC

Objective
Inductive Heater test shot

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

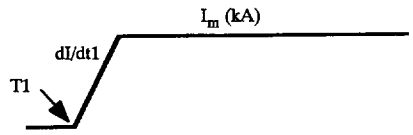
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:48 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 11:19 p. 249

Run No. 172 - 2

Procedure No.

Operation Mode DC

Objective: Inductive Heater test shot

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

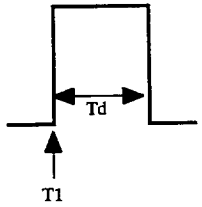
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:19 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 69V
Inductive heater current : 68A
I^2 integral : 33.2 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 11:29 p. 250

Run No. 172 - 3

Procedure No.

Operation Mode DC

Objective: Inductive Heater test shot

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

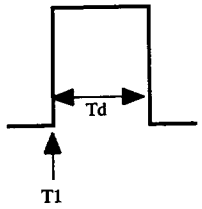
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:29 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 138V
Inductive heater current : 137A
I^2 integral : 135.2 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 11:40 p. 251

Run No. 172 - 4

Procedure No.

Operation Mode DC

Objective: Inductive Heater test shot

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

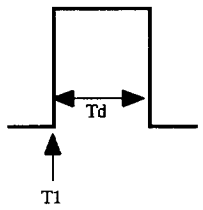
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:40 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 207V
Inductive heater current : 204A
I^2 integral : 308.9 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time ____ p. 252

Run No. 172 - 5

Procedure No.

Operation Mode DC

Objective: Inductive Heater test shot

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

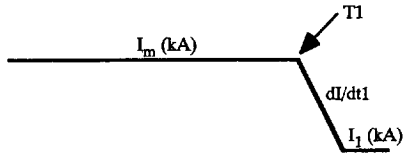
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:40 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 13:10 p. 253

Run No. 173 - 1
Procedure No. CI-G17
Operation Mode DC

Objective
Inductive Heater test shot at 13T

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

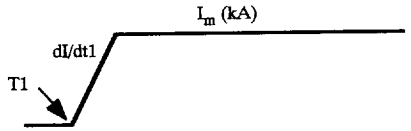
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:10 T_2 ____ T_3 ____

Heater CI-G17 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 14:14 p. 254

Run No. 173 - 2
Procedure No. ____
Operation Mode DC

Objective
Inductive Heater test shot at 13T

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

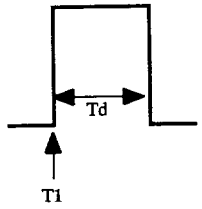
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:14 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 67V
Inductive heater current : 65A
I^2 integral : 30.8 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 14:24 p. 255

Run No. 173 - 3

Procedure No.

Operation Mode DC

Objective: Inductive Heater test shot at 13T

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

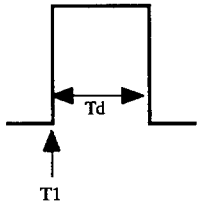
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:24 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 193V
Inductive heater current : 184A
I^2 integral : 255.6 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 14:33 p. 256

Run No. 173 - 4

Procedure No.

Operation Mode DC

Objective: Inductive Heater test shot at 13T

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

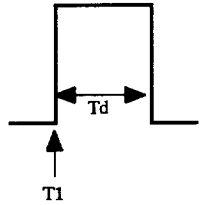
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:33 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 276V
Inductive heater current : 264A
I^2 integral : 524.6 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 14:43 p. 257

Run No. 173 - 5

Procedure No.

Operation Mode DC

Objective: Inductive Heater test shot at 13T

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

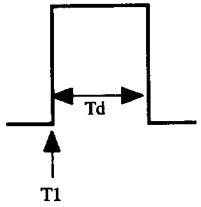
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:43 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 385V
Inductive heater current : 369A
I^2 integral : 1019.7 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 14:53 p. 258

Run No. 173 - 6

Procedure No.

Operation Mode DC

Objective: Inductive Heater test shot at 13T

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

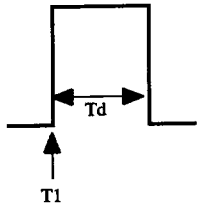
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:53 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 463V
Inductive heater current : 442A
I^2 integral : 1453.5 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 15:03 p. 259

Run No. 173 - 7

Procedure No.

Operation Mode DC

Objective: Inductive Heater test shot at 13T

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

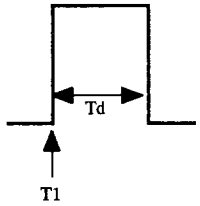
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:03 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 579V
Inductive heater current : 552A
I^2 integral : 2300 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 15:18 p. 260

Run No. 174 - 1

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

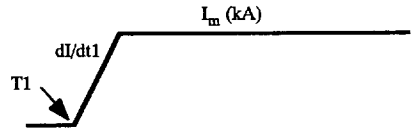
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = 5.0 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:18 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 16:18 p. 261

Run No. 174 - 2

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

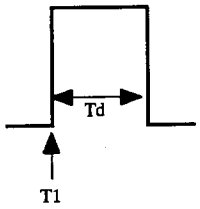
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:18 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 39V
Inductive heater current : 38A
I^2 integral : 10.6 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 16:29 p. 262

Run No. 174 - 3

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

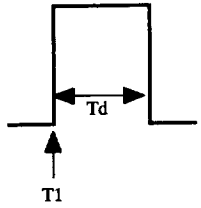
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:29 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 68V
Inductive heater current : 67A
I^2 integral : 32.5 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 16:36 p. 263

Run No. 174 - 4

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

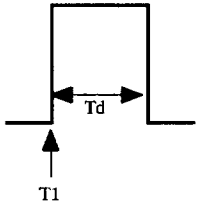
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:36 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 142V
Inductive heater current : 138A
I^2 integral : 135.9 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 16:46 p. 264

Run No. 174 - 5

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

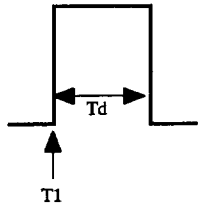
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:46 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 212V
Inductive heater current : 207A
I^2 integral : 308.5 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 16:55 p. 265

Run No. 174 - 6

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

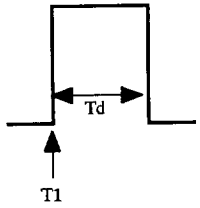
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:55 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 246V
Inductive heater current : 239A
I^2 integral : 417.3 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 17:06 p. 266

Run No. 174 - 7

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

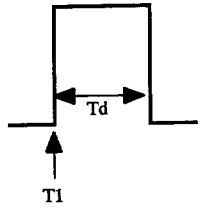
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:06 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 273V
Inductive heater current : 267A
I^2 integral : 521.2 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 17:13 p. 267

Run No. 174 - 8

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

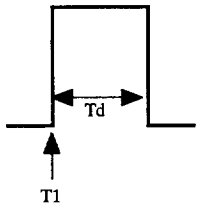
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:13 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 310V
Inductive heater current : 302A
I^2 integral : 655.5 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 17:20 p. 268

Run No. 174 - 9

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

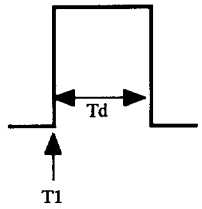
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:20 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 337V
Inductive heater current : 329A
I^2 integral : 781.1 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 17:32 p. 269

Run No. 174 - 10

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

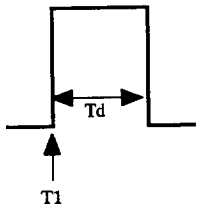
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:32 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 376V
Inductive heater current : 368A
I^2 integral : 992.7 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 17:39 p. 270

Run No. 174 - 11

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

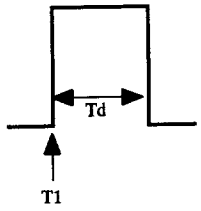
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:39 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench
Inductive heater volatage : 406V
Inductive heater current : 399A
I^2 integral : 1150 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.14 Time 17:48 p. 271

Run No. 174 - 12

Procedure No.

Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

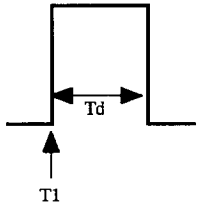
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:48 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Quench
Inductive heater volatage : 444V
Inductive heater current : 487A
I^2 integral : 1393 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 11:08 p. 272

Run No. 175 - 1

Procedure No. CI-B3-2

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA and CSIC up to 5 kA. Dump simultaneously.

Coolant condition (before this run)

	All	
Temperature	~ 4.5 K	~ K
Mass Flow Rate	~ 10 g/s	~ g/s
Pressure	~ 0.6 MPa	

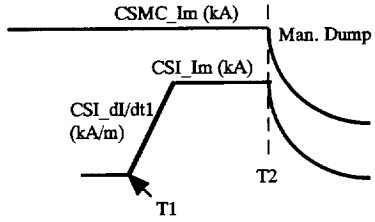
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5.0 kA I_1 = kA

dI/dt_1 = 5.0 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:23 T_2 11:32 T_3 ____

Heater W T_d = s

Results

Vouter =170 V
Vinner = 125 V
Tau_CSMC = 19.7 s
Vinsert = 12.5 V
Tau_CSI = 18.7 s
1A inlet pressure rise = 0.014 MPa
1A outlet temperature rise = 0.08 K
CSI outlet temperatrure rise = 0.04 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 11:44 p. 273

Run No. 176 - 1

Procedure No.

Operation Mode DC

Objective: Heat CSIC up to ~5.3 K.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

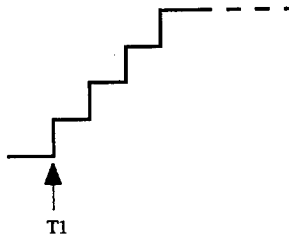
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:44 T_2 ____ T_3 ____

Heater 55 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 13:03 p. 274

Run No. 176 - 2

Procedure No.

Operation Mode DC

Objective: Test shot for ICS_HI_03

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

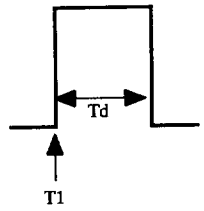
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:48 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 152V
Inductive heater current : 52A
I^2 integral : 17.9 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 13:25 p. 275

Run No. 176 - 3

Procedure No. CI-G18

Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

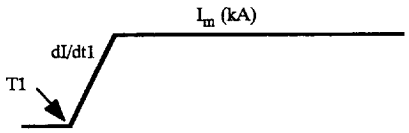
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 45.3 kA I_1 = kA

dI/dt_1 = 1.0 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:25 T_2 ____ T_3 ____

Heater W T_d = s

Results

Inductive heater volatage : 152V
Inductive heater current : 52A
I^2 integral : 17.9 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 14:25 p. 276

Run No. 176 - 4

Procedure No. ____

Operation Mode DC

Objective: Test shot for ICS_HI_03

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

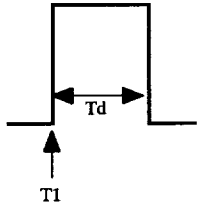
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:25 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 67.7V
Inductive heater current : 65.5A
I^2 integral : 31.5 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 14:41 p. 277

Run No. 176 - 5
Procedure No. CI-G18
Operation Mode DC

Objective
13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

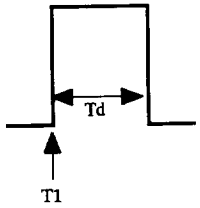
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = 5.0 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:41 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 15:10 p. 278

Run No. 176 - 6
Procedure No. CI-G18
Operation Mode DC

Objective
13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

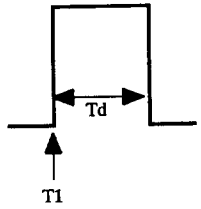
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:10 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 404V
Inductive heater current : 397A
I^2 integral : 1135.4 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 15:18 p. 279

Run No. 176 - 7
Procedure No. CI-G18
Operation Mode DC

Objective
13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

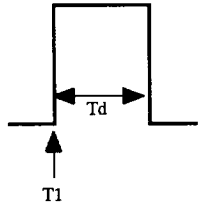
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:18 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 422V
Inductive heater current : 415A
I^2 integral : 1262.8A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 15:26 p. 280

Run No. 176 - 8
Procedure No. CI-G18
Operation Mode DC

Objective
13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

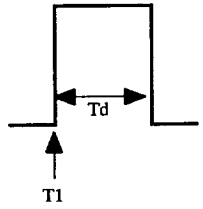
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:26 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 441V
Inductive heater current : 433A
I^2 integral : 1380 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 15:36 p. 281

Run No. 176 - 9
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

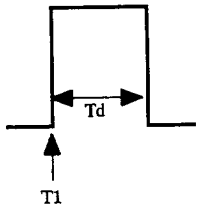
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:26 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
nductive heater volatage : 452V
Inductive heater current : 446A
I^2 integral : 1447.8 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 15:43 p. 282

Run No. 176 - 10
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

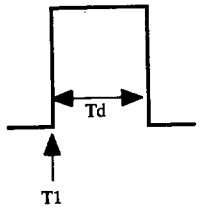
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:43 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 465V
Inductive heater current : 460A
I^2 integral : 1538.1 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 15:53 p. 283

Run No. 176 - 11
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

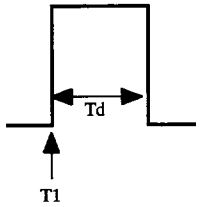
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:53 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 465V
Inductive heater current : 460A
I^2 integral : 1538.1 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 16:03 p. 284

Run No. 176 - 12
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

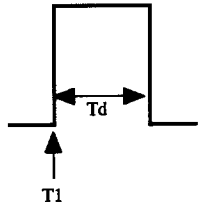
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:03 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 488V
Inductive heater current : 481A
I^2 integral : 1697.4 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 16:11 p. 285

Run No. 176 - 13
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

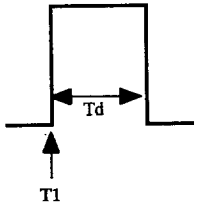
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:11 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 497V
Inductive heater current : 493A
I^2 integral : 1761.6 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 16:18 p. 286

Run No. 176 - 14
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 12 g/s
Pressure	~ 0.6 MPa	

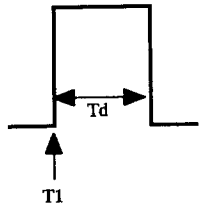
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:18 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 510V
Inductive heater current : 505A
I^2 integral : 1850.9 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 16:25 p. 287

Run No. 176 - 15
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

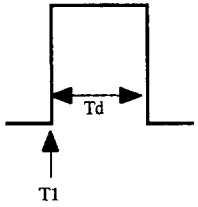
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:25 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Recover
Inductive heater volatage : 521V
Inductive heater current : 513A
I^2 integral : 1910.3 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 16:35 p. 288

Run No. 176 - 16
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

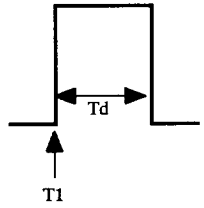
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:35 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Recover
Inductive heater volatage : 527V
Inductive heater current : 519A
I^2 integral : 1910.3 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 16:43 p. 289

Run No. 176 - 17
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

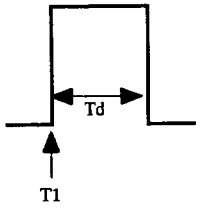
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:43 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Recover
Inductive heater volatage : 536V
Inductive heater current : 528A
I^2 integral : 2052.7 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 16:51 p. 290

Run No. 176 - 18
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

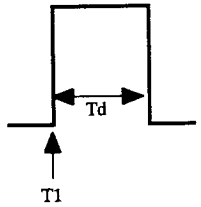
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:51 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Recover
Inductive heater volatage : 544V
Inductive heater current : 539A
I^2 integral : 2091.4 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 17:00 p. 291

Run No. 176 - 19
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

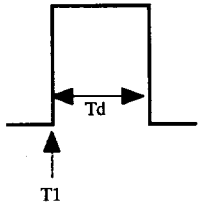
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:00 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Recover
Inductive heater volatage : 553V
Inductive heater current : 544A
I^2 integral : 2186.7 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 17:07 p. 292

Run No. 176 - 20
Procedure No. CI-G18
Operation Mode DC

Objective: 13 T - 30 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

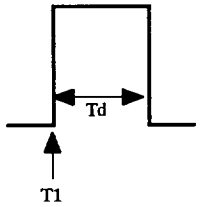
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:07 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Quench
Inductive heater volatage : 563V
Inductive heater current : 557A
I^2 integral : 2255.2 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 17:10 p. 293

Run No. 176 - 21
Procedure No. CI-G18
Operation Mode DC

Objective
13 T - 30 kA - 5.3 K Stability test. Monitor coolant after quench.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern No current

CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks
after quench

CS Model Coil Experiment Log

Date 2000.6.15 Time 17:26 p. 294

Run No. 177 - 1
Procedure No.
Operation Mode DC

Objective
Heat CSIC up to ~5.3 K.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

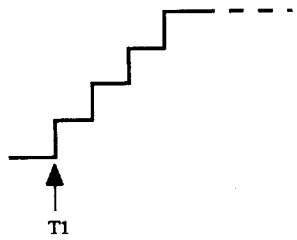
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:26 T_2 ____ T_3 ____

Heater 55 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 17:45 p. 295

Run No. 177 - 2
Procedure No. CI-G20
Operation Mode DC

Objective: 13 T - 35 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

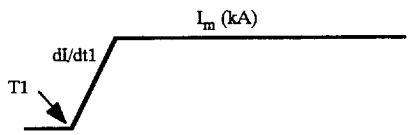
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 44.9 kA I_1 = kA
dI/dt_1 = 1.0 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:45 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 18:43 p. 296

Run No. 177 - 3
Procedure No. CI-G20
Operation Mode DC

Objective: 13 T - 35 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

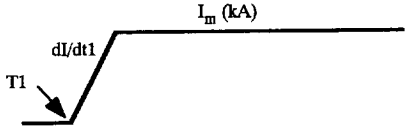
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 44.9 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35.0 kA I_1 = kA
dI/dt_1 = 5.0 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:43 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 19:11 p. 297

Run No. 178 - 1
Procedure No. CI-G20
Operation Mode DC

Objective: 13 T - 35 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

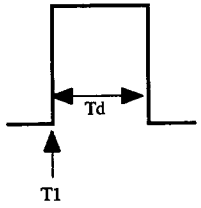
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.9 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:11 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 413V
Inductive heater current : 406A
I^2 integral : 1203.5 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 19:18 p. 298

Run No. 178 - 2
Procedure No. CI-G20
Operation Mode DC

Objective: 13 T - 35 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

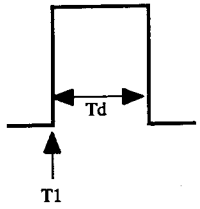
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.9 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:18 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 431V
Inductive heater current : 425A
I^2 integral : 1323.6 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 19:25 p. 299

Run No. 178 - 3
Procedure No. CI-G20
Operation Mode DC

Objective
13 T - 35 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

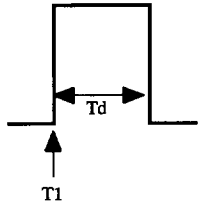
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.9 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:25 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 449V
Inductive heater current : 443A
I^2 integral : 1436.8 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 19:33 p. 300

Run No. 178 - 4
Procedure No. CI-G20
Operation Mode DC

Objective
13 T - 35 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

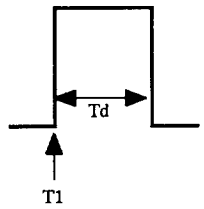
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.9 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:33 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 464V
Inductive heater current : 461A
I^2 integral : 1524.1 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 19:40 p. 301

Run No. 178 - 5
Procedure No. CI-G20
Operation Mode DC

Objective: 13 T - 35 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

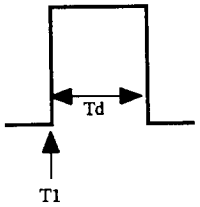
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.9 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:40 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench
Inductive heater volatage : 482V
Inductive heater current : 478A
I^2 integral : 1660.5 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 19:47 p. 302

Run No. 178 - 6
Procedure No. CI-G20
Operation Mode DC

Objective: 13 T - 35 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

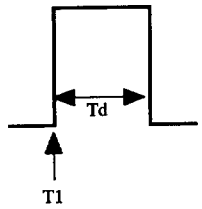
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater pulse



CSMC I_m = 44.9 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:47 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Recover
Inductive heater volatage : 498V
Inductive heater current : 494A
I^2 integral : 1771.1 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.15 Time 19:54 p. 303

Run No. 178 - 7

Procedure No. CI-G20

Operation Mode DC

Objective: 13 T - 35 kA - 5.3 K Stability test

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

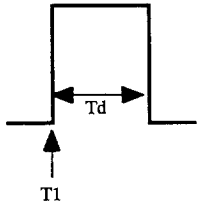
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater pulse



CSMC I_m = 44.9 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35.0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 19:54 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Quench
Inductive heater voltage : 509V
Inductive heater current : 502A
I^2 integral : 1841.1 A^2 s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 9:44 p. 304

Run No. 179 - 1

Procedure No. CI-B3-2

Operation Mode DC

Objective: Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA and CSIC up to 5 kA. Dump simultaneously.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 5.3 K
Mass Flow Rate	~ 10 g/s	~ 5 g/s
Pressure	~ 0.6 MPa	

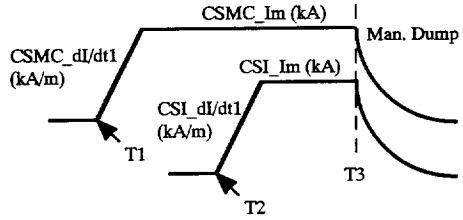
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:44 T_2 10:00 T_3 10:06

Heater W T_d = s

Results

Vouter = 169.7 V
Vinner = 129.8 V
Tau_CSMC = 19.7 s
Vinsert = 12.5 V, 5.2 V
Tau_CSI = 18.8 s
1A inlet pressure rise = 0.014 MPa
1A outlet temperature rise = 0.08 K
CSI outlet temperatrure rise = 0.03 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time _____ p. 305

Run No. 180 - 1
Procedure No. CI-G21
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test. Reduce mass flow rate of CSIC inlet to 5 g/s.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 5 g/s
Pressure	~ 0.6 MPa	

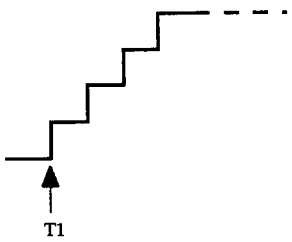
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater W T_d = s

Results
10:59
Inlet mass flow rate = 6.2 g/s
Outlet mass flow rate = 4.8 g/s
ICS_HR_IN = 20 W

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time _____ p. 306

Run No. 180 - 2
Procedure No. CI-G21
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

	All	
Temperature	~ 4.5 K	~ K
Mass Flow Rate	~ 10 g/s	~ g/s
Pressure	~ 0.6 MPa	

Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern No current

CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks
Amplifier range of flow meters had been changed.

CS Model Coil Experiment Log

Date 2000.6.16 Time 13:11 p. 307

Run No. 180 - 3
Procedure No. CI-G21
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test. Charge CSMC up to 44.5 kA.

Coolant condition (before this run)

	All		Insert	
Temperature	~	K	~	K
Mass Flow Rate	~	g/s	~	g/s
Pressure	~	MPa		

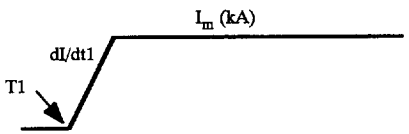
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:11 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 14:08 p. 308

Run No. 180 - 4
Procedure No. CI-G21
Operation Mode DC

Objective
Inductive heater calibration under high field.

Coolant condition (before this run)

	All			
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

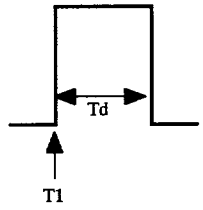
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:08 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
Vmax = 139 V
Imax = 134 A
I^2 integral = 133.1

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 14:14 p. 309

Run No. 180 - 5
Procedure No. CI-G21
Operation Mode DC

Objective
Inductive heater calibration under high field.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

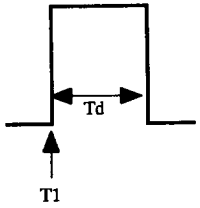
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:14 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
Vmax = 317 V
Imax = 305 A
I^2 integral = 701.4 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 14:21 p. 310

Run No. 180 - 6
Procedure No. CI-G21
Operation Mode DC

Objective
Inductive heater calibration under high field.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

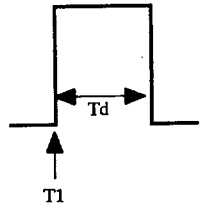
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:21 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
Vmax = 440 V
Imax = 424 A
I^2 integral = 1346.1 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 14:27 p. 311

Run No. 180 - 7
Procedure No. CI-G21
Operation Mode DC

Objective: Inductive heater calibration under high field.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

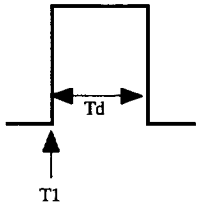
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern: Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:27 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
Vmax = 530 V
Imax = 510 A
I^2 integral = 1925.3 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 14:29 p. 312

Run No. 180 - 8
Procedure No. CI-G22
Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K - 5 g/s Stability test. Charge CSIC up to 40 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

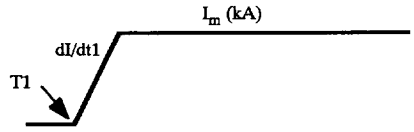
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern: Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:29 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 15:42 p. 313

Run No. 181 - 1
Procedure No. CI-G22
Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

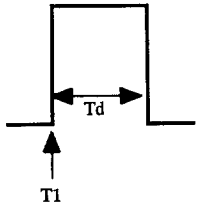
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern: Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:42 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 135 A
Vmax = 138 V
I^2 integral = 135.2 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 15:48 p. 314

Run No. 181 - 2
Procedure No. CI-G22
Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

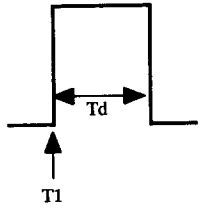
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS): CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern: Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:48 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 170 A
Vmax = 174 V
I^2 integral = 215.0 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 15:54 p. 315

Run No. 181 - 3
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

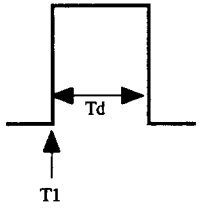
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:54 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 215 A
Vmax = 220 V
I^2 integral = 334.1 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 16:00 p. 316

Run No. 181 - 4
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

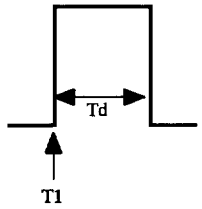
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:00 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 240 A
Vmax = 246 V
I^2 integral = 424.3 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 16:06 p. 317

Run No. 181 - 5
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

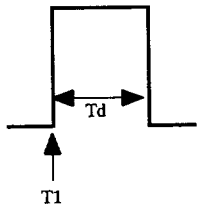
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:06 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 267 A
Vmax = 272 V
I^2 integral = 524.4 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 16:12 p. 318

Run No. 181 - 6
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

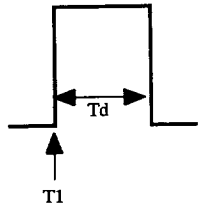
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:12 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 300 A
Vmax = 304 V
I^2 integral = 657.6 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 16:18 p. 319

Run No. 181 - 7
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

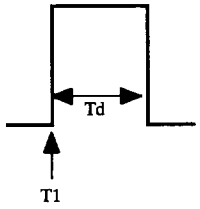
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:18 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 319 A
Vmax = 323 V
I^2 integral = 747.3 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 16:25 p. 320

Run No. 181 - 8
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

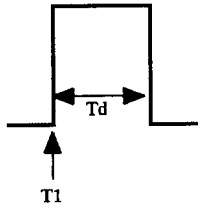
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:25 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 348 A
Vmax = 345 V
I^2 integral = 849.4 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 16:31 p. 321

Run No. 181 - 9
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

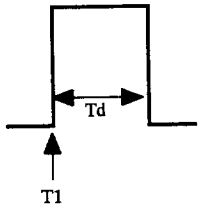
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:31 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 359 A
Vmax = 363 V
I^2 integral = 944.6 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 16:37 p. 322

Run No. 181 - 10
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

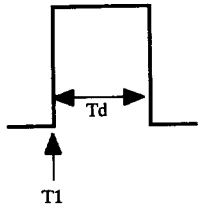
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:37 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 377 A
Vmax = 380 V
I^2 integral = 1031.0 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 16:45 p. 323

Run No. 181 - 11
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

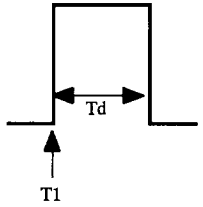
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:45 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 398 A
Vmax = 408 V
I^2 integral = 1151.4 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 16:51 p. 324

Run No. 181 - 12
Procedure No. CI-G22
Operation Mode DC

Objective
13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

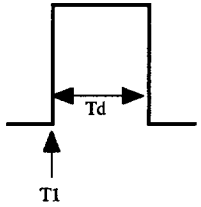
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:51 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03
Imax = 405 A
Vmax = 409 V
I^2 integral = 1173.8 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.16 Time 17:01 p. 325

Run No. 181 - 13
Procedure No. CI-G22
Operation Mode DC

Objective: 13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

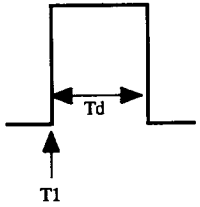
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1m-ohm

Data Acquisition System (DAS): CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	2 k

Current pattern: Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:01 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results: Quench.

Remarks: No data on ADC32ch because of DAS incident.

CS Model Coil Experiment Log

Date 2000.6.16 Time ____ p. 326

Run No. 182 - 1
Procedure No. ____
Operation Mode No Current

Objective: DAS check.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS): CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: No current

CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 9:54 p. 327

Run No. 183 - 1

Procedure No. CI-B3-2

Operation Mode DC

Objective

Daily check for sensors and protection systems. Charge CSMC up to 9.2 kA and CSIC up to 5 kA. Dump simultaneously.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

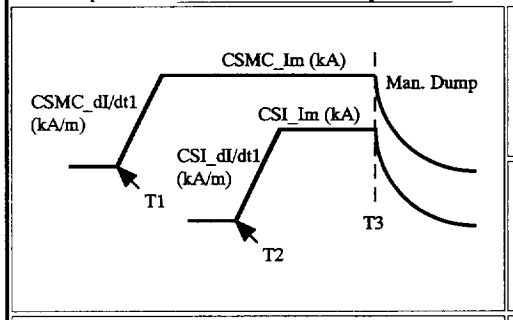
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:54 T_2 10:11 T_3 10:20

Heater W T_d = s

Results

Vouter = 159.5 V
Vinner = 124.5 V
Tau_CSMC = 19.7 s
Vinsert = 12.6 V, 5.1 V
Tau_CSI = 18.9 s
1A inlet pressure rise = 0.014 MPa
1A outlet temperature rise = 0.075 K
CSI outlet temperatrure rise = 0.022 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 10:41 p. 328

Run No. 184 - 1

Procedure No. ____

Operation Mode DC

Objective

Heat up CSIC to 6.8 K.

Coolant condition (before this run)

	All	
Temperature	~ 4.5 K	~ K
Mass Flow Rate	~ 10 g/s	~ g/s
Pressure	~ 0.6 MPa	

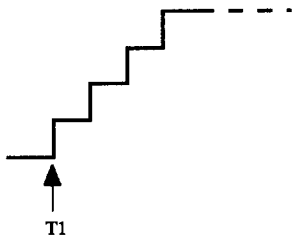
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:41 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 11:25 p. 329

Run No. 184 - 2
Procedure No. CI-B24
Operation Mode DC

Objective

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

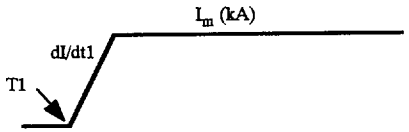
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:25 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 13:06 p. 330

Run No. 184 - 3
Procedure No.
Operation Mode DC

Objective
Inductive heater test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

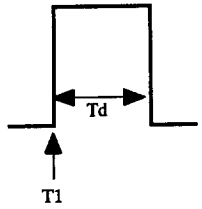
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:06 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
Imax = 133 A
Vmax = 140 V
I^2 integral = 133.2 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 13:14 p. 331

Run No. 184 - 4

Procedure No.

Operation Mode DC

Objective: Inductive heater test.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

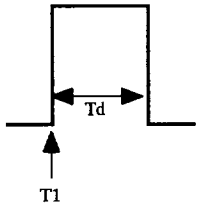
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:14 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
Imax = 303 A
Vmax = 315 V
I^2 integral = 690.4 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 13:20 p. 332

Run No. 184 - 5

Procedure No.

Operation Mode No Current

Objective

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

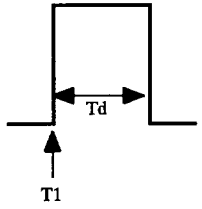
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:20 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
Imax = 426 A
Vmax = 441 V
I^2 integral = 1346.9 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 13:28 p. 333

Run No. 184 - 6

Procedure No.

Operation Mode No Current

Objective

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

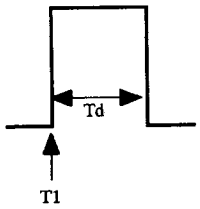
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:28 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
Imax = 477 A
Vmax = 493 V
I^2 integral = 1696.2 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 13:37 p. 334

Run No. 184 - 7

Procedure No.

Operation Mode No Current

Objective

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

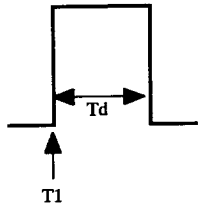
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:37 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
Imax = 511 A
Vmax = 529 V
I^2 integral = 1948.3 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 13:47 p. 335

Run No. 184 - 8
Procedure No. CI-B25
Operation Mode DC

Objective
Charge CSIC up to 40 kA for 13 T - 40 kA - 5.3 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

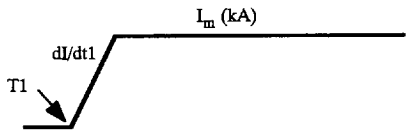
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:47 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 14:56 p. 336

Run No. 185 - 1
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

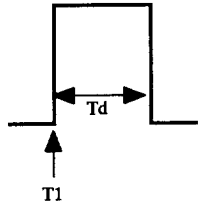
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:56 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 119 A.
Vmax = 121 V.
I^2 integral = 103.7 A^2s.

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 15:04 p. 337

Run No. 185 - 2
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

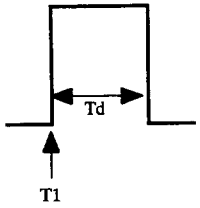
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:04 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 146 A.
Vmax = 150 V.
I^2 integral = 153.8 A^2s.

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 15:13 p. 338

Run No. 185 - 3
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

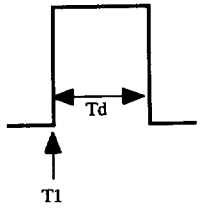
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:13 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 168 A.
Vmax = 172 V.
I^2 integral = 202.5 A^2s.

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 15:24 p. 339

Run No. 185 – 4

Procedure No. CI-G25

Operation Mode DC

Objective: 13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

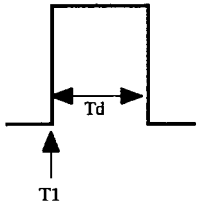
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:24 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench.
Inductive heater ICS_HI_03.
Imax = 188 A.
Vmax = 192 V.
I^2 integral = 253.1 A^2s.

Remarks

100 Hz low pass filters had installed for MCO_VD_JB16A17B, MCO_VD_JB18ASCB, MCO_VD_J11B12BL, MCI_VD_J0102BL, ICS_TC_04H, and ICS_TC_05H.

CS Model Coil Experiment Log

Date 2000.6.19 Time 15:32 p. 340

Run No. 185 – 5

Procedure No. CI-G25

Operation Mode DC

Objective: 13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

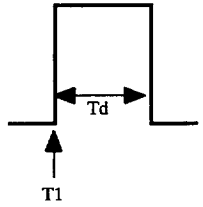
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:32 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench.
Inductive heater ICS_HI_03.
Imax = 206 A.
Vmax = 210 V.
I^2 integral = 304.3 A^2s.

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 15:40 p. 341

Run No. 185 - 6
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

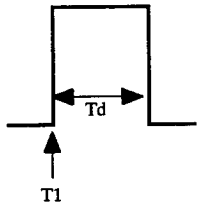
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:40 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 223 A.
Vmax = 226 V.
I^2 integral = 354.1 A^2s.

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 15:48 p. 342

Run No. 185 - 7
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

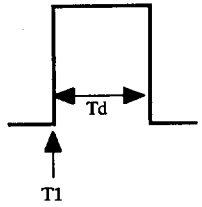
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:48 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 239 A.
Vmax = 240 V.
I^2 integral = 402 A^2s.

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 15:46 p. 343

Run No. 185 - 8
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

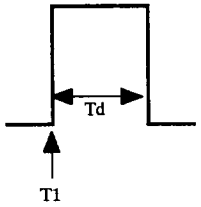
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:46 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 252 A.
Vmax = 253 V.
I^2 integral = 445.9 A^2s.

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 16:03 p. 344

Run No. 185 - 9
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

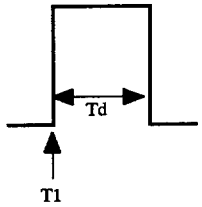
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:03 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 264 A.
Vmax = 266 V.
I^2 integral = 464.5 A^2s.

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 16:11 p. 345

Run No. 185 - 10
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

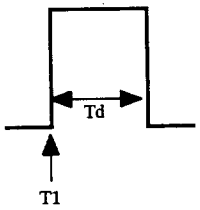
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:11 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 276 A.
Vmax = 279 V.
I^2 integral = 540.3 A^2s.

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 16:21 p. 346

Run No. 185 - 11
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

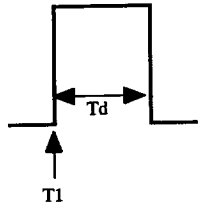
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:21 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 291 V
Vmax = 294 V
I^2 integral = 604.2 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 16:28 p. 347

Run No. 185 - 12
Procedure No. CI-G25
Operation Mode DC

Objective: 13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

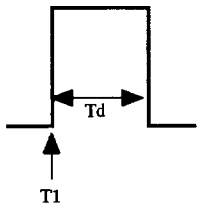
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:28 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench.
Inductive heater ICS_HI_03.
Imax = 292 V
Vmax = 294 V
I^2 integral = 612.5 A^2S

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 16:36 p. 348

Run No. 185 - 13
Procedure No. CI-G25
Operation Mode DC

Objective: 13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

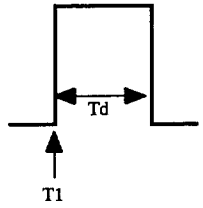
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	50 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:36 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

No quench.
Inductive heater ICS_HI_03.
Imax = 296 V
Vmax = 299 V
I^2 integral = 631.6 A^2S

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 16:45 p. 349

Run No. 185 - 14
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

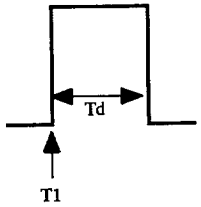
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:45 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 299 V
Vmax = 302 V
I^2 integral = 651.9 A^2S

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 16:53 p. 350

Run No. 185 - 15
Procedure No. CI-G25
Operation Mode DC

Objective
13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

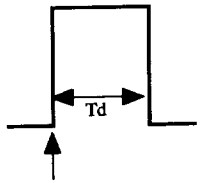
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:53 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 302 V
Vmax = 304 V
I^2 integral = 658.9 A^2S

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 17:01 p. 351

Run No. 185 - 16
Procedure No. CI-G25
Operation Mode DC

Objective: 13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

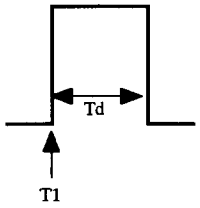
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:01 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 305 V
Vmax = 307 V
I^2 integral = 666.0 A^2S

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 17:09 p. 352

Run No. 185 - 17
Procedure No. CI-G25
Operation Mode DC

Objective: 13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

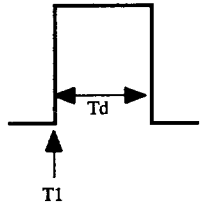
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:09 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 307 V
Vmax = 310 V
I^2 integral = 671.7 A^2S

Remarks

CS Model Coil Experiment Log

Date 2000.6.19 Time 17:17 p. 353

Run No. 185 - 18

Procedure No. CI-G25

Operation Mode DC

Objective: 13 T - 40 kA - 6.8 K - 5 g/s Stability test.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

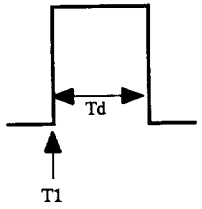
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Stability

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:17 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Quench.
Inductive heater ICS_HI_03.
Imax = 310 V.
Vmax = 314 V.
I^2 integral = 693.9 A^2S.
Vouter = 782 V.
Vinner = 630 V.
Tau_CSMC = 17.5 s.
Vinsert = 53.8 V, 26.2 V.
Tau_CSI = 17.9 s.
1A inlet pressure rise = 0.174MPa.
1A outlet temperature rise = 0.87 K.
CSI outlet temperatrure rise = 2.81 K.

Remarks

CS Model Coil Experiment Log

Date 2000.6.20 Time 16:09 p. 354

Run No. 186 - 1

Procedure No. CI-B3

Operation Mode DC

Objective: System check after sensor assignment had been changed. Charge CSMC up to 9.2 kA and CSIC up to 5 kA. Dump simultaneously.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	12 g/s
Pressure	~ 0.6 MPa		

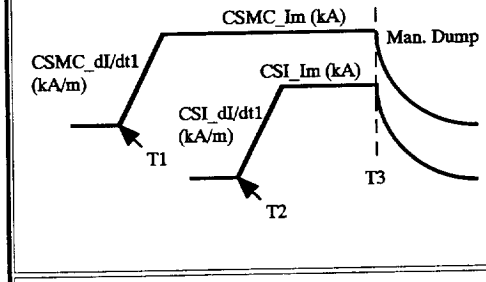
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:09 T_2 16:29 T_3 16:40

Heater W T_d = s

Results

Vouter = 569.7 V
Vinner = 398.3 V
Tau_CSMC = 5.94 s
Vinsert = 12.6 V
Tau_CSI = 5.8 s
1A inlet pressure rise = 0.023 MPa
1A outlet temperature rise = 0.144 K
CSI outlet temperatrure rise = 0.083 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.20 Time 17:12 p. 355

Run No. 187 - 1
Procedure No. CI-S2
Operation Mode DC

Objective: System check . Charge CSMC and CSIC up to 9.2 kA in series. Dump simultaneously.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 12 g/s
Pressure	~ 0.6 MPa	

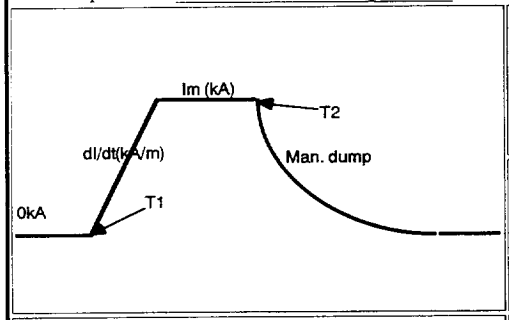
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC	50 kA	104.7 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:12 T_2 17:31 T_3 ____

Heater W T_d = s

Results
Vouter = 505.3 V
Vinner = 439.0 V
Tau = 6.1 s
Vinsert = 20.7 V
1A inlet pressure rise = 0.022 MPa
1A outlet temperature rise = 0.135 K
CSI outlet temperatrure rise = 0.071 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.21 Time 9:37 p. 356

Run No. 188 - 1
Procedure No. MC-E4-1
Operation Mode DC

Objective: Daily check for sensors. Charge CSMC up to 9.2 kA. Dump manually. (CSIC circuit was open)

Coolant condition (before this run)

	All	
Temperature	~ 4.5 K	~ K
Mass Flow Rate	~ 10 g/s	~ g/s
Pressure	~ 0.6 MPa	

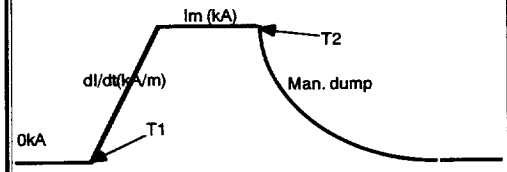
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:37 T_2 10:11 T_3 ____

Heater W T_d = s

Results
Vouter = 517 V
Vinner = 442 V
Tau = 5.9 s
1A inlet pressure rise = 0.022 MPa
1A outlet temperature rise = 0.135 K
CSI outlet temperatrure rise = 0.076 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.21 Time 10:55 p. 357

Run No. 189 - 1
Procedure No. MC-E4-2
Operation Mode DC

Objective: AC loss measurement. CSMC 50 % (23 kA) manual dump. (CSIC circuit was open). Tau = 6 s.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

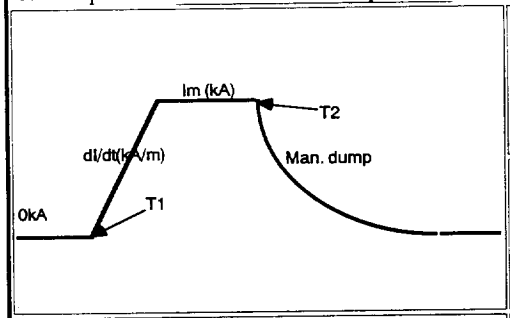
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:55 T_2 11:46 T_3 ____

Heater W T_d = s

Results
Vouter = 1287 V
Vinner = 1099 V
Tau = 5.6 s
1A inlet pressure rise = 0.095 MPa
1A outlet temperature rise = 0.606 K
CSI outlet temperatrure rise = 0.412 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.21 Time 13:13 p. 358

Run No. 190 - 1
Procedure No. MC-E4-3
Operation Mode DC

Objective: AC loss measurement. CSMC 65 % (29.9 kA) manual dump. (CSIC circuit was open). Tau ~ 6 s.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

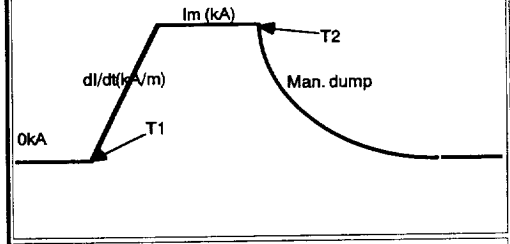
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 29.9 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:13 T_2 14:15 T_3 ____

Heater W T_d = s

Results
Vouter = 1677 V
Vinner = 1431 V
Tau = 5.56 s
1A inlet pressure rise = 0.158 MPa
1A outlet temperature rise = 0.925 K
CSI outlet temperatrure rise = 0.77 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.21 Time 15:10 p. 359

Run No. 191 - 1

Procedure No. MC-E4-4

Operation Mode No Current

Objective: AC loss measurement. CSMC 80 % (36.8 kA) manual dump. (CSIC circuit was open). Tau ~ 6 s.

Coolant condition (before this run)

All				
Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

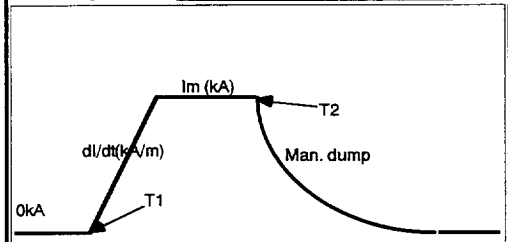
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:10 T_2 16:23 T_3 ____

Heater W T_d = s

Results

Vouter = 2069.4 V
Vinner = 1766.1 V
Tau = 5.4 s
1A inlet pressure rise = 0.243 MPa
1A outlet temperature rise = 1.183 K
CSI outlet temperatrure rise = 1.204 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.22 Time 9:38 p. 360

Run No. 192 - 1

Procedure No. CI-S1

Operation Mode DC

Objective: Daily check. CSMC+CSIC 9.2 kA manual dump.

Coolant condition (before this run)

All				
Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

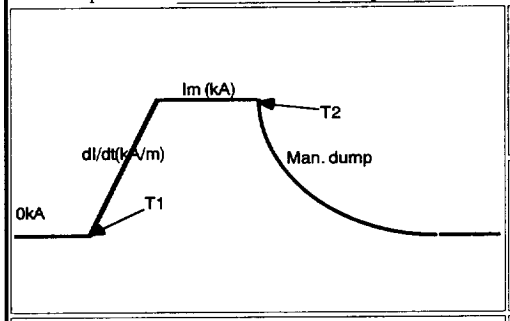
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC	50 kA	104.7 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:38 T_2 10:18 T_3 ____

Heater W T_d = s

Results

Vouter = 503.8 V
Vinner = 435.3 V
Tau = 6.0 s
Vinsert = 20.6 V
1A inlet pressure rise = 0.022 MPa
1A outlet temperature rise = 0.14 K
CSI outlet temperatrure rise = 0.081 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.22 Time 11:07 p. 361

Run No. 193 - 1

Procedure No. CI-S2

Operation Mode DC

Objective: AC loss measurement. CSMC+CSIC 23 kA manual dump. Tau ~ 6 s.

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

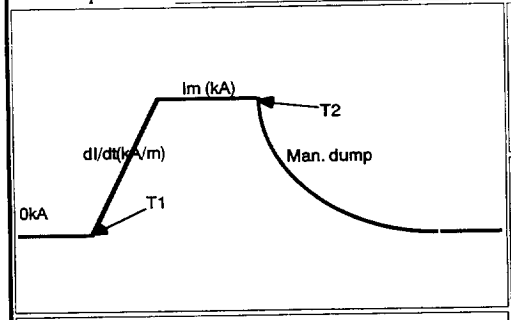
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC	50 kA	104.7 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 23 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 23 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:07 T_2 11:52 T_3 ____

Heater W T_d = s

Results

Vouter = 1255 V
Vinner = 1084 V
Tau = 5.7 s
Vinsert = 51.7 V
1A inlet pressure rise = 0.094 MPa
1A outlet temperature rise = 0.578 K
CSI outlet temperatrure rise = 0.422 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.22 Time 13:12 p. 362

Run No. 194 - 1

Procedure No. CI-S3

Operation Mode DC

Objective: AC loss measurement. CSMC+CSIC 29.9 kA manual dump. Tau ~ 6 s.

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

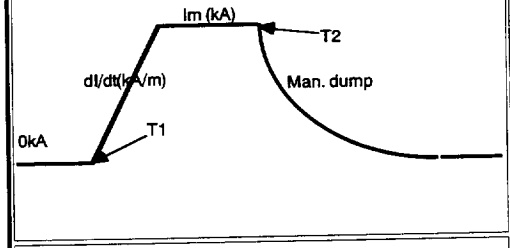
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC	50 kA	104.7 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 29.9 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 29.9 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:12 T_2 14:09 T_3 ____

Heater W T_d = s

Results

Vouter = 1634 V
Vinner = 1411 V
Tau = 5.8 s
Vinsert = 66.6 V
1A inlet pressure rise = 0.154 MPa
1A outlet temperature rise = 0.885 K
CSI outlet temperatrure rise = 0.725 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.22 Time 15:12 p. 363

Run No. 195 - 1
Procedure No. CI-S4
Operation Mode DC

Objective: AC loss measurement. CSMC+CSIC 36.8 kA manual dump. Tau ~ 6 s.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

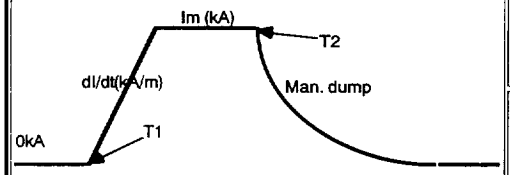
Facility condition

	Power Supply	Resistor
CSMC	50 kA	104.7 m-ohm
CSIC	50 kA	104.7 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern: Manual dump



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:12 T_2 16:20 T_3 ____

Heater W T_d = s

Results
Vouter = 2015 V.
Vinner = 1738 V.
Tau = 5.6 s.
Vinsert = 81 V.
1A inlet pressure rise = 0.235 MPa.
1A outlet temperature rise = 1.225 K.
CSI outlet temperatrure rise = 1.105 K.

Remarks

CS Model Coil Experiment Log

Date 2000.6.23 Time 9:33 p. 364

Run No. 196 - 1
Procedure No. MC-E5-1
Operation Mode DC

Objective: Daily check for sensors. Charge CSMC up to 9.2 kA. Dump manually. (CSIC circuit was open). Tau~9 s.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

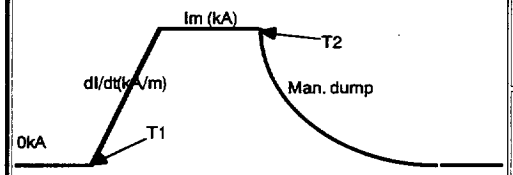
Facility condition

	Power Supply	Resistor
CSMC	50 kA	65.7 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:33 T_2 10:11 T_3 ____

Heater W T_d = s

Results
Vouter = 323.4 V.
Vinner = 275.6 V.
Tau = 9.4 s.
Vinsert = 13.2 V.
1A inlet pressure rise = 0.019 MPa.
1A outlet temperature rise = 0.109 K.
CSI outlet temperatrure rise = 0.071 K.

Remarks

CS Model Coil Experiment Log

Date 2000.6.23 Time 11:04 p. 365

Run No. 197 - 1

Procedure No. MC-E5-2

Operation Mode DC

Objective: AC loss measurement. Charge CSMC up to 23 kA. Dump manually. (CSIC circuit was open). Tau~9 s.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

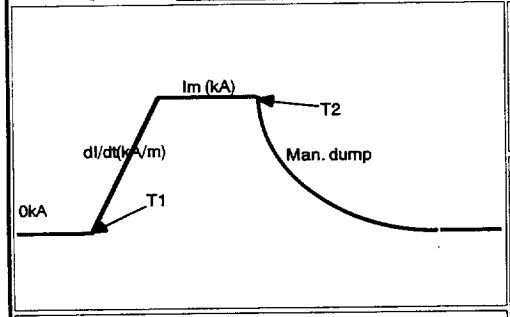
Facility condition

	Power Supply	Resistor
CSMC	50 kA	65.7 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 23 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:04 T_2 11:59 T_3 ____

Heater W T_d = s

Results

Vouter = 804.1 V.
Vinner = 685.1 V.
Tau = 9.0 s.
Vinsert = 30.8 V.
1A inlet pressure rise = 0.073 MPa.
1A outlet temperature rise = 0.45 K.
CSI outlet temperatrure rise = 0.41 K.

Remarks

CS Model Coil Experiment Log

Date 2000.6.23 Time 13:13 p. 366

Run No. 198 - 1

Procedure No. MC-E5-3

Operation Mode DC

Objective: AC loss measurement. Charge CSMC up to 29.9 kA. Dump manually. (CSIC circuit was open). Tau~9 s.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

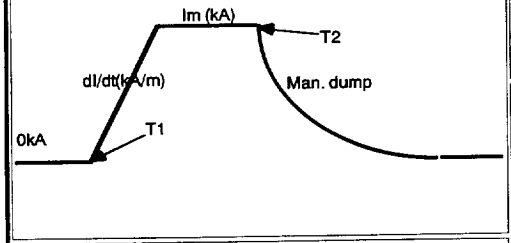
Facility condition

	Power Supply	Resistor
CSMC	50 kA	65.7 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:13 T_2 14:12 T_3 ____

Heater W T_d = s

Results

Vouter = 1047 V.
Vinner = 892 V.
Tau = 8.9 s.
Vinsert = 39.7 V.
1A inlet pressure rise = 0.12 MPa.
1A outlet temperature rise = 0.70 K.
CSI outlet temperatrure rise = 0.75 K.

Remarks

CS Model Coil Experiment Log

Date 2000.6.23 Time 15:20 p. 367

Run No. 199 - 1
Procedure No. MC-E5-4
Operation Mode DC

Objective
AC loss measurement. Charge CSMC up to 36.8 kA. Dump manually. (CSIC circuit was open). Tau~9 s.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

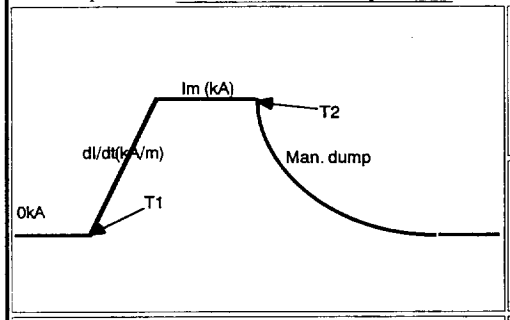
Facility condition

	Power Supply	Resistor
CSMC	50 kA	65.7 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:20 T_2 16:29 T_3 ____

Heater W T_d = s

Results
Vouter = 1290 V.
Vinner = 1098 V.
Tau = 8.75 s.
Vinsert = 48.9 V.
1A inlet pressure rise = 0.183 MPa.
1A outlet temperature rise = 0.97 K.
CSI outlet temperatrure rise = 1.14 K.

Remarks

CS Model Coil Experiment Log

Date 2000.6.26 Time 9:36 p. 368

Run No. 200 - 1
Procedure No. CI-S5
Operation Mode DC

Objective
Daily check. CSMC + CSIC 9.2 kA manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

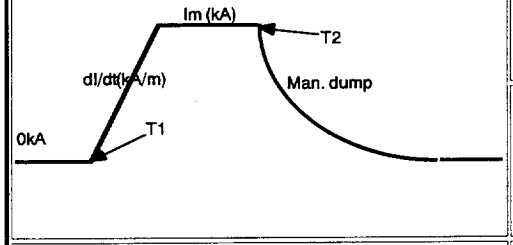
Facility condition

	Power Supply	Resistor
CSMC	50 kA	65.7 m-ohm
CSIC	50 kA	65.7 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:36 T_2 10:16 T_3 ____

Heater W T_d = s

Results
Vouter = 314V.
Vinner = 270 V.
Tau = 9.8 s.
Vinsert = 13.1 V.
1A inlet pressure rise = 0.018 MPa.
1A outlet temperature rise = 0.10 K.
CSI outlet temperatrure rise = 0.07 K.

Remarks

CS Model Coil Experiment Log

Date 2000.6.26 Time 11:07 p. 369

Run No. 201 - 1

Procedure No. CI-S6

Operation Mode DC

Objective: AC loss measurement. CSMC + CSIC 23 kA manual dump.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

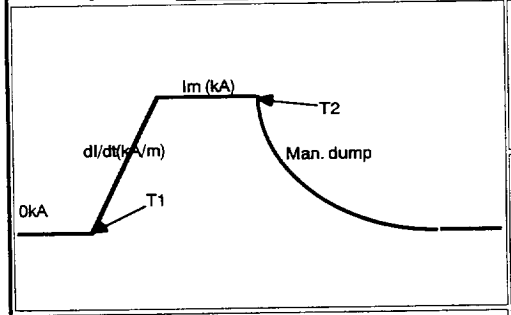
Facility condition

	Power Supply	Resistor
CSMC	50 kA	65.7 m-ohm
CSIC	50 kA	65.7 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 23 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 23 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:07 T_2 11:55 T_3 ____

Heater W T_d = s

Results

Vouter = 783V
Vinner = 675V
Tau = 9.48s
Vinsert = 31.5V
1A inlet pressure rise = 0.071MPa
1A outlet temperature rise = 0.432K
CSI outlet temperatrure rise = 0.440K

Remarks

CS Model Coil Experiment Log

Date 2000.6.26 Time 13:15 p. 370.

Run No. 202 - 1

Procedure No. CI-S7

Operation Mode DC

Objective: AC loss measurement. CSMC + CSIC 29.9 kA manual dump.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

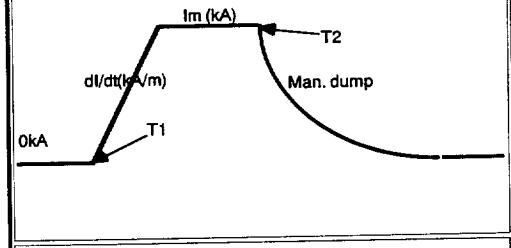
Facility condition

	Power Supply	Resistor
CSMC	50 kA	65.7 m-ohm
CSIC	50 kA	65.7 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 29.9 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 29.9 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:15 T_2 14:19 T_3 ____

Heater W T_d = s

Results

Vouter = 1019.4 V
Vinner = 878 V
Tau = 9.24 s
Vinsert = 41.2 V
1A inlet pressure rise = 0.116 MPa
1A outlet temperature rise = 0.66 K
CSI outlet temperatrure rise = 0.63 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.26 Time 15:21 p. 371

Run No. 203 - 1
Procedure No. CI-S8
Operation Mode DC

Objective: AC loss measurement. CSMC + CSIC 36.8 kA manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

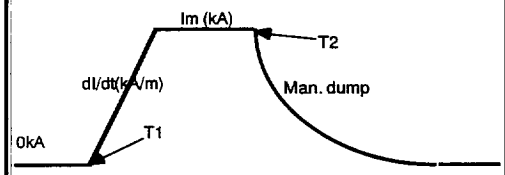
Facility condition

	Power Supply	Resistor
CSMC	50 kA	65.7 m-ohm
CSIC	50 kA	65.7 m-ohm

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 36.8 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:21 T_2 16:35 T_3 ____

Heater W T_d = s

Results
Vouter = 1259 V
Vinner = 1084 V
Tau = 9.1 s
Vinsert = 50.7 V
1A inlet pressure rise = 0.175 MPa
1A outlet temperature rise = 0.93 K
CSI outlet temperatrure rise = 0.96 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.27 Time 9:33 p. 372

Run No. 204 - 1
Procedure No. MC-B2
Operation Mode DC

Objective: Daily check. CSMC 9.2 kA manual dump. Tau ~ 20 s.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

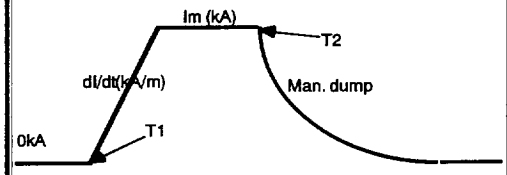
Facility condition

	Power Supply	Resistor
CSMC	50 kA	32 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:33 T_2 10:21 T_3 ____

Heater W T_d = s

Results
Vouter = 156 V
Vinner = 134 V
Tau = 19.4 s
Vinsert = 6.4 V
1A inlet pressure rise = 0.014 MPa
1A outlet temperature rise = 0.075 K
CSI outlet temperatrure rise = 0.056 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.27 Time 11:08 p. 373

Run No. 205 - 1
Procedure No. MC-B4
Operation Mode DC

Objective
AC loss measurement. CSMC 23 kA (50 %) manual dump. Tau ~ 20 s.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

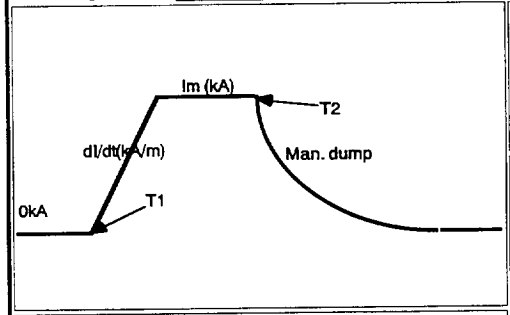
Facility condition

	Power Supply	Resistor
CSMC	50 kA	32 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:08 T_2 12:00 T_3 ____

Heater W T_d = s

Results
Vouter = 389.6 V
Vinner = 331.6 V
Tau = 18.6 s
Vinsert = 15.3 V
1A inlet pressure rise = 0.048 MPa
1A outlet temperature rise = 0.285 K
CSI outlet temperatrure rise = 0.282 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.27 Time 13:12 p. 374

Run No. 206 - 1
Procedure No. MC-B6
Operation Mode DC

Objective
AC loss measurement. CSMC 36.8 kA (80 %) manual dump. Tau ~ 20 s.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

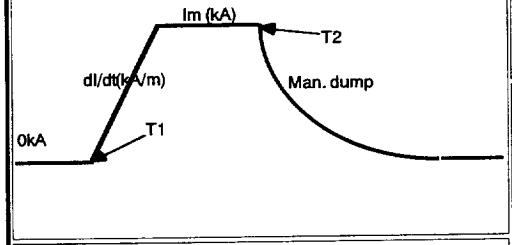
Facility condition

	Power Supply	Resistor
CSMC	50 kA	32 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:12 T_2 14:25 T_3 ____

Heater W T_d = s

Results
Vouter = 625 V
Vinner = 533 V
Tau = 17.9 s
Vinsert = 25.0 V
1A inlet pressure rise = 0.113 MPa
1A outlet temperature rise = 0.627 K
CSI outlet temperatrure rise = 0.85 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.27 Time 15:25 p. 375

Run No. 207 - 1

Procedure No. CI-S12

Operation Mode DC

Objective: AC loss measurement. CSMC + CSIC 36.8 kA manual dump. Tau ~ 20 s.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

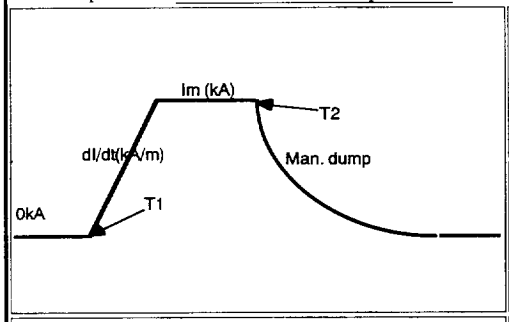
Facility condition

	Power Supply	Resistor
CSMC	50 kA	32 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test2

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:25 T_2 16:33 T_3 ____

Heater W T_d = s

Results

Vouter = 610.4 V
Vinner = 525 V
Tau = 18.64 s
Vinsert = 24.9 V
1A inlet pressure rise = 0.11 MPa
1A outlet temperature rise = 0.597 K
CSI outlet temperatrure rise = 0.693 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.28 Time 9:43 p. 376

Run No. 208 - 1

Procedure No. CI-B3

Operation Mode DC

Objective: Check sensors, inductive heater. Daily Check.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

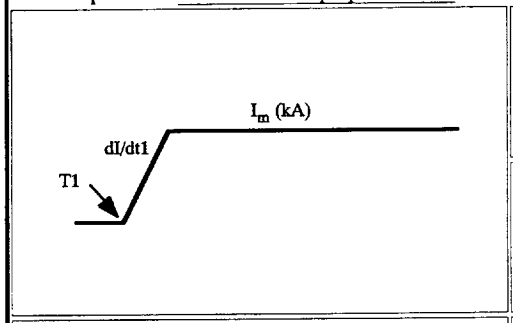
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:43 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

QD setting
ICS_VB_ALL, ICS_VB_ALL2 -> OFF
FD setting
CSIC, CSMC outlet -> OFF

CS Model Coil Experiment Log

Date 2000.6.28 Time _____ p. 377

Run No. 208 - 2
Procedure No. CI-B3
Operation Mode DC

Objective: Check sensors, inductive heater. Daily Check.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

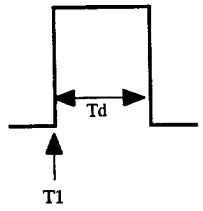
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Heater pulse



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 10:04 T_2 _____ T_3 _____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
I^2 integral = 31.3 A^2s
Ipeak = 66.2 A
Vpeak = 66.6 V

Remarks

CS Model Coil Experiment Log

Date 2000.6.28 Time 10:11 p. 378

Run No. 208 - 3
Procedure No. CI-B3
Operation Mode DC

Objective: Check sensors, inductive heater. Daily Check.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

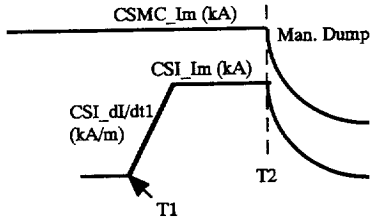
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 10:11 T_2 10:42 T_3 _____

Heater W T_d = s

Results
Vouter = 169 V
Vinner = 125 V
Tau_CSMC = 20.0 s
V_CSIC = 12.3 V
Tau_CSIC = 18.8 s
1A inlet pressure rise = 0.014 MPa
1A outlet temperature rise = 0.08 K
CSI outlet temperatrure rise = 0.06 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.28 Time 11:25 p. 379

Run No. 209 - 1

Procedure No.

Operation Mode No Current

Objective: Heat CSIC up to 5.3 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

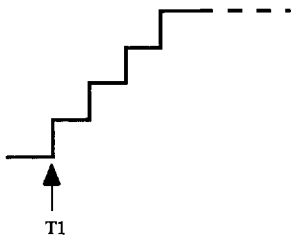
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:25 T_2 ____ T_3 ____

Heater 53 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.28 Time 13:12 p. 380

Run No. 210 - 1

Procedure No. CI-L10-3

Operation Mode DC

Objective: Quench test at 13 T, 30 kA, 5.3 K, 10 g/s, and 3 s delay. Charge CSMC up to 45.3 kA and CSIC up to 30 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

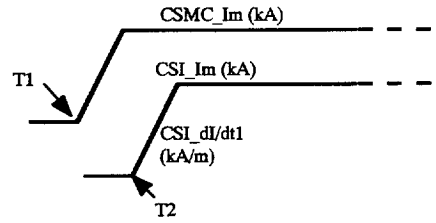
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 45.3 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:12 T_2 14:08 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.28 Time 14:38 p. 381

Run No. 210 - 2
Procedure No. CI-L10-3
Operation Mode DC

Objective: Quench test at 13 T, 30 kA, 5.3 K, 10 g/s, and 3 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

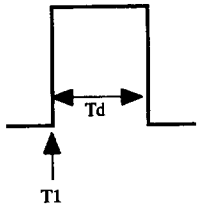
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Heater pulse



CSMC I_m = 45.3 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:38 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
I^2 integral = 2168.7 A^2s
Ipeak = 545.5 A
Vpeak = 554.9 V
Quench. Dump at 14:38.
Vouter = 802.2 V
Vinner = 625.5 V
Tau_CSMC = 17.6 s
V_CSIC = 39.5 V
Tau_CSIC = 18.7 s
1A inlet pressure rise = 0.196 MPa
CSI outlet temperatrure rise = 6.1 K

Remarks

Delay time (time beween QD responce and manual dump) was 4.2 s.

CS Model Coil Experiment Log

Date 2000.6.28 Time 16:01 p. 382

Run No. 211 - 1
Procedure No. ____
Operation Mode No Current

Objective: Heat CSIC up to 5.3 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

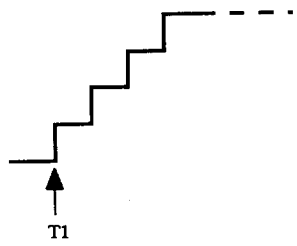
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:01 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.28 Time 16:43 p. 383

Run No. 212 - 1

Procedure No. CI-L8-2

Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Charge CSMC up to 44.5 kA and CSIC up to 40 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

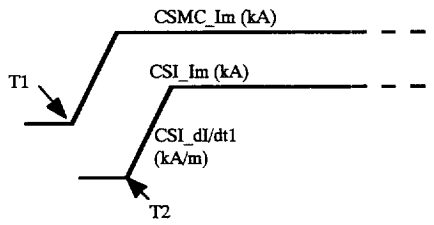
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Ramp up



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:43 T_2 17:38 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.28 Time ____ p. 384

Run No. 212 - 2

Procedure No. CI-L8-2

Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

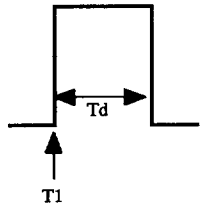
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

NG
Some incident occurred in the inductive heater power supply.
Discharge CSIC.

Remarks

CS Model Coil Experiment Log

Date 2000.6.28 Time 19:52 p. 385

Run No. 213 - 1

Procedure No.

Operation Mode DC

Objective: Discharge CSMC to 10 kA. Manual dump.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

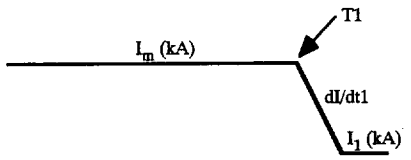
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp down



CSMC I_m = 44.5 kA I_1 = 10 kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 19:52 T_2 ____ T_3 ____

Heater W T_d = s

Results

1A inlet pressure rise = 0.013 MPa
1A outlet temperature rise = 0.087 K
CSI outlet temperatrure rise = 0.06 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 10:15 p. 386

Run No. 214 - 1

Procedure No. CI-B3

Operation Mode DC

Objective: Daily check. Check sensors, inductive heater. Charge CSMC up to 9.2 kA.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

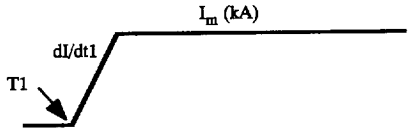
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:15 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 10:34 p. 387

Run No. 214 - 2
Procedure No. CI-B3
Operation Mode DC

Objective
Daily check. Check sensors, inductive heater. Inductive heater check.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

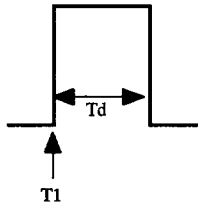
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:34 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
I^2 integral = 31.47 A^2s
Ipeak = 66.6 A
Vpeak = 67.5 V

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 10:38 p. 388

Run No. 214 - 3
Procedure No. CI-B3
Operation Mode DC

Objective
Daily check. Check sensors, inductive heater. Charge CSIC up to 5 kA. Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

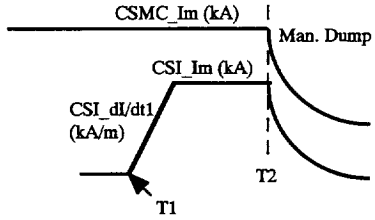
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:38 T_2 11:01 T_3 ____

Heater W T_d = s

Results
Vouter = 169 V
Vinner = 124.8 V
Tau_CSMC = 19.7 s
V_CSIC = 12.3 V
Tau_CSIC = 18.7 s
1A inlet pressure rise = 0.014 MPa
1A outlet temperature rise = 0.08 K
CSI outlet temperatrure rise = 0.04 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 11:41 p. 389

Run No. 215 - 1

Procedure No.

Operation Mode No Current

Objective: Heat CSIC up to 5.3 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

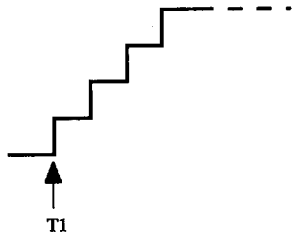
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:41 T_2 ____ T_3 ____

Heater 51.5 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 13:09 p. 390

Run No. 216 - 1

Procedure No. CI-L10-3

Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Charge CSMC up to 44.5 kA and CSIC up to 40 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

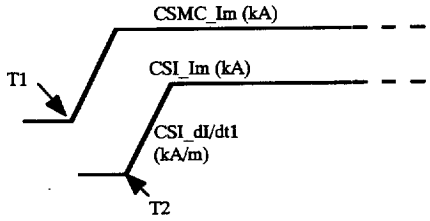
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:09 T_2 14:03 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 14:25 p. 391

Run No. 216 - 2
Procedure No. CI-L10-3
Operation Mode DC

Objective
Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

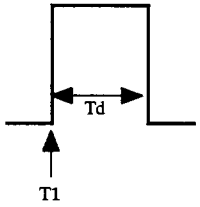
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:25 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
I^2 integral = 1052 A^2s
Ipeak = 381.5 A
Vpeak = 387 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 14:33 p. 392

Run No. 216 - 3
Procedure No. CI-L10-3
Operation Mode DC

Objective
Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

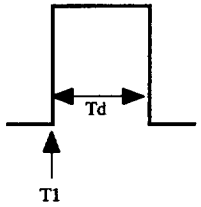
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:33 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
I^2 integral = 1123 A^2s
Ipeak = 393.4 A
Vpeak = 403.4 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 14:41 p. 393

Run No. 216 - 4

Procedure No. CI-L10-3

Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert	All
Temperature	~ 5.3 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

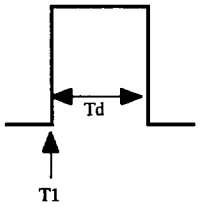
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:41 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
I^2 integral = 1252 A^2s
Ipeak = 414 A
Vpeak = 421 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 14:49 p. 394

Run No. 216 - 5

Procedure No. CI-L10-3

Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert	All
Temperature	~ 5.3 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

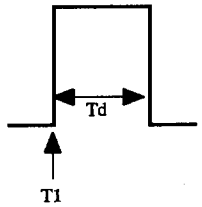
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:49 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
I^2 integral = 1357 A^2s
Ipeak = 432 A
Vpeak = 438 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 14:58 p. 395

Run No. 216 – 6

Procedure No. CI-L10-3

Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

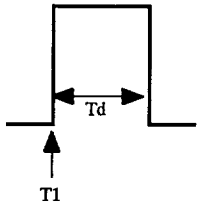
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:58 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
I^2 integral = 1399 A^2s
Ipeak = 439 A
Vpeak = 446 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 15:06 p. 396

Run No. 216 – 7

Procedure No. CI-L10-3

Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

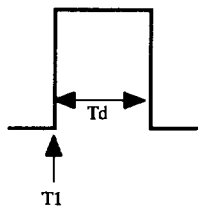
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:06 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
I^2 integral = 1468 A^2s
Ipeak = 448 A
Vpeak = 454 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 15:14 p. 397

Run No. 216 - 8

Procedure No. CI-L10-3

Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 2 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

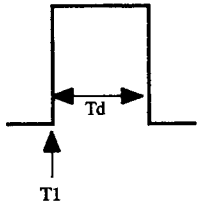
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:14 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
I^2 integral = 1591 A^2s
Ipeak = 468 A
Vpeak = 474 V
Quench. Dump at 15:14
Vouter = 778 V
Vinner = 628 V
Tau_CSMC = 17.0 s
V_CSIC > 50 V
Tau_CSIC = 17.5 s
Maximum CSIC inlet pressure = 0.778 MPa
Maximum CSIC temperature (04H) = 18 K (before dump)

Remarks

Delay time (time beween QD responce and manual dump) was 2.2 s.

CS Model Coil Experiment Log

Date 2000.6.29 Time 15:40 p. 398

Run No. 217 - 1

Procedure No. ____

Operation Mode No Current

Objective: Heat CSIC up to 5.3 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

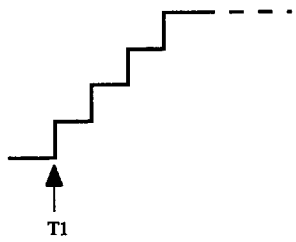
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:40 T_2 ____ T_3 ____

Heater 52 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 16:16 p. 399

Run No. 218 - 1
Procedure No. CI-L8-2
Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 5 s delay. Charge CSMC up to 44.5 kA and CSIC up to 40 kA.

Coolant condition (before this run)

	Insert	All
Temperature	~ 5.3 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

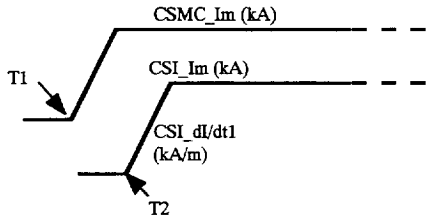
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:16 T_2 17:09 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.29 Time 17:31 p. 400

Run No. 218 - 2
Procedure No. CI-L8-2
Operation Mode DC

Objective: Quench test at 13 T, 40 kA, 5.3 K, 10 g/s, and 5 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert	All
Temperature	~ 5.3 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

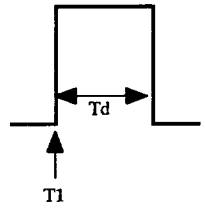
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:31 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
I^2 integral = 1484 A^2s
Ipeak = 451 A
Vpeak = 456 V
Quench. Dump at 17:31
Vouter = 784 V
Vinner = 6318 V
Tau_CSMC = 17.4 s
V_CSIC > 50 V
Tau_CSIC = 17.0 s
Maximum CSIC inlet pressure = 0.776 MPa
Maximum CSIC temperature (04H) = 28 K (before dump)

Remarks

Delay time (time beween QD responce and manual dump) was 5.2 s.

CS Model Coil Experiment Log

Date 2000.6.30 Time 9:42 p. 401

Run No. 219 - 1
Procedure No. CI-B3
Operation Mode DC

Objective
Daily check. Check sensors, inductive heater.
Charge CSMC up to 9.2 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

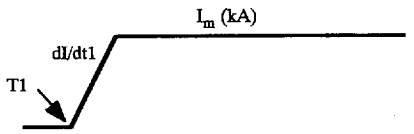
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:42 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks
Amplifier gain had been changed.
ICS_VD_0102, 0203....1617 : x50 -> x10
ICS_VD_ALL : x0.2 -> x0.1
ICS_VB_ALL, ALL2 : x10 -> x2.5

CS Model Coil Experiment Log

Date 2000.6.30 Time 10:01 p. 402

Run No. 219 - 2
Procedure No. CI-B3
Operation Mode DC

Objective
Daily check. Check sensors, inductive heater.
Charge CSIC up to 5 kA. Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

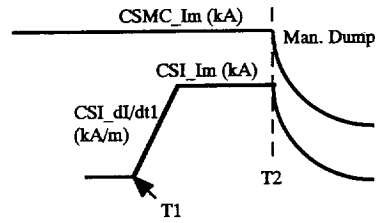
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:01 T_2 10:20 T_3 ____

Heater W T_d = s

Results
Vouter = 169.6 V
Vinner = 125.2 V
Tau_CSMC = 19.7 s
V_CSIC = 12.4 V, 5.22 V
Tau_CSIC = 19.7 s
1A inlet pressure rise = 0.013 MPa
1A outlet temperature rise = 0.075 K
CSI outlet temperatrure rise = 0.058 K

Remarks

CS Model Coil Experiment Log

Date 2000.6.30 Time 11:07 p. 403

Run No. 220 - 1

Procedure No.

Operation Mode No Current

Objective: Heat CSIC up to 5.3 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

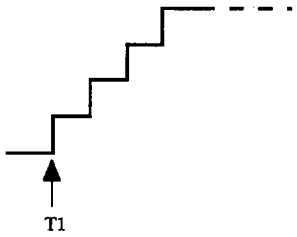
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:07 T_2 ____ T_3 ____

Heater 51 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.30 Time 13:10 p. 404

Run No. 221 - 1

Procedure No. CI-L9-5

Operation Mode DC

Objective: Quench test at 13 T, 35 kA, 5.3 K, 10 g/s, and 5 s delay. Charge CSMC up to 44.9 kA and CSIC up to 35 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

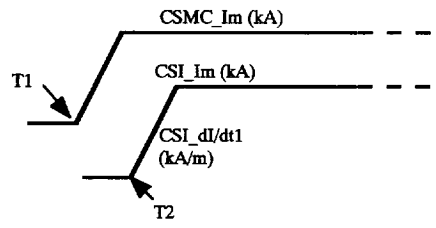
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 44.9 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:10 T_2 14:04 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.30 Time 14:25 p. 405

Run No. 221 - 2

Procedure No. CI-L9-5

Operation Mode DC

Objective: Quench test at 13 T, 35 kA, 5.3 K, 10 g/s, and 5 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 5.3 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

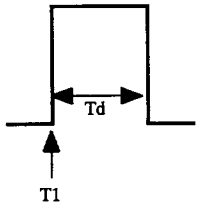
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 35 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:25 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
I^2 integral = 1662 A^2s
Ipeak = 476 A
Vpeak = 484 V
Quench. Dump at 14:25
Vouter = 793 V
Vinner = 627 V
Tau_CSMC = 17.56 s
V_CSIC = 45.0 V
Tau_CSIC = 18.8 s
Maximum CSIC inlet pressure = 0.778 MPa
Maximum CSIC temperature (04H) = 26.8 K (before dump)

Remarks

Delay time (time beween QD responce and manual dump) was 4.9 s.

CS Model Coil Experiment Log

Date 2000.6.30 Time 14:46 p. 406

Run No. 222 - 1

Procedure No. ____

Operation Mode No Current

Objective: Heat CSIC up to 5.3 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

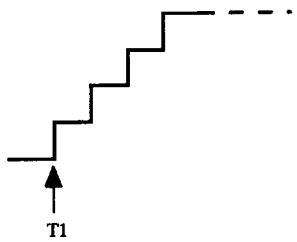
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:46 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.30 Time 16:16 p. 407

Run No. 223 - 1

Procedure No. CI-L11-5

Operation Mode DC

Objective

Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Charge CSMC up to 44.5 kA and CSIC up to 40 kA.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.8 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

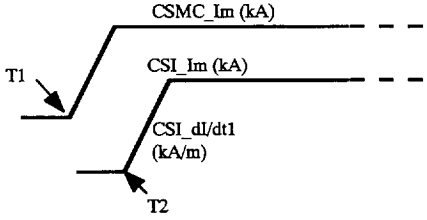
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:16 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.6.30 Time 17:32 p. 408

Run No. 223 - 2

Procedure No. CI-L11-5

Operation Mode DC

Objective

Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.8 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

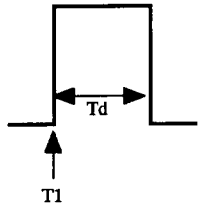
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:32 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater ICS_HI_03
I^2 integral = 483 A^2s
Ipeak = 257 A
Vpeak = 263 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.30 Time 17:40 p. 409

Run No. 223 - 3
Procedure No. CI-L11-5
Operation Mode DC

Objective
Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.8 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

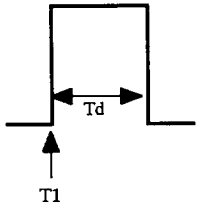
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:40 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
I^2 integral = 590 A^2s
Ipeak = 284 A
Vpeak = 289 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.30 Time 17:48 p. 410

Run No. 223 - 4
Procedure No. CI-L11-5
Operation Mode DC

Objective
Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.8 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

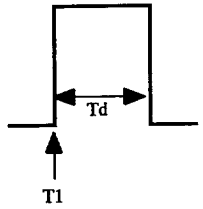
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:48 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
I^2 integral = 663 A^2s
Ipeak = 302 A
Vpeak = 308 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.30 Time 17:56 p. 411

Run No. 223 - 5
Procedure No. CI-L11-5
Operation Mode DC

Objective
Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.8 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

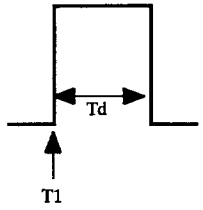
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:56 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
I^2 integral = 738 A^2s
Ipeak = 318 A
Vpeak = 324 V
No quench.

Remarks

CS Model Coil Experiment Log

Date 2000.6.30 Time 18:04 p. 412

Run No. 223 - 6
Procedure No. CI-L11-5
Operation Mode DC

Objective
Quench test at 13 T, 40 kA, 6.8 K, 10 g/s, and 5 s delay. Inductive heater shot.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.8 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

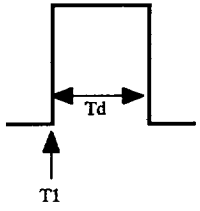
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-DC test3

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:04 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03
I^2 integral = 822 A^2s
Ipeak = 337 A
Vpeak = 342 V
Quench. Dump at 18:04
Vouter = 783.6 V
Vinner = 632.7 V
Tau_CSMC = 17.4 s
V_CSIC = 50.1 V
Tau_CSIC = 18.4 s
Maximum CSIC inlet pressure = 0.827 MPa
Maximum CSIC temperature (04H) = 27 K (before dump. Not calibrated)

Remarks
Delay time (time beween QD responce and manual dump) was 5.2 s.

CS Model Coil Experiment Log

Date 2000.7.3 Time 9:47 p. 413

Run No. 224 - 1
Procedure No. CI-B3
Operation Mode DC

Objective
Daily check. Check sensors, inductive heater. Charge CSMC up to 9.2 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

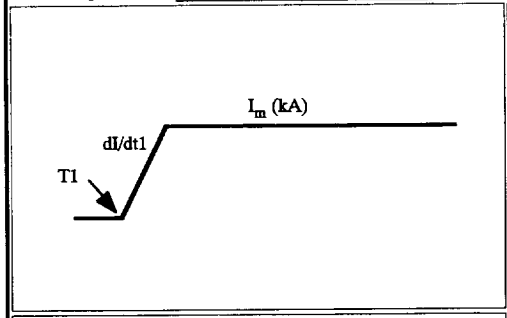
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:47 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.3 Time 10:06 p. 414

Run No. 224 - 2
Procedure No. CI-B3
Operation Mode DC

Objective
Daily check. Check sensors, inductive heater. Charge CSIC up to 5 kA. Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

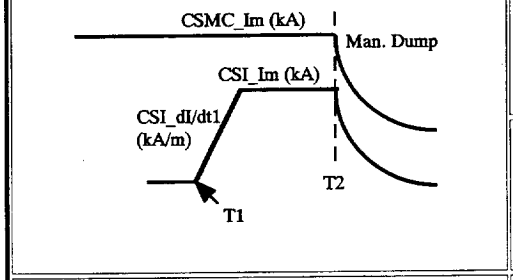
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:06′ T_2 10:11 T_3 ____

Heater W T_d = s

Results
Vouter = 169.2 V
Vinner = 125.0 V
Tau_CSMC = 19.75 s
V_CSIC = 12.1 V, 5.2 V
Tau_CSIC = 18.8 s
1A inlet pressure rise = 0.014 MPa
1A outlet temperature rise = 0.076 K
CSI outlet temperatrure rise = 0.061 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.3 Time 10:54 p. 415

Run No. 225 - 1

Procedure No. CI-R8

Operation Mode Cyclic

Objective: Cyclic test procedure check. 5 cycles at 7.5 T.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

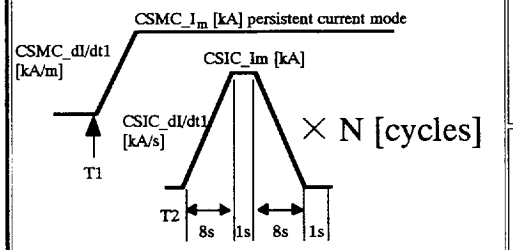
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Cyclic



CSMC I_m = 23 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 5 cycles

Time T_1 10:54 T_2 11:26 T_3

Heater W T_d = s

Results

NG.
Dump at 7 kA by ICS_VB_ALL2.
Vouter = 416 V
Vinner = 308 V
Tau_CSMC = 18.7 s
V_CSIC = 129 V
Tau_CSIC = 19.9 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.3 Time 13:24 p. 416

Run No. 226 - 1

Procedure No. CI-B11

Operation Mode Cyclic

Objective: Balanced voltages adjustment. Charge and discharge CSIC several times.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

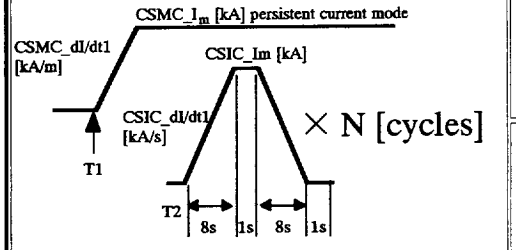
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Cyclic



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test cycles

Time T_1 13:24 T_2 13:45 T_3

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.3 Time 14:56 p. 417

Run No. 227 - 1

Procedure No. CI-R8

Operation Mode Cyclic

Objective: Cyclic test procedure check. 10 cycles at 4.2 T.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

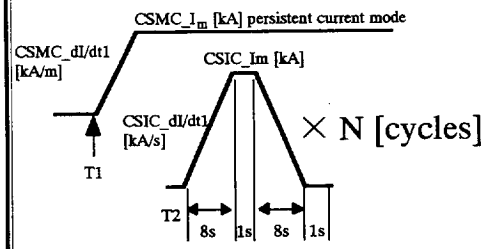
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Cyclic



CSMC I_m = 15 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 10 cycles

Time T_1 14:56 T_2 15:18 T_3

Heater W T_d = s

Results: Succeeded.

Remarks: Two series of 5 cycle tests had been performed. CSMC had been recharged after the first 5 cycle series.

CS Model Coil Experiment Log

Date 2000.7.3 Time 15:59 p. 418

Run No. 228 - 1

Procedure No. CI-R10

Operation Mode Cyclic

Objective: Cyclic test procedure check. 10 cycles at 4.2 T.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

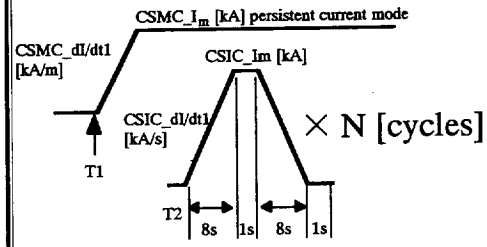
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Cyclic



CSMC I_m = 15 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 10 cycles

Time T_1 15:59 T_2 16:24 T_3

Heater W T_d = s

Results: Succeeded.

Remarks: Two series of 5 cycle tests had been performed. CSMC had been recharged after the first 5 cycle series.

CS Model Coil Experiment Log

Date 2000.7.3 Time 16:49 p. 419

Run No. 229 - 1
Procedure No. CI-R1
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 44.5 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

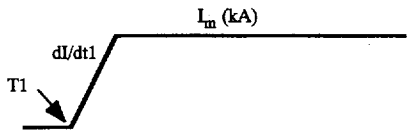
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:49 T_2 ____ T_3 ____

Heater W T_d = s

Results
NG. Current went down at 40 kA.

Remarks
The circuit breaker had been set to work at 40 kA.

CS Model Coil Experiment Log

Date 2000.7.3 Time 18:33 p. 420

Run No. 230 - 1
Procedure No. CI-R1
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 100 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

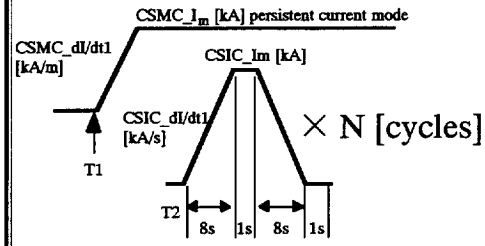
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern Cyclic



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 100 cycles

Time T_1 18:33 T_2 19:25 T_3 ____

Heater W T_d = s

Results
NG.
Dump at 7.44 kA by ICS_VB_ALL2.
Vouter = 810 V
Vinner = 600 V
Tau_CSMC = 17.6 s
V_CSIC = 25.3 V
Tau_CSIC = 19.5 s
1A outlet temperature rise = 0.827 K
CSI outlet temperatrure rise = 1.06 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.4 Time 10:34 p. 421

Run No. 231 - 1
Procedure No. CI-R1
Operation Mode Cyclic

Objective
Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 100 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

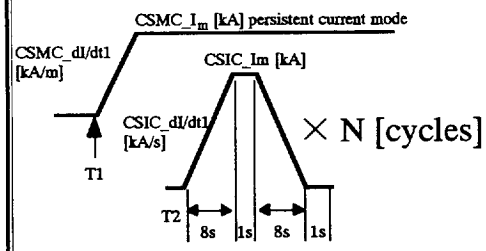
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	300	2 k	300	2 k	1 k

Current pattern Cyclic



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 100 cycles

Time T_1 10:34 T_2 ____ T_3 ____

Heater W T_d = s

Results
Succeeded.

Remarks
Amplifier gain for CSMC layer voltage had been changed;
MCI_VD_0102A, 0102B, 0304A, ..., 1718B : x10 -> x2

CS Model Coil Experiment Log

Date 2000.7.4 Time 11:22 p. 422

Run No. 231 - 2
Procedure No. CI-R1-7
Operation Mode Cyclic

Objective
CSMC 36.8 kA (80 %) AC loss measurement.
Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

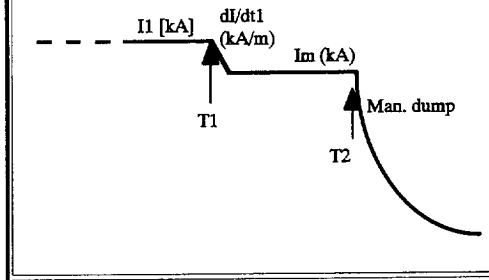
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	300	2 k	300	2 k	1 k

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = 44.5 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:22 T_2 11:51 T_3 ____

Heater W T_d = s

Results
Vouter = 664 V
Vinner = 485 V
Tau_CSMC = 18.1 s
V_CSIC = 20.4 V
Tau_CSIC = 18.9 s
1A inlet pressure rise = 0.115 MPa
1A outlet temperature rise = 0.62 K
CSI outlet temperatrure rise = 0.785 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.4 Time 13:15 p. 423

Run No. 232 - 1
Procedure No. CI-R1-1
Operation Mode DC

Objective
40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 100 cycle test. Charge CSMC up to 44.5 kA for background field.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

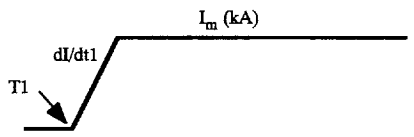
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:15 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks
Noize filters (0.1 Hz low pass) had been set for the CSIC voltages; ICS_VD_0708, 0809, 0910 and 1011.

CS Model Coil Experiment Log

Date 2000.7.4 Time 14:15 p. 424

Run No. 232 - 2
Procedure No. CI-R1-1
Operation Mode DC

Objective
40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 100 cycle test. Charge CSIC up to 40 kA under 12.5 T.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

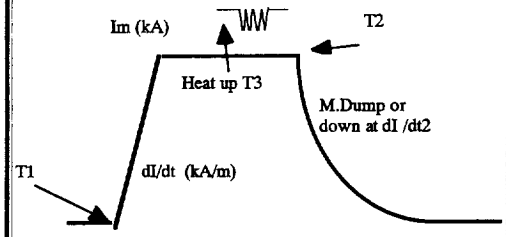
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:15 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.4 Time _____ p. 425

Run No. 232 - 3
Procedure No. CI-R1-1
Operation Mode DC

Objective
40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 100 cycle test. Energize heater ICS_HR_IN.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

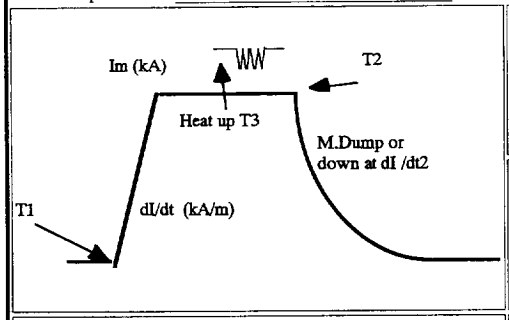
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = 50 kA/m kA/s
Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 14:37

Heater W T_d = s

Results
Tcs (0.1 micro-V def.) = 7.48 K (calibrated value)
CSIC current down safely.
After the Tcs measurement, CSMC current down to 36.8 kA.

Remarks

CS Model Coil Experiment Log

Date 2000.7.4 Time 17:15 p. 426

Run No. 232 - 4
Procedure No. CI-R1-7
Operation Mode DC

Objective
CSMC 80 % (36.8 kA) AC loss measurement.
Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

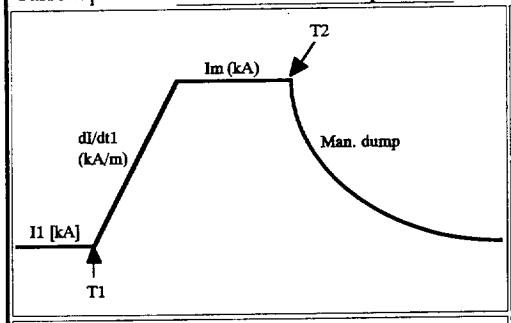
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = 44.5 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 17:15 T_2 18:22 T_3 _____

Heater W T_d = s

Results
Vouter = 626 V
Vinner = 527 V
Tau_CSMC = 17.91 s
V_CSIC = 25.0 V
1A inlet pressure rise = 0.12 MPa
1A outlet temperature rise = 0.63 K
CSI outlet temperatrure rise = 0.71 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.5 Time 9:46 p. 427

Run No. 233 - 1
Procedure No. CI-R2
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 100 cycle test for CSIC.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

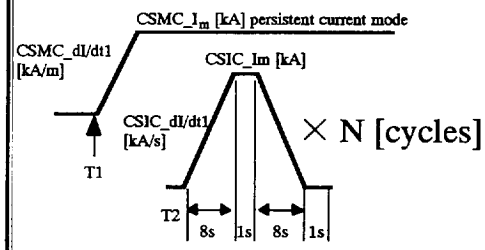
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	300	2 k	300	2 k	1 k

Current pattern: Cyclic



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 100 cycles

Time T_1 9:46 T_2 10:38 T_3

Heater W T_d = s

Results: Succeeded.

Remarks: Noize filters (0.1 Hz low pass) had been removed for the CSIC voltages; ICS_VD_0708, 0809, 0910 and 1011. CSMC current (persistent current mode) had decayed to be 41 kA.
200 cycle tests have been done.

CS Model Coil Experiment Log

Date 2000.7.5 Time 11:10 p. 428

Run No. 233 - 2
Procedure No. CI-R2-7
Operation Mode Cyclic

Objective: Discharge CSMC to 36.8 kA. Manual dump.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

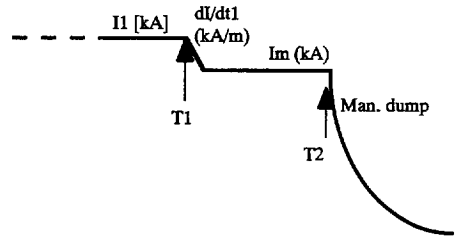
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	300	2 k	300	2 k	1 k

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = 44.5 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test cycles

Time T_1 11:10 T_2 11:43 T_3

Heater W T_d = s

Results:
Vouter = 622 V
Vinner = 523 V
Tau_CSMC = 17.97 s
V_CSIC = 24.8 V
1A inlet pressure rise = 0.117 MPa
1A outlet temperature rise = 0.63 K
CSI outlet temperatrure rise = 0.69 K

Remarks:

CS Model Coil Experiment Log

Date 2000.7.5 Time 13:37 p. 429

Run No. 234 - 1
Procedure No. CI-B12
Operation Mode DC

Objective
Try 44.3 kA charge for CSIC. Charge CSMC up to 44.3 kA.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

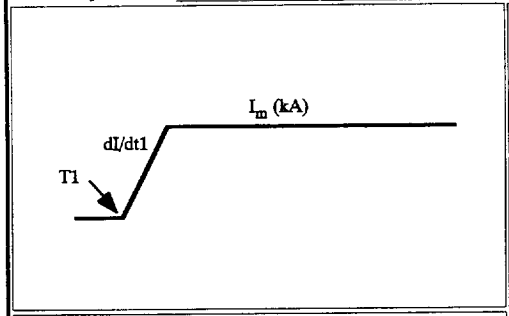
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Ramp up



CSMC I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:37 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks
Noize filters (0.1 Hz low pass) had been set for the CSIC voltages; ICS_VD_0708, 0809, 0910 and 1011. Quench detector criterion has been set to 100 mV - 1 s for ICS_VD_ALL.

CS Model Coil Experiment Log

Date 2000.7.5 Time 14:36 p. 430

Run No. 234 - 1
Procedure No. CI-B12
Operation Mode DC

Objective
Charge CSIC up to 44.3 kA at 13 T.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

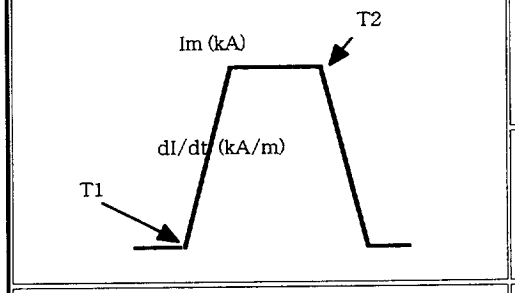
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Trapezoidal



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 44.3 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:36 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.5 Time 15:20 p. 431

Run No. 235 - 1
Procedure No. CI-R2-1
Operation Mode DC

Objective
40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 200 cycle test. Energize heater ICS_HR_IN up to 150 W. Charge CSMC up to 44.5 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

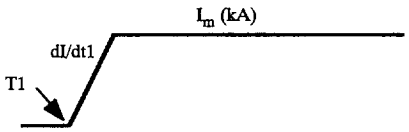
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = 44.3 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:20 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.5 Time 15:54 p. 432

Run No. 235 - 2
Procedure No. CI-R2-1
Operation Mode DC

Objective
40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 200 cycle test. Charge CSIC up to 40 kA. Energize heater ICS_HR_IN.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

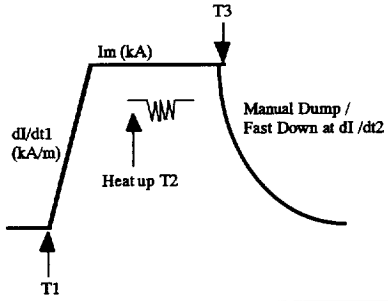
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = 50 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:54 T_2 ____ T_3 18:14

Heater W T_d = s

Results
Tcs (0.1 micro-V def.) = 7.45 K (calibrated value)
CSIC current down safely.
After the Tcs measurement, CSMC current up to 46 kA.

Remarks

CS Model Coil Experiment Log

Date 2000.7.5 Time 18:28 p. 433

Run No. 235 - 3

Procedure No. CI-R2-6

Operation Mode DC

Objective: 100 % (46 kA) AC loss measurement. Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

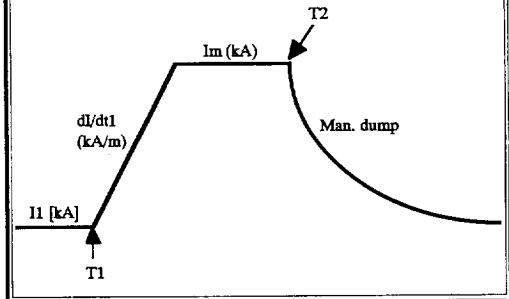
Facility condition

	Power Supply	Resistor
CSMC	50kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 46 kA I_1 = 44.5 kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 18:28 T_2 19:35 T_3 ____

Heater W T_d = s

Results

Vouter = 784 V
Vinner = 659 V
Tau_CSMC = 17.4 s
V_CSIC = 31.5 V
1A inlet pressure rise = 0.178 MPa
1A outlet temperature rise = 0.88 K
CSI outlet temperatrure rise = 1.00 K

Remarks

The 21st 100% charge.

CS Model Coil Experiment Log

Date 2000.7.6 Time 9:52 p. 434

Run No. 236 - 1

Procedure No. CI-R3

Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 300 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

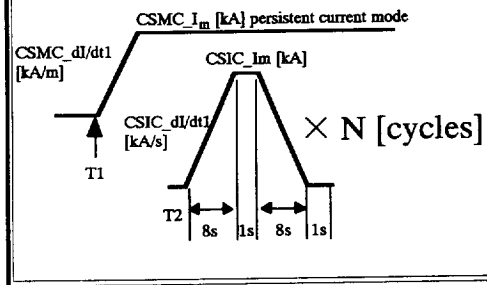
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	300	2 k	300	2 k	1 k

Current pattern Cyclic



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 300 cycles

Time T_1 9:52 T_2 10:43 T_3 ____

Heater W T_d = s

Results

Succeeded.

Remarks

Noize filters (0.1 Hz low pass) had been removed for the CSIC voltages; ICS_VD_0708, 0809, 0910 and 1011. 500 cycle tests have been done.

CS Model Coil Experiment Log

Date 2000.7.6 Time 12:24 p. 435

Run No. 236 - 2

Procedure No. CI-R3-7

Operation Mode Cyclic

Objective: Discharge CSMC to 36.8 kA (80 %). Manual dump.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

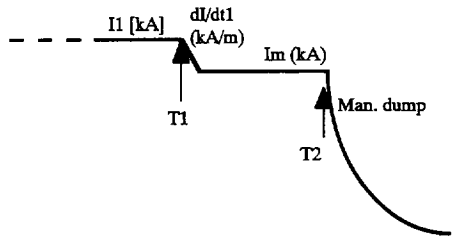
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	300	2 k	300	2 k	1 k

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = 44.5 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 12:24 T_2 13:02 T_3 ____

Heater W T_d = s

Results

Vouter = 623 V
Vinner = 524 V
Tau_CSMC = 17.9 s
V_CSIC = 25.0 V
1A inlet pressure rise = 0.117 MPa
1A outlet temperature rise = 0.63 K
CSI outlet temperatrure rise = 0.67 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.6 Time 14:11 p. 436

Run No. 237 - 1

Procedure No. CI-R3-1

Operation Mode DC

Objective: 40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 500 cycle test. Energize heater ICS_HR_IN up to 150 W. Charge CSMC up to 44.5 kA.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

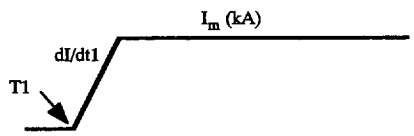
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:11 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.6 Time 15:08 p. 437

Run No. 237 - 2
Procedure No. CI-R3-1
Operation Mode DC

Objective
40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 500 cycle test. Charge CSIC up to 40 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

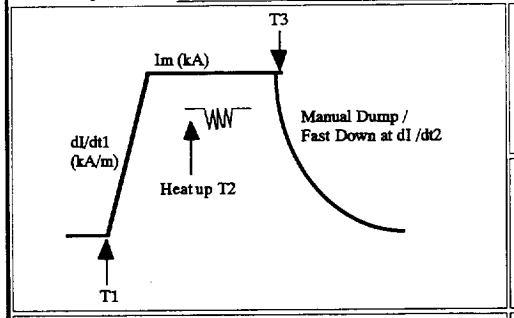
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:08 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.6 Time 15:29 p. 438

Run No. 237 - 3
Procedure No. CI-R3-1
Operation Mode DC

Objective
40 kA - 13 T Tcs measurement for the CS insert coil (CSIC) after the 500 cycle test. Energize heater ICS_HR_IN.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

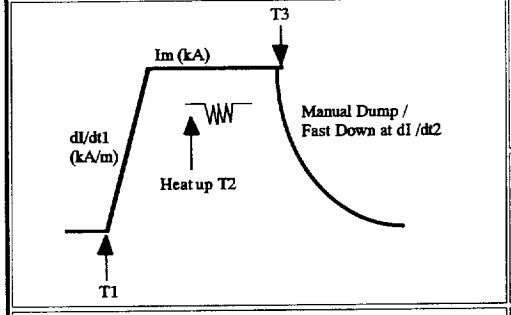
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = -50 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:08 T_2 15:29 T_3 17:40

Heater W T_d = s

Results
Tcs (0.1 micro-V def.) = 7.46 K (calibrated value)
CSIC current down safely.

Remarks

CS Model Coil Experiment Log

Date 2000.7.6 Time 17:45 p. 439

Run No. 237 - 4
Procedure No. CI-R3-6
Operation Mode DC

Objective: 100 % (46 kA) AC loss measurement. Manual dump.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

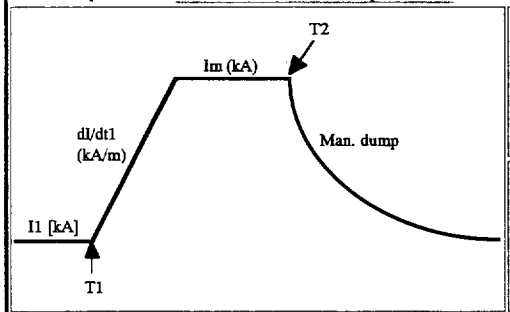
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	2 k	300	2 k	

Current pattern Manual dump



CSMC I_m = 44.5 kA I_1 = 44.5 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:45 T_2 19:17 T_3 ____

Heater W T_d = s

Results
Vouter = 784 V
Vinner = 660 V
Tau_CSMC = 17.4 s
V_CSIC = 31.5 V
1A inlet pressure rise = 0.179 MPa
1A outlet temperature rise = 0.88 K
CSI outlet temperatrure rise = 1.01 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.7 Time 9:47 p. 440

Run No. 238 - 1
Procedure No. CI-R4
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 501 cycle test for CSIC.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

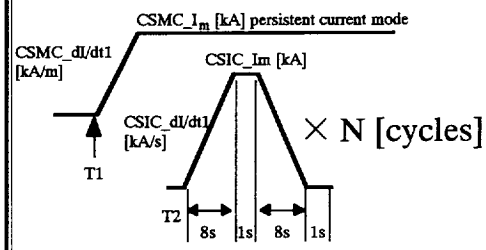
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	300	2 k	300	2 k	1 k

Current pattern Cyclic



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 501 cycles

Time T_1 9:47 T_2 10:39 T_3 ____

Heater W T_d = s

Results
Succeeded.

Remarks
Noize filters (0.1 Hz low pass) had been removed for the CSIC voltages; ICS_VD_0708, 0809, 0910 and 1011. 1001 cycle tests have been done.

CS Model Coil Experiment Log

Date 2000.7.7 Time 13:35 p. 441

Run No. 238 - 2

Procedure No. CI-R4-7

Operation Mode Cyclic

Objective: Discharge CSMC to 36.8 kA (80 %). Manual dump.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

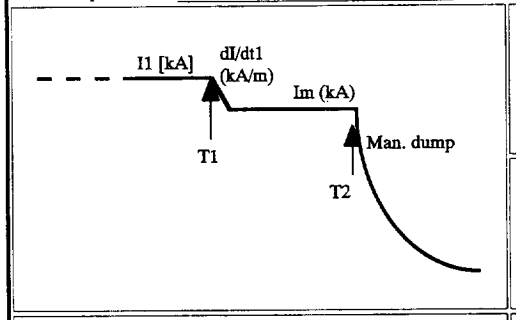
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.5 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	0.02 ms
Pre-trigger	300	2 k	300	2 k	1 k

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = 44.5 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:35 T_2 14:17 T_3 ____

Heater W T_d = s

Results

Vouter = 625 V
Vinner = 525 V
Tau_CSMC = 17.95 s
V_CSIC = 25.1 V
1A inlet pressure rise = 0.12 MPa
1A outlet temperature rise = 0.63 K
CSI outlet temperatrure rise = 0.68 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.10 Time 13:33 p. 442

Run No. 239 - 1

Procedure No. CI-S13

Operation Mode DC

Objective: Check sensors and balanced voltages.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

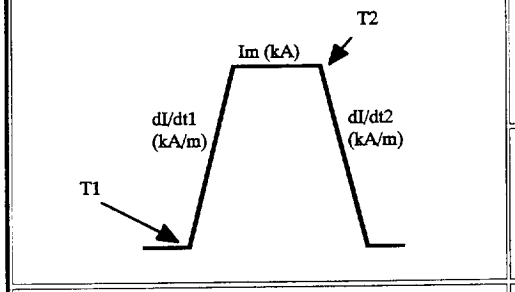
Facility condition

	Power Supply	Resistor
CSMC	50 kA	62.5 m-ohm
CSIC	50 kA	62.5 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = -1 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:33 T_2 13:47 T_3 ____

Heater W T_d = s

Results

Remarks

Amplifier gain was adjusted.
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.10 Time 14:13 p. 443

Run No. 239 – 2
Procedure No. CI-S13
Operation Mode DC

Objective: Check sensors and balanced voltages.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

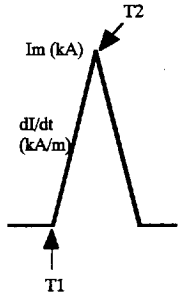
Facility condition

	Power Supply	Resistor
CSMC	50 kA	62.5 m-ohm
CSIC	50 kA	62.5 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Triangular



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:13 T_2 14:58 T_3 ____

Heater W T_d = s

Results

Remarks
Voltage drift had been observed for some layer voltages. Check amplifiers.
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.10 Time 15:30 p. 444

Run No. 239 – 3
Procedure No. CI-S13
Operation Mode DC

Objective: Check sensors and balanced voltages.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

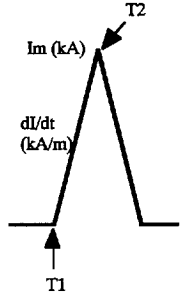
Facility condition

	Power Supply	Resistor
CSMC	50 kA	62.5 m-ohm
CSIC	50 kA	62.5 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Triangular



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:30 T_2 15:44 T_3 ____

Heater W T_d = s

Results

Remarks
Voltage drift had been observed for some layer voltages. Check amplifiers.
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.10 Time 16:49 p. 445

Run No. 240 - 1
Procedure No. CI-S13
Operation Mode DC

Objective
Check sensors and balanced voltages.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

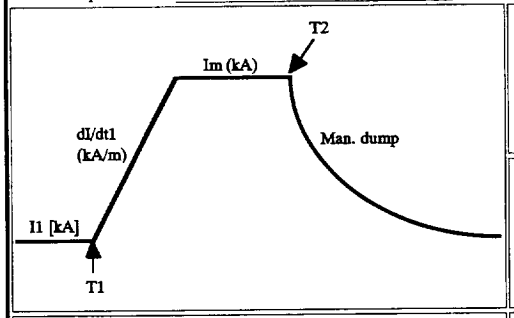
Facility condition

	Power Supply	Resistor
CSMC	50 kA	62.5 m-ohm
CSIC	50 kA	62.5 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:49 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.10 Time 17:31 p. 446

Run No. 240 - 2
Procedure No. CI-S13
Operation Mode DC

Objective
Check sensors and balanced voltages.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

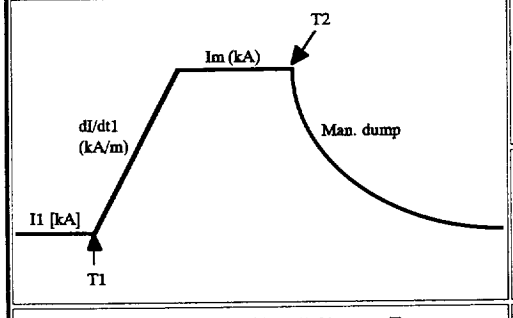
Facility condition

	Power Supply	Resistor
CSMC	50 kA	62.5 m-ohm
CSIC	50 kA	62.5 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = 0 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 9.2 kA I_1 = 0 kA
dI/dt_1 = 1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:49 T_2 17:31 T_3 ____

Heater W T_d = s

Results
Vouter = 315.5 V
Vinner = 270.5 V
Tau_CSMC = 9.82 s
V_CSIC = 13.3 V
1A inlet pressure rise = 0.018 MPa
1A outlet temperature rise = 0.101 K
CSI outlet temperatrure rise = 0.072 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 10:59 p. 447

Run No. 241 - 1
Procedure No. CI-H1
Operation Mode Pulse

Objective: Check for sensors.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

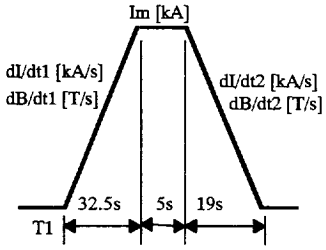
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 5 kA I_1 = kA
dI/dt_1 = 0.15 kA/m kA/s dB/dt_1 = 0.04 T/s
dI/dt_2 = -0.26 kA/m kA/s dB/dt_2 = -0.07 T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 0.15 kA/m kA/s
dI/dt_2 = -0.26 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:59 T_2 ____ T_3 ____

Heater W T_d = s

Results
OK.
01AI pressure rise = 0.019 MPa
01AO temperature rise = 0.09 K
TC02 temperature rise = 0.06 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 11:27 p. 448

Run No. 242 - 1
Procedure No. CI-H1A
Operation Mode Pulse

Objective: Check for protection systems.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

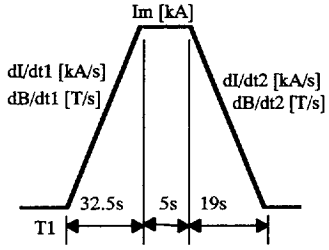
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 5 kA I_1 = kA
dI/dt_1 = 0.15 kA/m kA/s dB/dt_1 = 0.04 T/s
dI/dt_2 = -0.26 kA/m kA/s dB/dt_2 = -0.07 T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 0.15 kA/m kA/s
dI/dt_2 = -0.26 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:27 T_2 ____ T_3 ____

Heater W T_d = s

Results
NG.
Failed in fast down.

Remarks
Have been persistent current mode, discharged by the DC power supply.
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 13:48 p. 449

Run No. 243 - 1
Procedure No. CI-H1A
Operation Mode Pulse

Objective
Check for protection systems.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

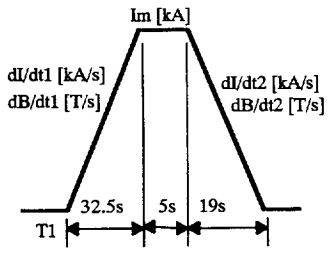
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 5 kA I_1 = kA
dI/dt_1 = 0.15 kA/m kA/s dB/dt_1 = 0.04 T/s
dI/dt_2 = -0.26 kA/m kA/s dB/dt_2 = -0.07 T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 0.15 kA/m kA/s
dI/dt_2 = -0.26 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:48 T_2 ____ T_3 ____

Heater W T_d = s

Results
OK.

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 14:20 p. 450

Run No. 244 - 1
Procedure No. CI-H2
Operation Mode Pulse

Objective
Pulse charge CSMC + CSIC up to 10 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

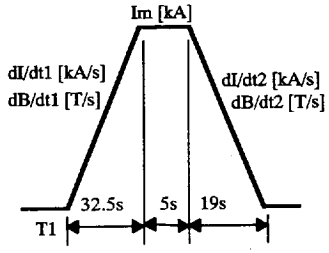
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 0.31 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -0.53 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = 0.31 kA/m kA/s
dI/dt_2 = -0.53 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:20 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 9.9 kA
01AI pressure rise = 0.026 MPa
01AO temperature rise = 0.20 K
TC02 temperature rise = 0.12 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 15:05 p. 451

Run No. 245 - 1
Procedure No. CI-H3
Operation Mode Pulse

Objective: 10 kA manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

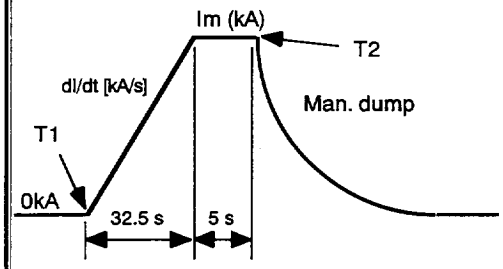
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 0.31 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = 0.31 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:05 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 9.9 kA
01AI pressure rise = 0.033 MPa
01AO temperature rise = 0.19 K
TC02 temperature rise = 0.11 K
Vouter = 336 V
Vinner = 288 V
V_CSIC = 14.3 V
Tau = 9.8 s

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 15:42 p. 452

Run No. 246 - 1
Procedure No. CI-H5
Operation Mode Pulse

Objective: Pulse charge CSMC + CSIC up to 20 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

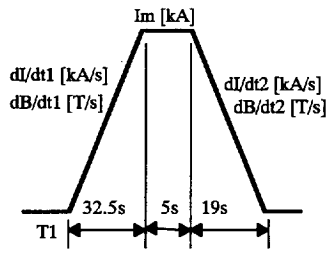
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 20 kA I_1 = kA
dI/dt_1 = 0.62 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1.05 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA
dI/dt_1 = 0.62 kA/m kA/s
dI/dt_2 = -1.05 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:42 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 19.45 kA
01AI pressure rise = 0.088 MPa
01AO temperature rise = 0.52 K
TC02 temperature rise = 0.27 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 16:20 p. 453

Run No. 247 - 1
Procedure No. CI-H7
Operation Mode Pulse

Objective
Pulse charge CSMC + CSIC up to 30 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

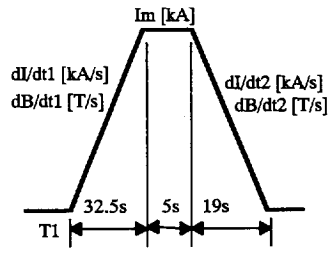
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 30 kA I_1 = kA
dI/dt_1 = 0.923 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1.58 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 30 kA I_1 = kA
dI/dt_1 = 0.923 kA/m kA/s
dI/dt_2 = -1.58 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:20 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 29.02 kA
01AI pressure rise = 0.163 MPa
01AO temperature rise = 0.95 K
TC02 temperature rise = 0.50 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 16:57 p. 454

Run No. 248 - 1
Procedure No. CI-H9
Operation Mode Pulse

Objective
Pulse charge CSMC + CSIC up to 40 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

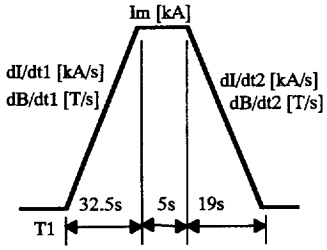
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = 1.23 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -2.1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 1.23 kA/m kA/s
dI/dt_2 = -2.1 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:57 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 39.62 kA
01AI pressure rise = 0.292 MPa
01AO temperature rise = 1.57 K
TC02 temperature rise = 0.96 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 17:44 p. 455

Run No. 249 - 1
Procedure No. CI-H11
Operation Mode Pulse

Objective: Pulse charge CSMC + CSIC up to 44.3 kA (13 T).

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

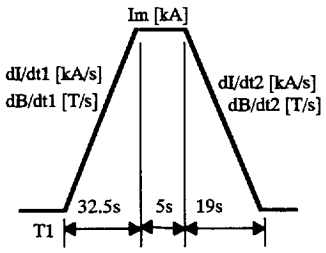
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.36 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = -2.3 kA/m kA/s dB/dt_2 = -0.7 T/s

CSI I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.36 kA/m kA/s
dI/dt_2 = -2.3 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:44 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 44.4 kA
01AI pressure rise = 0.367 MPa
01AO temperature rise = 1.91 K
TC02 temperature rise = 1.29 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.11 Time 18:31 p. 456

Run No. 250 - 1
Procedure No. CI-H12
Operation Mode Pulse

Objective: 44.3 kA (13 T) manual dump.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

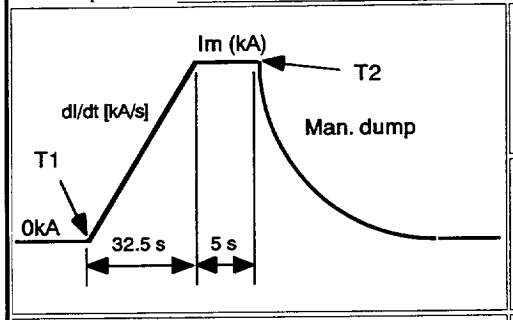
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.36 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.36 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:31 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 44.4 kA
01AI pressure rise = 0.346 MPa
01AO temperature rise = 1.82 K
TC02 temperature rise = 1.24 K
Vouter = 1519 V
Vinner = 1296 V
V_CSIC = 60.2 V
Tau = 8.94 s

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 10:02 p. 457

Run No. 251 - 1
Procedure No. CI-H3
Operation Mode Pulse

Objective: Daily check. 10 kA manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

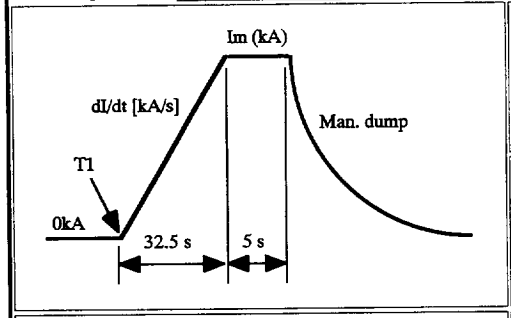
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 0.3 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = 0.3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:02 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 9.89 kA
01AI pressure rise = 0.033 MPa
01AO temperature rise = 0.20 K
TC02 temperature rise = 0.11 K
Vouter = 326 V
Vinner = 279 V
V_CSIC = 13.6 V
Tau = 9.82 s

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 10:37 p. 458

Run No. 252 - 1
Procedure No. CI-H14
Operation Mode Pulse

Objective: Pulse charge up to 13 T (Mode C).

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

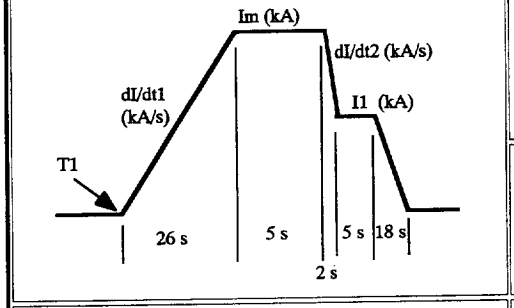
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Stepped Trapezoidal (Mode C)



CSMC I_m = 44.3 kA I_1 = 39 kA
dI/dt_1 = 1.7 kA/m kA/s dB/dt_1 = 0.5 T/s
dI/dt_2 = -1.7 kA/m kA/s dB/dt_2 = -0.5 T/s

CSI I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.7 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:37 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 44.4 kA
I1 = 39.2 kA
01AI pressure rise = 0.368 MPa
01AO temperature rise = 1.94 K
TC02 temperature rise = 1.38 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 11:21 p. 459

Run No. 253 - 1

Procedure No. CI-H15

Operation Mode Pulse

Objective: Bipolar charge from -3 T to 10 T (Mode E).

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

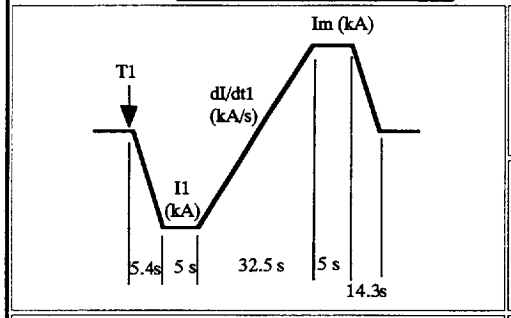
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Bipolar (Mode E)



CSMC I_m = 33.3 kA I_1 = -11 kA

dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 33.3 kA I_1 = kA

dI/dt_1 = 1.4 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:21 T_2 ____ T_3 ____

Heater W T_d = s

Results

Im = 33.5 kA
I1 = -10.3 kA
01AI pressure rise = 0.328 MPa
01AO temperature rise = 1.75 K
TC02 temperature rise = 0.872 K

Remarks

ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 13:13 p. 460

Run No. 254 - 1

Procedure No. CI-H16

Operation Mode Pulse

Objective: Bipolar charge from -3 T to 13 T (Mode E).

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

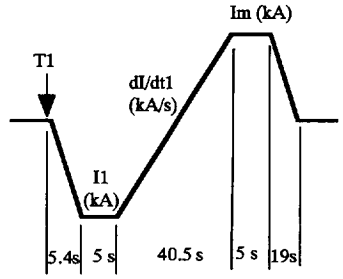
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Bipolar (Mode E)



CSMC I_m = 44.3 kA I_1 = -11 kA

dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 44.3 kA I_1 = kA

dI/dt_1 = 1.4 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:13 T_2 ____ T_3 ____

Heater W T_d = s

Results

Im = 44.4 kA
I1 = -11.0 kA
01AI pressure rise = 0.451 MPa
01AO temperature rise = 2.30 K
TC02 temperature rise = 1.38 K

Remarks

ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 14:04 p. 461

Run No. 255 - 1
Procedure No. CI-H17
Operation Mode Pulse

Objective
Pulse charge up to 44.3 kA (13 T) at 0.6 T/s.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

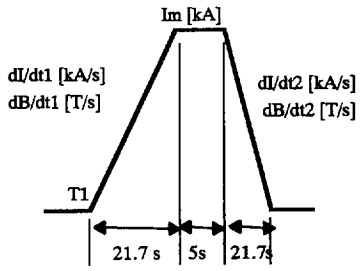
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 44.3 kA I_1 = kA
dI/dt_1 = 2.0 kA/m kA/s dB/dt_1 = 0.6 T/s
dI/dt_2 = -2.0 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 44.3 kA I_1 = kA
dI/dt_1 = 2.0 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:04 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
Im = 44.4 kA
01AI pressure rise = 0.374 MPa
01AO temperature rise = 1.95 K
TC02 temperature rise = 1.26 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 14:57 p. 462

Run No. 256 - 1
Procedure No. ____
Operation Mode Pulse

Objective
Energize heater ICS_HR_IN up to 6.5 K.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

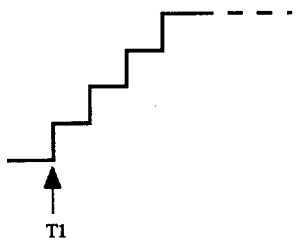
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:57 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 16:05 p. 463

Run No. 257 - 1
Procedure No. CI-K21
Operation Mode Pulse

Objective
CSIC ramp rate limitation test at 6.5 K and 0.4 T/s, up to 40 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

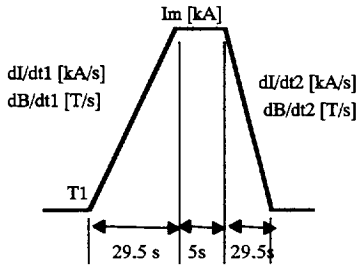
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = -1.4 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 1.4 kA/m kA/s
dI/dt_2 = -1.4 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:05 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
Im = 40.2 kA
01AI pressure rise = 0.254 MPa
01AO temperature rise = 1.39 K
TC02 temperature rise = 0.9 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 17:06 p. 464

Run No. 258 - 1
Procedure No. CI-K22
Operation Mode Pulse

Objective
CSIC ramp rate limitation test at 6.5 K and 0.4 T/s, up to 44.3 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

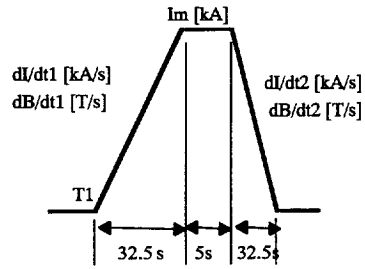
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = -1.4 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.4 kA/m kA/s
dI/dt_2 = -1.4 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:06 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
Im = 44.5 kA
01AI pressure rise = 0.37 MPa
01AO temperature rise = 1.89 K
TC02 temperature rise = 1.46 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 17:51 p. 465

Run No. 259 - 1
Procedure No. CI-K25
Operation Mode Pulse

Objective
CSIC ramp rate limitation test at 6.5 K and 0.5 T/s, up to 40 kA.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

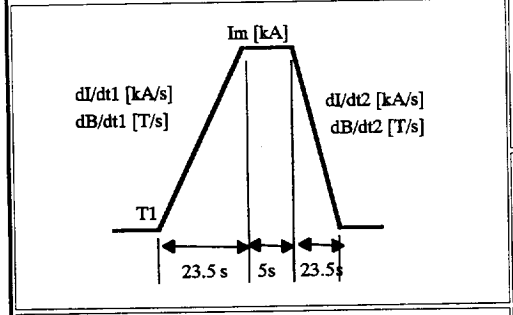
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = 1.7 kA/m kA/s dB/dt_1 = 0.5 T/s
dI/dt_2 = -1.7 kA/m kA/s dB/dt_2 = -0.5 T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 1.7 kA/m kA/s
dI/dt_2 = -1.7 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:51 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
Im = 40.2 kA
01AI pressure rise = 0.29 MPa
01AO temperature rise = 1.58 K
TC02 temperature rise = 1.07 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 18:39 p. 466

Run No. 260 - 1
Procedure No. CI-K23
Operation Mode Pulse

Objective
CSIC ramp rate limitation test at 6.5 K and 0.5 T/s, up to 44.3 kA.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

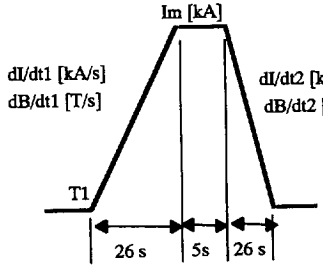
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.7 kA/m kA/s dB/dt_1 = 0.5 T/s
dI/dt_2 = -1.7 kA/m kA/s dB/dt_2 = -0.5 T/s

CSI I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.7 kA/m kA/s
dI/dt_2 = -1.7 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:39 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
Im = 44.4 kA
01AI pressure rise = 0.34 MPa
01AO temperature rise = 1.79 K
TC02 temperature rise = 1.41 K

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.12 Time 19:28 p. 467

Run No. 261 - 1

Procedure No. CI-K24

Operation Mode Pulse

Objective: CSIC ramp rate limitation test at 6.5 K and 0.6 T/s, up to 44.3 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

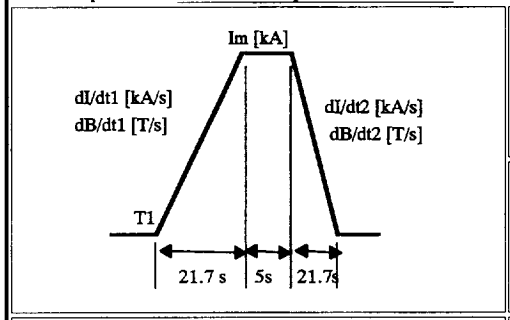
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 44.3 kA I_1 = kA

dI/dt_1 = 2 kA/m kA/s dB/dt_1 = 0.6 T/s

dI/dt_2 = -2 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 44.3 kA I_1 = kA

dI/dt_1 = 2 kA/m kA/s

dI/dt_2 = -2 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 19:28 T_2 ____ T_3 ____

Heater W T_d = s

Results

Quench. Dump at 40.9 kA.
Im = 44.5 kA
01A1 pressure rise = 0.40 MPa
01AO temperature rise = 2.04 K
TC02 temperature rise = 1.78 K
Vouter = 1394.7 V
Vinner = 1189.3 V
Tau_CSMC = 9.0 s
V_CSIC = 52.8 V

Remarks

ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.13 Time 9:42 p. 468

Run No. 262 - 1

Procedure No. ____

Operation Mode No Current

Objective: Control CSIC temperature up to 7.5 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

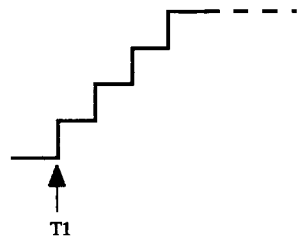
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:42 T_2 ____ T_3 ____

Heater W T_d = s

Results

ICS_HR_IN: 287 W
ICS_TC_01: 7.75 K
ICS_TC_04H: 7.4 K
Inlet mass flow: 9.5 g/s

Remarks

Amplifier gain had been changed for MCI_VB_0102, 01A02A, 01B02B: x1 -> x10
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.13 Time 10:34 p. 469

Run No. 263 - 1
Procedure No. CI-H3
Operation Mode Pulse

Objective: Daily check. 10 kA manual dump.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 7.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

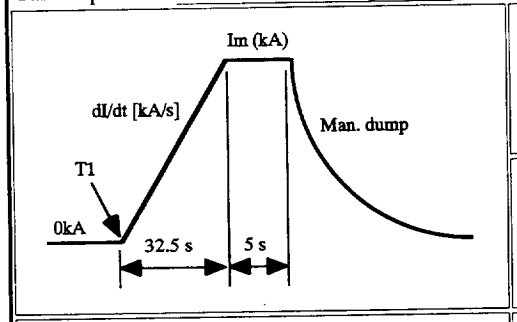
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 0.3 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = 0.3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:34 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 10.3 kA
01AI pressure rise = 0.033 MPa
01AO temperature rise = 0.19 K
TC02 temperature rise = 0.21 K
Vouter = 348.5 V
Vinner = 298.8 V
V_CSIC = 14.6 V
Tau = 9.79 s

Remarks
ICS_VD_0910 signal is not reliable due to some trouble of the AD converter.

CS Model Coil Experiment Log

Date 2000.7.13 Time 11:07 p. 470

Run No. 264 - 1
Procedure No. CI-K26
Operation Mode Pulse

Objective: CSIC ramp rate limitation test at 7.5 K and 0.4 T/s, up to 44.3 kA.

Coolant condition (before this run)

	Insert	All
Temperature	~ 7.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

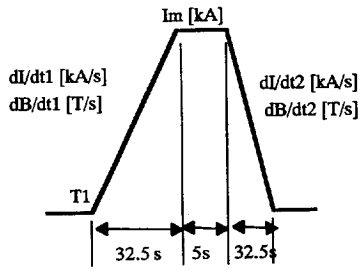
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = -1.4 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.4 kA/m kA/s
dI/dt_2 = -1.4 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:07 T_2 ____ T_3 ____

Heater W T_d = s

Results
Quench at 43.0 kA (corresponds to 100 mV).
Dump at 43.6 kA.
01AI pressure rise = 0.65 MPa
01AO temperature rise = 1.78 K
TC02 temperature rise = 27.9 K
CSIC inlet maximum pressure = 3.01 MPa
CSIC center maximum pressure > 6 MPa
CSIC outlet maximum pressure = 3.37 MPa
Vouter = 1394.7 V
Vinner = 1189.3 V
Tau_CSMC = 9.0 s
V_CSIC = 52.8 V

Remarks

CS Model Coil Experiment Log

Date 2000.7.13 Time 14:18 p. 471

Run No. 265 - 1

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

Objective

Control CSIC temperature up to 6.5 K.

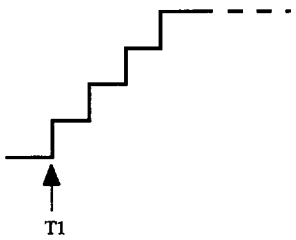
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:18 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.13 Time 15:45 p. 472

Run No. 266 - 1

Procedure No. CI-K24a

Operation Mode Pulse

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

Objective

CSIC ramp rate limitation test at 6.5 K and 0.6 T/s, up to 40 kA.

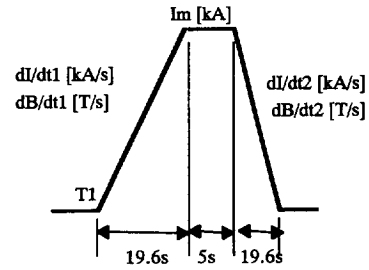
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 40 kA I_1 = kA

dI/dt_1 = 2 kA/m kA/s dB/dt_1 = 0.6 T/s

dI/dt_2 = -2 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 2 kA/m kA/s

dI/dt_2 = -2 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:45 T_2 ____ T_3 ____

Heater W T_d = s

Results

No quench.
Im = 39.4 kA
01AI pressure rise = 0.245 MPa
01AO temperature rise = 1.38 K
TC02 temperature rise = 1.36 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.13 Time _____ p. 473

Run No. 267 - 1

Procedure No. _____

Operation Mode No Current

Objective: Control CSIC temperature up to 7.5 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

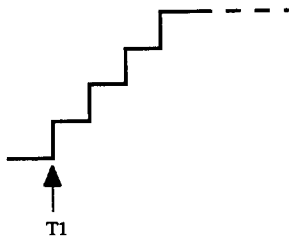
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 _____ T_2 _____ T_3 _____

Heater W T_d = s

Results

At 17:18
ICS_HR_IN: 290 W
TC_01 = 7.8 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.13 Time 17:25 p. 474

Run No. 268 - 1

Procedure No. CI-K26a

Operation Mode Pulse

Objective: CSIC ramp rate limitation test at 7.5 K and 0.4 T/s, up to 40 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 7.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

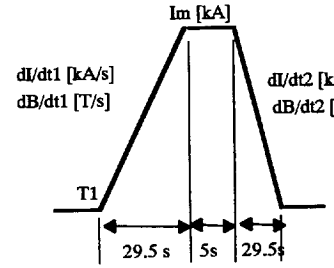
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 40 kA I_1 = kA

dI/dt_1 = 1.4 kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = -1.4 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 1.4 kA/m kA/s

dI/dt_2 = -1.4 kA/m kA/s

Cyclic Test _____ cycles

Time T_1 17:25 T_2 _____ T_3 _____

Heater W T_d = s

Results

No quench.
Im = 40.2 kA
01AI pressure rise = 0.245 MPa
01AO temperature rise = 1.38 K
TC02 temperature rise = 1.36 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.13 Time 17:45 p. 475

Run No. 268 - 2

Procedure No.

Operation Mode Pulse

Objective: Increase CSIC temperature to 4.5 K. Discharge heater ICS_HR_IN.

Coolant condition (before this run)

	Insert	All
Temperature	~ 7.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern No current

CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:45 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.13 Time 19:14 p. 476

Run No. 269 - 1

Procedure No. CI-H18

Operation Mode Pulse

Objective: AC loss measurement with bipolar field.

Coolant condition (before this run)

	Insert	All
Temperature	~ 7.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

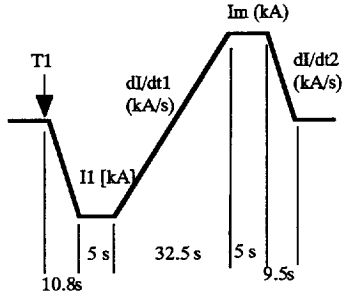
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC	JT60F	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Bipolar (Mode E)



CSMC I_m = 23 kA I_1 = -23 kA

dI/dt_1 = kA/m kA/s dB/dt_1 = 0.4 T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 23 kA I_1 = -23 kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 19:14 T_2 ____ T_3 ____

Heater W T_d = s

Results

Im = -21.9 kA, 22.4 kA
01AI pressure rise = 0.332 MPa
01AO temperature rise = 1.65 K
TC02 temperature rise = 0.76 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.14 Time 9:50 p. 477

Run No. 270 - 1
Procedure No.
Operation Mode No Current

Objective: The 5th layer heater test. Energize heater MCI_HR_05AI1 and 05AI2 up to 9 K.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

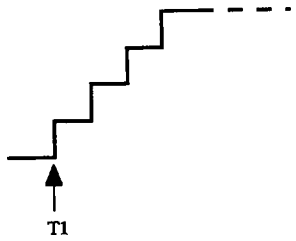
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:50 T_2 ____ T_3 ____

Heater W T_d = s

Results
At 11:10
MCI_HR_05AI1+05AI2: 650 W
TS_05AI = 8.9 K
TS_05AO = 7.04 K
TS_05BO = 6.64 K

At 11:30, turned off heater.

Remarks

CS Model Coil Experiment Log

Date 2000.7.14 Time 14:39 p. 478

Run No. 271 - 1
Procedure No. CI-J18
Operation Mode Pulse

Objective: CSIC ramp rate limitation test. Pulse charge to 10 kA with 1 T/s.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

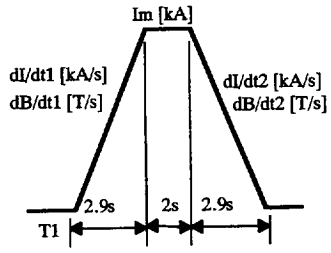
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 3.4 kA/m kA/s dB/dt_1 = 1 T/s
dI/dt_2 = -3.4 kA/m kA/s dB/dt_2 = -1 T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = 3.4 kA/m kA/s
dI/dt_2 = -3.4 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:39 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
Im = 10.08 kA
01AI pressure rise = 0.103 MPa
01AO temperature rise = 0.654 K
TC02 temperature rise = 0.247 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.14 Time 15:31 p. 479

Run No. 272 - 1
Procedure No. CI-J3
Operation Mode Pulse

Objective: 10 kA manual dump.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

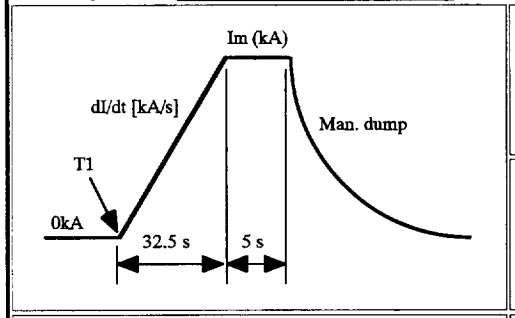
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:31 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 10.09 kA
01AI pressure rise = 0.043 MPa
01AO temperature rise = 0.280 K
TC02 temperature rise = 0.116 K
Vouter = 337 V
Vinner = 288 V
V_CSIC = 14.3 V
Tau = 9.85 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.14 Time 15:31 p. 480

Run No. 273 - 1
Procedure No. CI-J13
Operation Mode Pulse

Objective: CSIC ramp rate limitation test. Pulse charge to 10 kA with 2 T/s.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

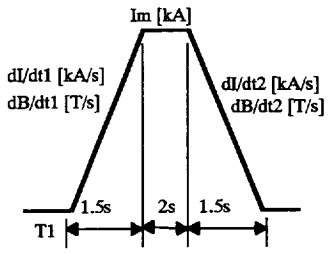
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 6.7 kA/m kA/s dB/dt_1 = 2 T/s
dI/dt_2 = -6.7 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = 6.7 kA/m kA/s
dI/dt_2 = -6.7 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:31 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
Im = kA
01AI pressure rise = 0.143 MPa
01AO temperature rise = 0.832 K
TC02 temperature rise = 0.315 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.14 Time 17:20 p. 481

Run No. 274 - 1
Procedure No. CI-J19
Operation Mode Pulse

Objective: CSIC ramp rate limitation test. Pulse charge to 20 kA with 1 T/s.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

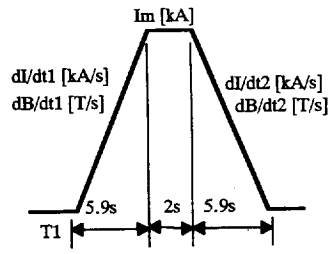
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 20 kA I_1 = kA
dI/dt_1 = 3.4 kA/m kA/s dB/dt_1 = 1 T/s
dI/dt_2 = -3.4 kA/m kA/s dB/dt_2 = -1 T/s

CSI I_m = 20 kA I_1 = kA
dI/dt_1 = 3.4 kA/m kA/s
dI/dt_2 = -3.4 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:20 T_2 ____ T_3 ____

Heater W T_d = s

Results

No quench.
Im = 20.02 kA
01AI pressure rise = 0.18 MPa
01AO temperature rise = 1.11 K
TC02 temperature rise = 0.45 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.14 Time 18:15 p. 482

Run No. 275 - 1
Procedure No. CI-J14
Operation Mode Pulse

Objective: CSIC ramp rate limitation test. Pulse charge to 20 kA with 2 T/s.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

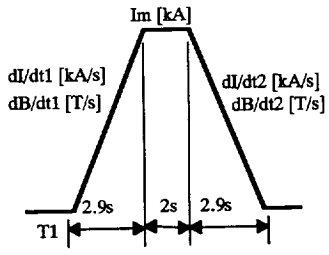
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 20 kA I_1 = kA
dI/dt_1 = 6.9 kA/m kA/s dB/dt_1 = 2 T/s
dI/dt_2 = -6.9 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 20 kA I_1 = kA
dI/dt_1 = 6.9 kA/m kA/s
dI/dt_2 = -6.9 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:15 T_2 ____ T_3 ____

Heater W T_d = s

Results

No quench.
Im = 20.02 kA
01AI pressure rise = 0.30 MPa
01AO temperature rise = 1.63 K
TC02 temperature rise = 0.70 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.14 Time 19:11 p. 483

Run No. 276 - 1

Procedure No. CI-J15

Operation Mode Pulse

Objective: CSIC ramp rate limitation test. Pulse charge to 30 kA with 2 T/s.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

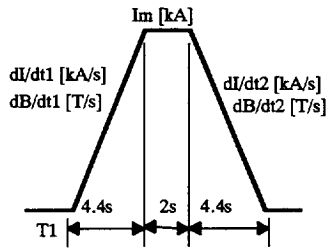
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 30 kA I_1 = kA

dI/dt_1 = 6.8 kA/m kA/s dB/dt_1 = 2 T/s

dI/dt_2 = -6.8 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 30 kA I_1 = kA

dI/dt_1 = 6.8 kA/m kA/s

dI/dt_2 = -6.8 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 19:11 T_2 ____ T_3 ____

Heater W T_d = s

Results

No quench.
Im = 29.9 kA
01AI pressure rise = 0.48 MPa
01AO temperature rise = 2.42 K
TC02 temperature rise = 1.15 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.17 Time 9:54 p. 484

Run No. 277 - 1

Procedure No. ____

Operation Mode No Current

Objective: Control CSIC temperature up to 6.5 K.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

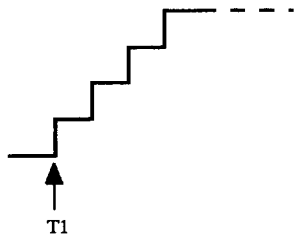
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:54 T_2 ____ T_3 ____

Heater W T_d = s

Results

ICS_HR_IN: 165 W
ICS_TC_01: 6.68 K
ICS_TC_04H: 6.50 K
Inlet mass flow: 10.8 g/s

Remarks

Amplifier gain had been changed for MCI_VB_0102, 01A02A, 01B02B: x1

CS Model Coil Experiment Log

Date 2000.7.17 Time 10:16 p. 485

Run No. 278 - 1
Procedure No. CI-J13
Operation Mode Pulse

Objective: Daily check. 10 kA manual dump.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

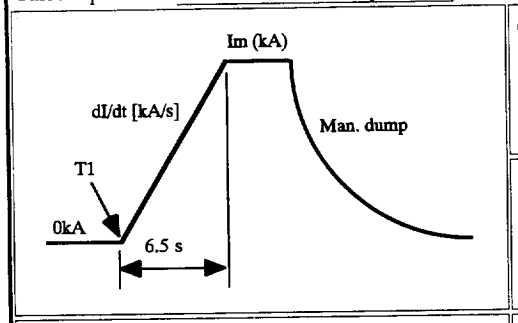
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 1.54 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = 1.54 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:16 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 10.0 kA
01AI pressure rise = 0.044 MPa
01AO temperature rise = 0.30 K
TC02 temperature rise = 0.14 K
Vouter = 338 V
Vinner = 288.5 V
V_CSIC = 14.2 V
Tau = 9.85 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.17 Time 11:01 p. 486

Run No. 279 - 1
Procedure No. CI-J20
Operation Mode Pulse

Objective: CSIC ramp rate limitation test at 6.5 K. Pulse charge to 35 kA with 2 T/s.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

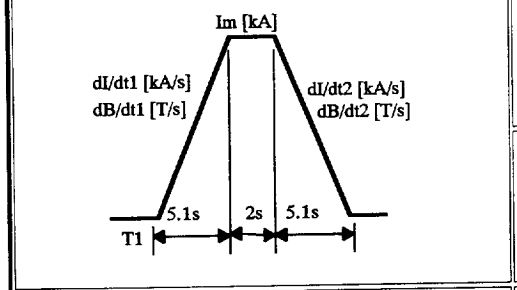
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 35 kA I_1 = kA
dI/dt_1 = 6.9 kA/m kA/s dB/dt_1 = 2 T/s
dI/dt_2 = -6.9 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 35 kA I_1 = kA
dI/dt_1 = 6.9 kA/m kA/s
dI/dt_2 = -6.9 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:01 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
Im =kA
01AI pressure rise = 0.58 MPa
01AO temperature rise = 2.89 K
TC02 temperature rise = 1.65 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.17 Time 13:17 p. 487

Run No. 280 - 1

Procedure No. CI-J21

Operation Mode Pulse

Objective: CSIC ramp rate limitation test at 6.5 K. Pulse charge to 40 kA with 2 T/s.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

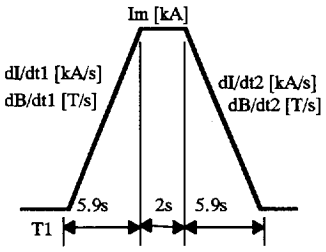
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 40 kA I_1 = kA

dI/dt_1 = 6.8 kA/m kA/s dB/dt_1 = 2 T/s

dI/dt_2 = -6.8 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 6.8 kA/m kA/s

dI/dt_2 = -6.8 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:17 T_2 ____ T_3 ____

Heater W T_d = s

Results

Quenched at 40 kA (flat top).
Dump at 40 kA.
01AI pressure rise = 0.58 MPa
01AO temperature rise = 2.89 K
TC02 temperature rise = 1.65 K
Vouter = 1355 V
Vinner = 1157 V
V_CSIC = 53.5 V
Tau = 8.97 s

Remarks

Measured physical data of MCI_VB_0102, MCI_VB_01A02A, and MCI_VB_01B02B are 1/10 of the real value.

CS Model Coil Experiment Log

Date 2000.7.17 Time ____ p. 488

Run No. 281 - 1

Procedure No. ____

Operation Mode No Current

Objective: Control CSIC temperature up to 6.5 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

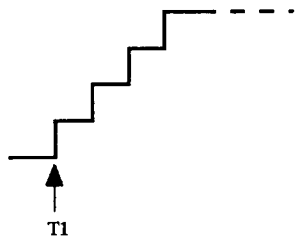
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results

ICS_HR_IN: 155 W
ICS_TC_04H: 6.51 K
Inlet mass flow: 11.3 g/s

Remarks

CS Model Coil Experiment Log

Date 2000.7.17 Time 15:42 p. 489

Run No. 282 - 1
Procedure No. CI-J26
Operation Mode Pulse

Objective: CSIC ramp rate limitation test at 6.5 K. Pulse charge to 38 kA with 2 T/s.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

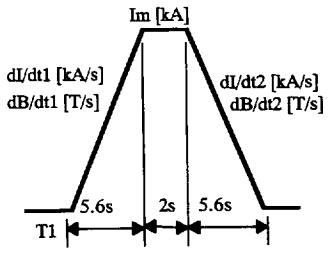
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 38 kA I_1 = kA
dI/dt_1 = 6.8 kA/m kA/s dB/dt_1 = 2 T/s
dI/dt_2 = -6.8 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 38 kA I_1 = kA
dI/dt_1 = 6.8 kA/m kA/s
dI/dt_2 = -6.8 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:42 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
01AI pressure rise = 0.61 MPa
01AO temperature rise = 3.03 K
TC02 temperature rise = 1.64 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.17 Time 18:33 p. 490

Run No. 283 - 1
Procedure No. CI-J27
Operation Mode Pulse

Objective: AC loss measurement for CSMC+CSIC. Pulse charge to 20 kA with 2 T/s.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

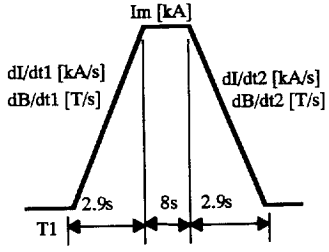
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 20 kA I_1 = kA
dI/dt_1 = 6.9 kA/m kA/s dB/dt_1 = 2 T/s
dI/dt_2 = -6.9 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 20 kA I_1 = kA
dI/dt_1 = 6.9 kA/m kA/s
dI/dt_2 = -6.9 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:33 T_2 ____ T_3 ____

Heater W T_d = s

Results
01AI pressure rise = 0.308 MPa
01AO temperature rise = 1.624 K
TC02 temperature rise = 0.725 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.17 Time 19:29 p. 491

Run No. 284 - 1
Procedure No. MC-G8-4
Operation Mode Pulse

Objective: CSMC 1st layer ramp rate limitation test at 4.5 K. Pulse charge to 40 kA with 2 T/s. (CSIC circuit is open.)

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

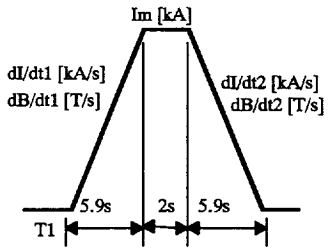
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = 6.8 kA/m kA/s dB/dt_1 = 2 T/s
dI/dt_2 = -6.8 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:29 T_2 ____ T_3 ____

Heater W T_d = s

Results

Quench.
Dump at 35.3 kA.
01AI pressure rise = 0.58 MPa
01AO temperature rise = 2.89 K
TC02 temperature rise = 1.65 K
Vouter = 1235 V (dump)
Vinner = 1040 V (dump)
V_CSIC = 46.5 V
Tau = 8.73 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.18 Time 9:55 p. 492

Run No. 285 - 1
Procedure No. MC-G8-7
Operation Mode Pulse

Objective: Daily check. CSMC 10 kA manual dump. CSIC circuit is opened.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

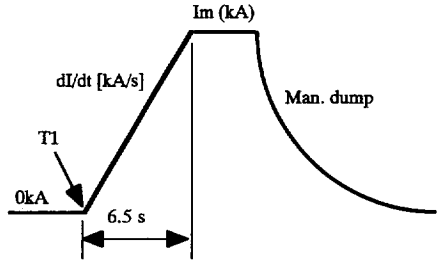
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 1.54 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:55 T_2 ____ T_3 ____

Heater W T_d = s

Results

Im = 10.0 kA
01AI pressure rise = 0.042 MPa
01AO temperature rise = 0.28 K
TC02 temperature rise = 0.09 K
Vouter = 346 V
Vinner = 292 V
V_CSIC = 13.8 V
Tau = 9.45 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.18 Time 10:40 p. 493

Run No. 286 - 1
Procedure No. MC-G8-8
Operation Mode Pulse

Objective
CSMC AC loss measurement at 4.5 K. Pulse charge to 10 kA with 1 T/s. CSIC circuit is opened.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

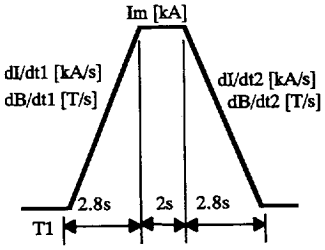
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 3.6 kA/m kA/s dB/dt_1 = 1 T/s
dI/dt_2 = -3.6 kA/m kA/s dB/dt_2 = -1 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:40 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 10.1 kA
01AI pressure rise = 0.09 MPa
01AO temperature rise = 0.58 K
TC02 temperature rise = 0.17 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.18 Time 11:35 p. 494

Run No. 287 - 1
Procedure No. MC-G8-9
Operation Mode Pulse

Objective
CSMC AC loss measurement at 4.5 K. Pulse charge to 10 kA with 2 T/s. CSIC circuit is opened.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

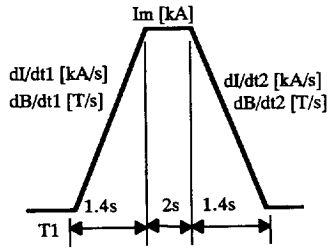
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 7.1 kA/m kA/s dB/dt_1 = 2 T/s
dI/dt_2 = -7.1 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:35 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 10.0 kA
01AI pressure rise = 0.14 MPa
01AO temperature rise = 0.84 K
TC02 temperature rise = 0.24 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.18 Time 13:34 p. 495

Run No. 288 - 1

Procedure No. MC-G8-10

Operation Mode Pulse

Objective: CSMC AC loss measurement at 4.5 K. Pulse charge to 20 kA with 1 T/s. CSIC circuit is opened.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

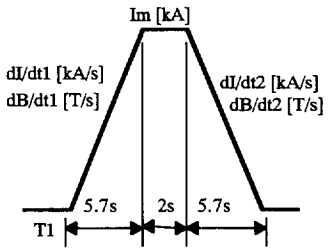
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 20 kA I_1 = kA

dI/dt_1 = 3.5 kA/m kA/s dB/dt_1 = 1 T/s

dI/dt_2 = -3.5 kA/m kA/s dB/dt_2 = -1 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:34 T_2 ____ T_3 ____

Heater W T_d = s

Results

Im = 19.9 kA
01AI pressure rise = 0.18 MPa
01AO temperature rise = 1.1 K
TC02 temperature rise = 0.3 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.18 Time 14:38 p. 496

Run No. 289 - 1

Procedure No. MC-G8-11

Operation Mode Pulse

Objective: CSMC AC loss measurement at 4.5 K. Pulse charge to 20 kA with 2 T/s. CSIC circuit is opened.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

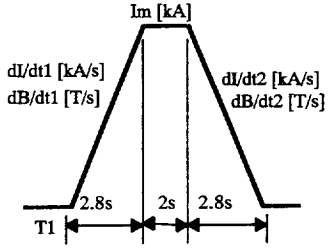
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 20 kA I_1 = kA

dI/dt_1 = 7.1 kA/m kA/s dB/dt_1 = 2 T/s

dI/dt_2 = -7.1 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:38 T_2 ____ T_3 ____

Heater W T_d = s

Results

Im = 19.9 kA
01AI pressure rise = 0.30 MPa
01AO temperature rise = 1.56 K
TC02 temperature rise = 0.47 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.18 Time 15:48 p. 497

Run No. 290 - 1

Procedure No. MC-G8-12

Operation Mode Pulse

Objective: CSMC 1st layer ramp rate limitation test at 4.5 K. Pulse charge to 38 kA with 1.9 T/s. CSIC circuit is opened.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

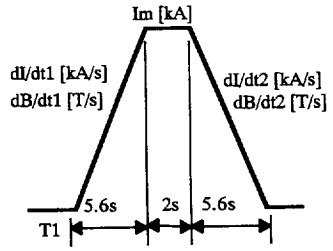
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 38 kA I_1 = kA

dI/dt_1 = -6.8 kA/m kA/s dB/dt_1 = 1.9 T/s

dI/dt_2 = -6.8 kA/m kA/s dB/dt_2 = -1.9 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:48 T_2 ____ T_3 ____

Heater W T_d = s

Results

No quench.
Dump at 18 kA (decreasing current) due to the power supply trouble.

Im = 37.8 kA
01AI pressure rise = 0.42 MPa
01AO temperature rise = 2.36 K
TC02 temperature rise = 0.65 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.18 Time 16:20 p. 498

Run No. 291 - 1

Procedure No. ____

Operation Mode No Current

Objective: Control CSIC temperature up to 6.5 K.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

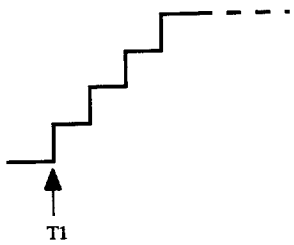
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:20 T_2 ____ T_3 ____

Heater W T_d = s

Results

ICS_HR_IN: 164 W
ICS_TC_04H: 6.52 K
Inlet mass flow: 10.6 g/s
Inlet pressure : 0.58 MPa

Remarks

CS Model Coil Experiment Log

Date 2000.7.18 Time 17:29 p. 499

Run No. 292 - 1

Procedure No. CI-J29

Operation Mode Pulse

Objective: CSIC ramp rate limitation test at 6.5 K. Pulse charge to 42 kA with 1.2 T/s. After 1-s hold, dump manually.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

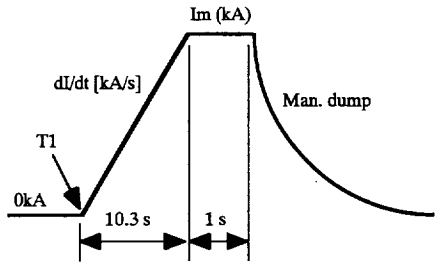
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 42 kA I_1 = kA

dI/dt_1 = 4.1 kA/m kA/s dB/dt_1 = 1.2 T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 42 kA I_1 = kA

dI/dt_1 = 4.1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:29 T_2 ____ T_3 ____

Heater W T_d = s

Results

CSIC quenched at 41.7 kA (flat top). No quench in CSMC. Dump at 41.7 kA.

Im = 41.7 kA
01AI pressure rise = 0.39 MPa
01AO temperature rise = 2.06 K
TC02 temperature rise = 3.45 K
Vouter = 1423 V
Vinner = 1217 V
V_CSIC = 56.2 V
Tau = 8.89 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.19 Time 9:31 p. 500

Run No. 293 - 1

Procedure No.

Operation Mode No Current

Objective: Control CSMC 5th layer temperature up to 10 K.

Coolant condition (before this run)

	All
Temperature	~ 4.5 K ~ K
Mass Flow Rate	~ 10 g/s ~ g/s
Pressure	~ 0.6 MPa

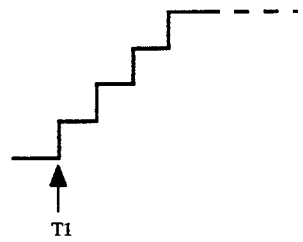
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:31 T_2 ____ T_3 ____

Heater W T_d = s

Results

10:23
MCI_HR_05AI1 and 05AI2: 600 W
MCI_TS_05AI: 8.24 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.19 Time 10:33 p. 501

Run No. 294 - 1
Procedure No. MC-G8-7
Operation Mode Pulse

Objective: Daily check. CSMC 10 kA manual dump. CSIC circuit is opened.

Coolant condition (before this run)

	5A&B		All
Temperature	~ ~8 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

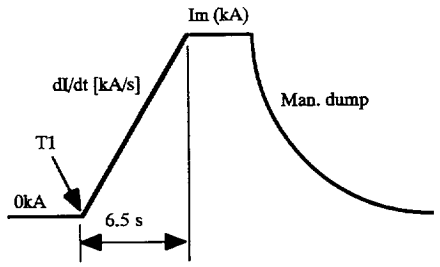
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 1.54 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:33 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 10.0 kA
01AI pressure rise = 0.042 MPa
01AO temperature rise = 0.28 K
TC02 temperature rise = 0.10 K
Vouter = 345 V
Vinner = 293 V
V_CSIC = 13.8 V
Tau = 9.46 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.19 Time ____ p. 502

Run No. 294 - 2
Procedure No. ____
Operation Mode No Current

Objective: Control CSMC 5th layer temperature up to 10 K.

Coolant condition (before this run)

	5A&B		All
Temperature	~ ~8 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

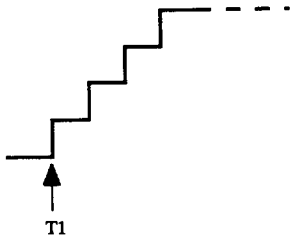
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 ____ T_2 ____ T_3 ____

Heater W T_d = s

Results
11:26
MCI_HR_05AI1 and 05AI2: 767 W
MCI_TS_05AI: 10.05 K
MCI_TS_05AO: 7.37 K
MCI_TS_05BO: 6.96 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.19 Time 11:35 p. 503

Run No. 295 - 1

Procedure No. MC-G20-1

Operation Mode Pulse

Objective: CSMC 5th layer ramp rate limitation test at 10 K. Pulse charge to 40 kA. CSIC circuit is open.

Coolant condition (before this run)

	5A&B		All
Temperature	~ 10 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

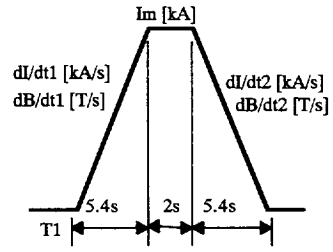
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 38 kA I_1 = kA

dI/dt_1 = 7 kA/m kA/s dB/dt_1 = 2 T/s

dI/dt_2 = -7 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:35 T_2 ____ T_3 ____

Heater W T_d = s

Results

Quench at 36.4 kA (100 mV)
01AI pressure rise = 0.60 MPa
01AO temperature rise = 2.35 K
TC02 temperature rise = 0.59 K
05AI pressure rise = 0.9 MPa (Pmax = 1.6 MPa)
05AI temperature rise = 26.4 K
05AO temperature rise = 9.49 K
05BO temperature rise = 9.41 K
Vouter = 1310 V (dump)
Vinner = 1103 V (dump)
V_CSIC = 49 V
Tau = 8.71 s

Remarks

Zero adjustment has been done for flow meters FL_05A06BI and FL_05AO after this shot.

CS Model Coil Experiment Log

Date 2000.7.19 Time 13:00 p. 504

Run No. 296 - 1

Procedure No. ____

Operation Mode No Current

Objective: Control CSIC layer temperature up to 6.5 K.

Coolant condition (before this run)

	All		All
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

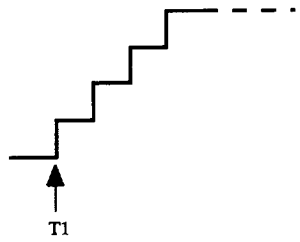
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:00 T_2 ____ T_3 ____

Heater W T_d = s

Results

ICS_HR_IN: 169 W
ICS_TC_01: 6.67 K
ICS_TC_04H: 6.50 K
ICS_TC_05H: 6.54 K
ICS_TC_02: 6.33 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.19 Time 14:14 p. 505

Run No. 297 - 1
Procedure No. CI-J30
Operation Mode Pulse

Objective
CSIC ramp rate limitation test at 6.5 K. Pulse charge to 40 kA with 1.2 T/s. After 1-s hold, dump manually.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

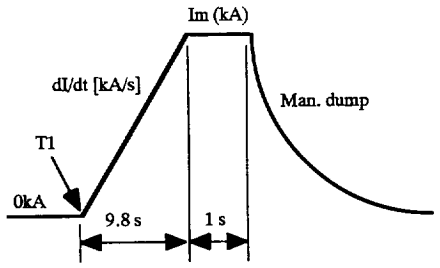
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = 4.1 kA/m kA/s dB/dt_1 = 1.2 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 4.1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:14 T_2 ____ T_3 ____

Heater W T_d = s

Results
No quench.
Im = 39.8 kA
01AI pressure rise = 0.35 MPa
01AO temperature rise = 1.90 K
TC02 temperature rise = 1.14 K
Vouter = 1360 V
Vinner = 1160 V
V_CSIC = 54 V
Tau = 8.96 s

Remarks
Zero adjustment has been done for flow meter FL_05A06BI after this shot.

CS Model Coil Experiment Log

Date 2000.7.19 Time 14:31 p. 506

Run No. 298 - 1
Procedure No. ____
Operation Mode No Current

Objective
Control CSMC 5th layer temperature up to 10 K.

Coolant condition (before this run)

	All		All
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

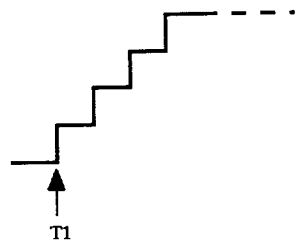
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:31 T_2 ____ T_3 ____

Heater W T_d = s

Results
MCI_HR_05AI1 and 05AI2: 773 W
MCI_TS_05AI: 10.1 K
MCI_TS_05AO: 7.41 K
MCI_TS_05BO: 7.01 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.19 Time 16:19 p. 507

Run No. 299 - 1
Procedure No. MC-G20-2
Operation Mode Pulse

Objective: CSMC 5th layer ramp rate limitation test at 10 K. Pulse charge to 44.3 kA. After 1-s hold, dump manually. CSIC circuit is open.

Coolant condition (before this run)

	5A&B		All
Temperature	~ 6.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

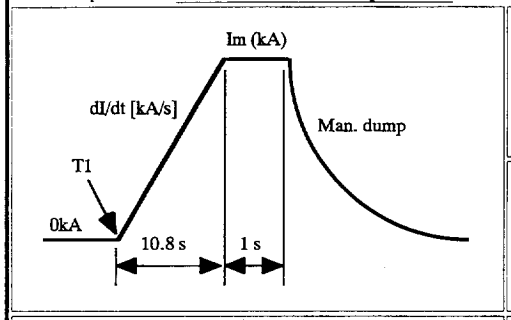
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = 4.1 kA/m kA/s dB/dt_1 = 1.2 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:19 T_2 ____ T_3 ____

Heater W T_d = s

Results

Quench at 38.0 kA (100 mV)
01AI pressure rise = 0.64 MPa
01AO temperature rise = 2.12 K
TC02 temperature rise = 0.60 K
05AI pressure rise = 0.49 MPa (Pmax = 1.92 MPa)
05AI temperature rise = 27.7 K
05AO temperature rise = 11.9 K
05BO temperature rise = 10.9 K
Vouter = 1393 V (dump)
Vinner = 1173 V (dump)
V_CSIC = 52 V
Tau = 8.59 s

Remarks

Zero adjustment has been done for flow meters FL_05A06BI and FL_05AO after this shot.

CS Model Coil Experiment Log

Date 2000.7.20 Time 9:58 p. 508

Run No. 300 - 1
Procedure No. CI-J3
Operation Mode Pulse

Objective: Daily check. CSMC 10 kA manual dump. CSIC circuit is open.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

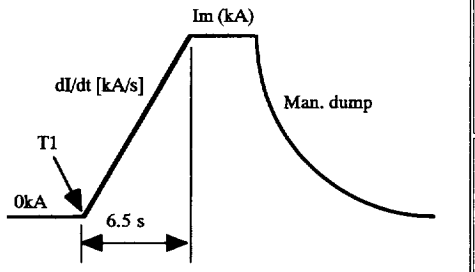
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 1.54 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 10 kA I_1 = kA
dI/dt_1 = 1.54 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:58 T_2 ____ T_3 ____

Heater W T_d = s

Results

Im = 10.0 kA
01AI pressure rise = 0.043 MPa
01AO temperature rise = 0.27 K
TC02 temperature rise = 0.099 K
Vouter = 338 V
Vinner = 290 V
V_CSIC = 14.2 V
Tau = 9.82 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.20 Time 10:55 p. 509

Run No. 301 - 1

Procedure No. CI-J31

Operation Mode Pulse

Objective: Demonstration of 13 T and 1.2 T/s pulse charge for series connected CSMC and CSIC. Pulse charge to 44.3 kA.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

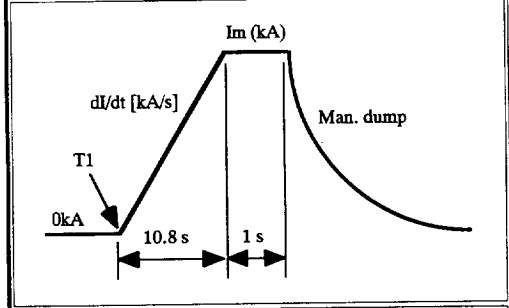
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 44.3 kA I_1 = kA

dI/dt_1 = 4.1 kA/m kA/s dB/dt_1 = 1.2 T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 44.3 kA I_1 = kA

dI/dt_1 = 4.1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:55 T_2 ____ T_3 ____

Heater W T_d = s

Results

CSMC quenched at 44.1 kA (flat top). No quench in CSIC.
01AI pressure rise = 0.44 MPa
01AO temperature rise = 8.08 K
TC02 temperature rise = 1.33 K
Vouter = 1500 V (dump)
Vinner = 1280 V (dump)
V_CSIC = 59 V
Tau = 8.89 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.20 Time 11:40 p. 510

Run No. 302 - 1

Procedure No. ____

Operation Mode No Current

Objective: Control CSMC 1st layer temperature up to 6.5 K.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

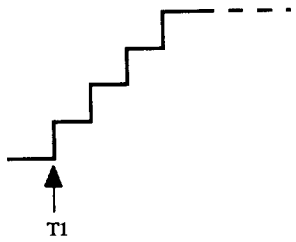
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:40 T_2 ____ T_3 ____

Heater W T_d = s

Results

13:00
MCI_HR_01AI1 and 01AI2: 516 W
MCI_TS_01AI: 6.51 K
MCI_TS_01AO: 6.34 K
MCI_TS_01BO: 6.31 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.20 Time 13:16 p. 511

Run No. 303 - 1
Procedure No. MC-G21-1
Operation Mode Pulse

Objective: CSMC 1st layer ramp rate limitation test at 6.5 K and 2 T/s. Pulse charge to 38 kA. CSIC circuit is open.

Coolant condition (before this run)

	1A&B	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

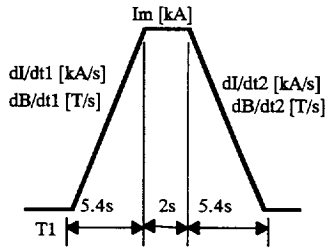
Facility condition

	Power Supply	Resistor
CSMC	JT60V	65 m-ohm
CSIC	JT60V	65 m-ohm

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 38 kA I_1 = kA
dI/dt_1 = 7 kA/m kA/s dB/dt_1 = 2 T/s
dI/dt_2 = -7 kA/m kA/s dB/dt_2 = -2 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:16 T_2 ____ T_3 ____

Heater W T_d = s

Results
Quench at 37.85 kA (100 mV)
01AI pressure rise = 0.45 MPa
01AO temperature rise = 10.08 K
TC02 temperature rise = 0.69 K
Vouter = 1322 V (dump)
Vinner = 1117 V (dump)
V_CSIC = 49.5 V
Tau = 8.68 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.21 Time 10:09 p. 512

Run No. 304 - 1
Procedure No. MC-F1-5
Operation Mode Pulse

Objective: Daily check. CSMC 10 kA manual dump. CSIC circuit is open.

Coolant condition (before this run)

	All
Temperature	~ 4.5 K ~ K
Mass Flow Rate	~ 10 g/s ~ g/s
Pressure	~ 0.6 MPa

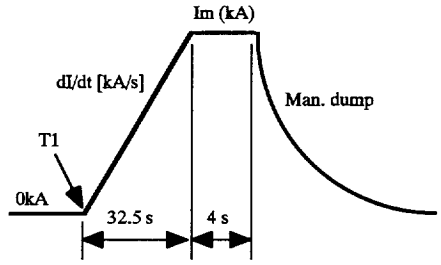
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 0.308 kA/m kA/s dB/dt_1 = 0.870 T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:09 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 10.34 kA
01AI pressure rise = 0.032 MPa
01AO temperature rise = 0.188 K
TC02 temperature rise = 0.074 K
Vouter = 361 V
Vinner = 306 V
V_CSIC = 14.4 V
Tau = 9.45 s

Remarks

CS Model Coil Experiment Log

Date 2000.7.21 Time 10:58 p. 513

Run No. 305 - 1
Procedure No. MC-G1-8
Operation Mode Pulse

Objective: AC loss measurement with 0.2 T/s sweep rate and up to 10 kA. CSIC circuit is open.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

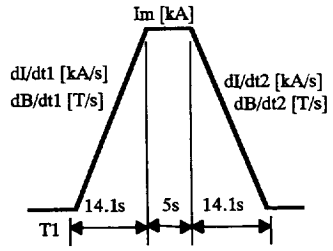
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 0.71 kA/m kA/s dB/dt_1 = 0.2 T/s
dI/dt_2 = -0.71 kA/m kA/s dB/dt_2 = -0.2 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:58 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im =10.34 kA
01AI pressure rise = 0.0 41MPa
01AO temperature rise = 0.252 K
TC02 temperature rise = 0.089 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.21 Time 11:46 p. 514

Run No. 306 - 1
Procedure No. MC-G1-9
Operation Mode Pulse

Objective: AC loss measurement with 0.2 T/s sweep rate and up to 20 kA. CSIC circuit is open.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

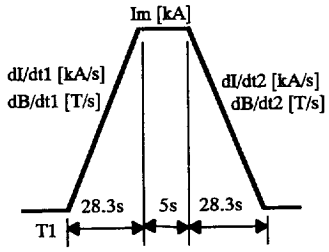
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 20 kA I_1 = kA
dI/dt_1 = 0.72 kA/m kA/s dB/dt_1 = 0.2 T/s
dI/dt_2 = -0.72 kA/m kA/s dB/dt_2 = -0.2 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:46 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im =20.31 kA
01AI pressure rise = 0.0 73MPa
01AO temperature rise = 0.454 K
TC02 temperature rise = 0.140 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.21 Time 13:37 p. 515

Run No. 307 - 1
Procedure No. MC-G1-11
Operation Mode Pulse

Objective: AC loss measurement with 0.4 T/s sweep rate and up to 20 kA. CSIC circuit is open.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

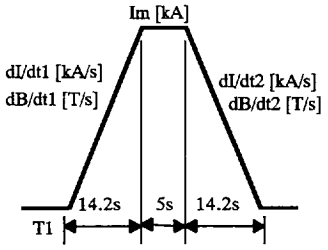
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 20 kA I_1 = kA
dI/dt_1 = 1.43 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = -1.43 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:37 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im =20.32 kA
01AI pressure rise = 0.104 MPa
01AO temperature rise = 0.672 K
TC02 temperature rise = 0.188 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.21 Time 14:28 p. 516

Run No. 308 - 1
Procedure No. MC-G1-12
Operation Mode Pulse

Objective: AC loss measurement with 0.6 T/s sweep rate and up to 10 kA. CSIC circuit is open.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

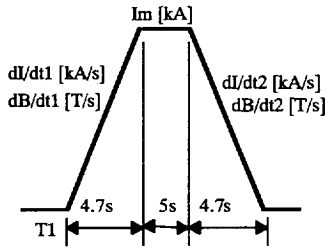
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 2.20 kA/m kA/s dB/dt_1 = 0.6 T/s
dI/dt_2 = -2.20 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:28 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im =20.355 kA
01AI pressure rise = 0.066 MPa
01AO temperature rise = 0.451K
TC02 temperature rise = 0.130 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.21 Time 15:20 p. 517

Run No. 309 - 1
Procedure No. MC-G1-13
Operation Mode Pulse

Objective: AC loss measurement with 0.6 T/s sweep rate and up to 20 kA. CSIC circuit is open.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

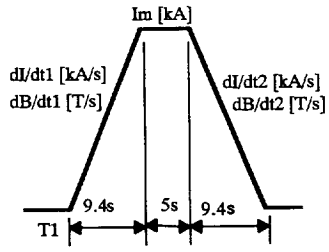
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS): CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 20 kA I_1 = kA
dI/dt_1 = 2.20 kA/m kA/s dB/dt_1 = 0.6 T/s
dI/dt_2 = -2.2 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:20 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im =20.32kA
01AI pressure rise = 0.132MPa
01AO temperature rise = 0.853 K
TC02 temperature rise = 0.230K

Remarks

CS Model Coil Experiment Log

Date 2000.7.21 Time 16:12 p. 518

Run No. 310 - 1
Procedure No. MC-G1-14
Operation Mode Pulse

Objective: AC loss measurement with 44.3 kA /32.5 s charge. CSIC circuit is open.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

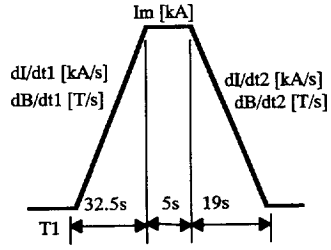
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS): CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 44.3 kA I_1 = kA
dI/dt_1 = 1.37 kA/m kA/s dB/dt_1 = 0.39 T/s
dI/dt_2 = -2.34 kA/m kA/s dB/dt_2 = -0.66 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:12 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im =44.52kA
01AI pressure rise = 0.322MPa
01AO temperature rise = 1.772K
TC02 temperature rise = 0.441K

Remarks

CS Model Coil Experiment Log

Date 2000.7.21 Time 17:10 p. 519

Run No. 311 - 1
Procedure No. MC-F5-3
Operation Mode Pulse

Objective: AC loss measurement with bipolar charge (-22.15 to +22.15). CSIC circuit is open.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

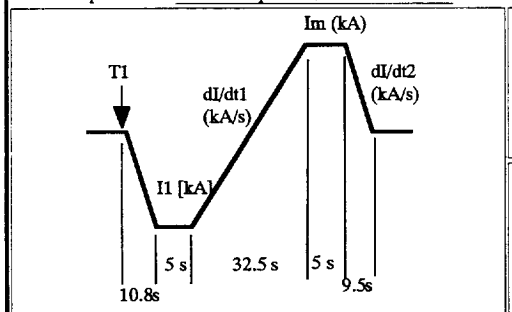
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Bipolar (Mode E)



CSMC I_m = 22.15 kA I_1 = kA
dI/dt_1 = 1.36 kA/m kA/s dB/dt_1 = 0.39 T/s
dI/dt_2 = -2.006 kA/m kA/s dB/dt_2 = -0.66 T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:10 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im =-21.66kA
Im= +22.47kA
01AI pressure rise = 0.291MPa
01AO temperature rise = 1.587K
TC02 temperature rise = 0.474K

Remarks
Data acquisition of transient H start error.
Initial 16s data are eliminated.

CS Model Coil Experiment Log

Date 2000.7.21 Time 18:29 p. 520

Run No. 312 - 1
Procedure No. MC-G1-14
Operation Mode Pulse

Objective: AC loss measurement with 0.6 T/s, 46 kA charge. CSIC circuit is open.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

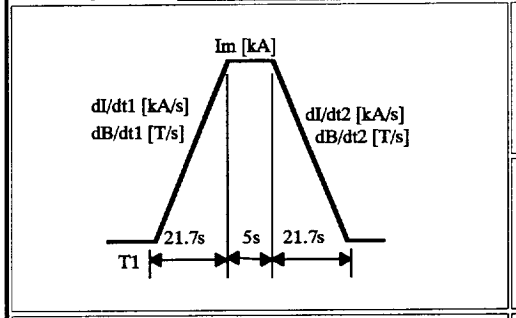
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 2.13 kA/m kA/s dB/dt_1 = 0.6 T/s
dI/dt_2 = -2.13 kA/m kA/s dB/dt_2 = -0.6 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:29 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 46.20kA
01AI pressure rise = 0.367MPa
01AO temperature rise = 1.979K
TC02 temperature rise = 0.482K

Remarks
The 22nd 100% charge.

CS Model Coil Experiment Log

Date 2000.7.21 Time 19:24 p. 521

Run No. 313 - 1
Procedure No. MC-G1-10
Operation Mode Pulse

Objective: AC loss measurement with 0.6 T/s, 10 kA charge. CSIC circuit is open.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

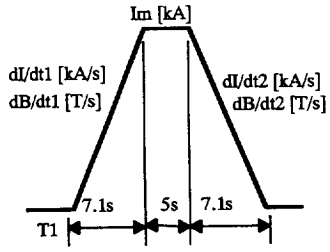
Facility condition

	Power Supply	Resistor
CSMC	JT60F	65 m-ohm
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 10 kA I_1 = kA
dI/dt_1 = 1.46 kA/m kA/s dB/dt_1 = 0.4 T/s
dI/dt_2 = -1.46 kA/m kA/s dB/dt_2 = -0.4 T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:24 T_2 ____ T_3 ____

Heater W T_d = s

Results
Im = 10.35kA
01AI pressure rise = 0.056MPa
01AO temperature rise = 0.361K
TC02 temperature rise = 0.113K

Remarks

CS Model Coil Experiment Log

Date 2000.7.24 Time 13:46 p. 522

Run No. 314 - 1
Procedure No. CI-B3
Operation Mode DC

Objective: CSIC balanced voltages (ICS_VB_ALL2) adjustment and daily check.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

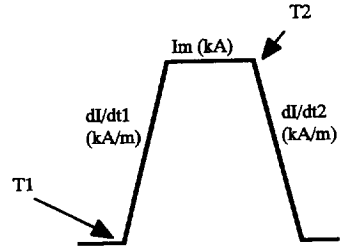
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = -1 kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:46 T_2 ____ T_3 ____

Heater W T_d = s

Results
NG
CSMC outer module voltage was two times larger than the inner module one.

Remarks

CS Model Coil Experiment Log

Date 2000.7.24 Time 14:29 p. 523

Run No. 315 - 1
Procedure No. CI-B3
Operation Mode DC

Objective: CSIC balanced voltages (ICS_VB_ALL2) adjustment and daily check.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

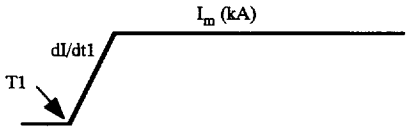
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:29 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.24 Time 14:50 p. 524

Run No. 315 - 2
Procedure No. CI-B3
Operation Mode DC

Objective: CSIC balanced voltages (ICS_VB_ALL2) adjustment.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

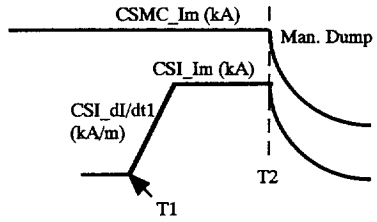
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:50 T_2 15:16 T_3 ____

Heater W T_d = s

Results

Vouter = 169.7 V
Vinner = 125.5 V
Tau_CSMC = 19.7 s
V_CSIC = 12.1 V, 5.2 V
Tau_CSIC = 16.7 s
1A inlet pressure rise = 0.012 MPa
1A outlet temperature rise = 0.063 K
CSI outlet temperatrure rise = 0.028 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.24 Time 16:56 p. 525

Run No. 316 - 1

Procedure No. CI-R4-5

Operation Mode DC

Objective: AC loss measurement. Charge CSMC and CSIC up to 36.8 kA, and dump manually. Tau ~ 20 s.

Coolant condition (before this run): All

Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

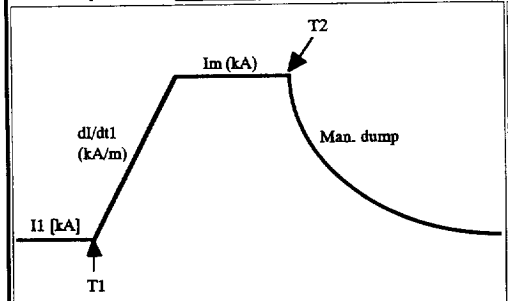
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:56 T_2 18:18 T_3 ____

Heater W T_d = s

Results

Vouter = 612 V
Vinner = 521 V
Tau_CSMC = 18.6 s
V_CSIC = 25.9 V
Tau_CSIC = 18.6 s
1A inlet pressure rise = 0.088 MPa
1A outlet temperature rise = 0.507 K
CSI outlet tempera trure rise = 0.352 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.25 Time 9:56 p. 526

Run No. 317 - 1

Procedure No. CI-B11

Operation Mode Cyclic

Objective: CSIC balanced voltages (ICS_VB_ALL2) adjustment. (This shot is not cyclic test)

Coolant condition (before this run): All

Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.6 MPa			

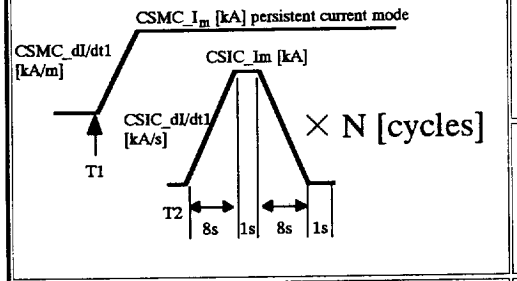
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:56 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.25 Time 11:20 p. 527

Run No. 318 - 1

Procedure No.

Operation Mode No Current

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

Objective

Control CSIC temperature up to 6 K. Energize heater ICS_HR_IN.

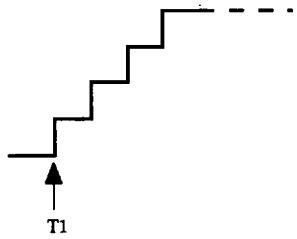
Facility condition

	Power Supply	Resistor
CSMC		
CSIC		

Data Acquisition System (DAS) CSI-AC test

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Heater energize



CSMC I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:20 T_2 ____ T_3 ____

Heater W T_d = s

Results

12:55
ICS_HR_IN: 121 W
ICS_TC_01: 6.22 K
ICS_TC_04H: 6.06 K
ICS_TC_05H: 6.09 K
ICS_TC_02: 5.91 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.25 Time 13:17 p. 528

Run No. 319 - 1

Procedure No. CI-R4-1

Operation Mode DC

Coolant condition (before this run)

	Insert		All
Temperature	~ 6 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

Objective

CSIC Tcs measurement at 40 kA and 13 T.
Charge CSMC up to 44.5 kA.

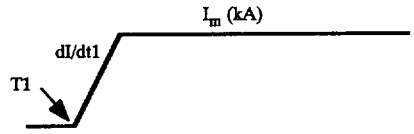
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:17 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.25 Time 14:15 p. 529

Run No. 319 - 2
Procedure No. CI-R4-1
Operation Mode DC

Objective
CSIC Tcs measurement at 40 kA and 13 T.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

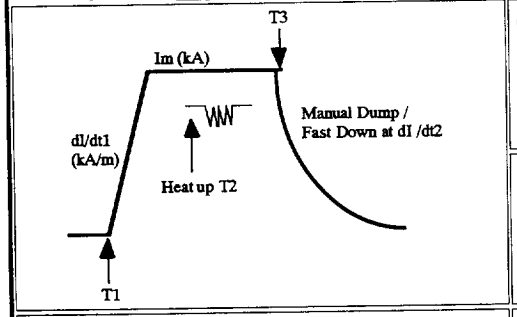
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:15 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.25 Time 14:43 p. 530

Run No. 319 - 3
Procedure No. CI-R4-1
Operation Mode DC

Objective
CSIC Tcs measurement at 40 kA and 13 T.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

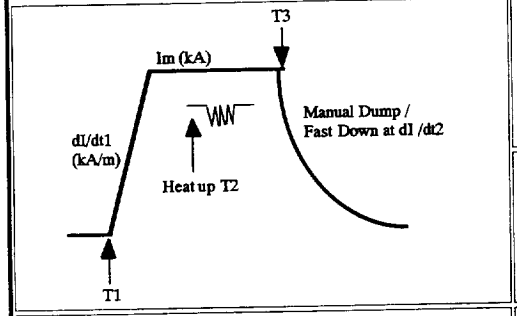
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:15 T_2 14:43 T_3 16:37

Heater W T_d = s

Results
CSIC current went down safely.
Tcs = 7.22 K. (calibrated value).
Heater ICS_HR_IN discharged.

Remarks
0.1 Hz low pass filters had been attached for ICS_VD_0708, 0809, 0910, anc 1011.

CS Model Coil Experiment Log

Date 2000.7.25 Time 16:52 p. 531

Run No. 320 - 1
Procedure No. CI-R4-1
Operation Mode DC

Objective: CSIC Ic measurement at 8.9 K. Set CSIC temperature to be 8.8 K. Energize heater ICS_HR_IN.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

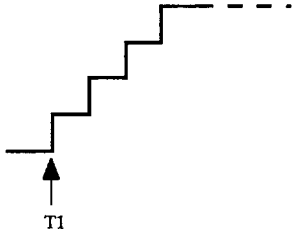
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:52 T_2 ____ T_3 ____

Heater W T_d = s

Results
ICS_HR_IN: 326 W
ICS_TC_01: 9.55 K
ICS_TC_04H: 8.70 K
ICS_TC_05H: 8.77 K
ICS_TC-02: 8.37 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.25 Time 17:53 p. 532

Run No. 320 - 2
Procedure No. CI-R4-1
Operation Mode DC

Objective: CSIC Ic measurement at 8.9 K. Charge CSMC up from 44.5 kA to 45.8 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.8 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

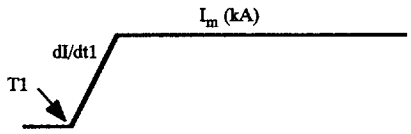
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 45.8 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:53 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.25 Time 18:55 p. 533

Run No. 320 - 3
Procedure No. CI-R4-1
Operation Mode DC

Objective: CSIC Ic measurement at 8.9 K. Charge CSIC.

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.8 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

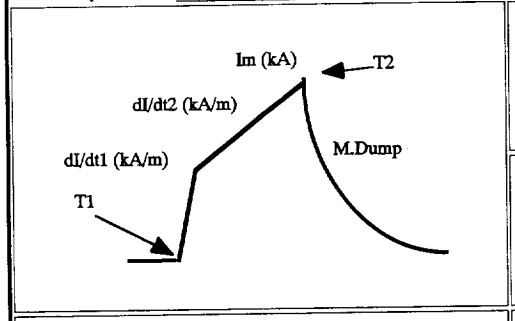
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ic



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = 0.2 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:55 T_2 19:22 T_3 ____

Heater W T_d = s

Results
Ic = 16.8 kA (12.95 T) at 8.8 K.
Fast down at 19:22.

Remarks
CSMC current was remaining 44.5 kA.

CS Model Coil Experiment Log

Date 2000.7.25 Time 19:30 p. 534

Run No. 321 - 1
Procedure No. ____
Operation Mode DC

Objective: Discharge CSMC.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

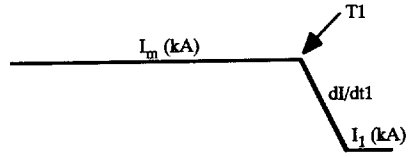
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:30 T_2 ____ T_3 ____

Heater W T_d = s

Results
Dump at 35.0 kA.

Remarks

CS Model Coil Experiment Log

Date 2000.7.26 Time 9:56 p. 535

Run No. 322 - 1

Procedure No. CI-R5

Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

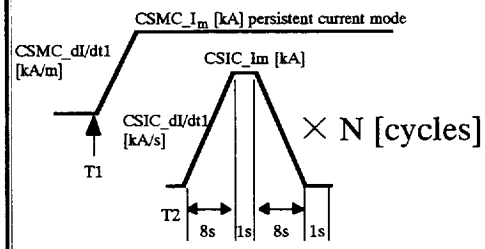
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 400 cycles

Time T_1 9:56 T_2 T_3

Heater W T_d = s

Results: Two sets of 200-cycle test had been performed. Total 1401 cycles.

Remarks:

CS Model Coil Experiment Log

Date 2000.7.26 Time 13:11 p. 536

Run No. 322 - 2

Procedure No. CI-R5

Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 44.5 kA and 600 cycle test for CSIC.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

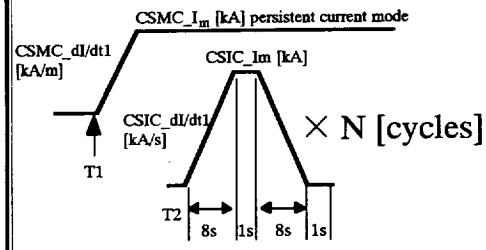
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 600 cycles

Time T_1 13:11 T_2 T_3

Heater W T_d = s

Results: Three sets of 200-cycle test had been performed. Total 2001 cycles.

Remarks:

CS Model Coil Experiment Log

Date 2000.7.26 Time 16:45 p. 537

Run No. 323 - 1
Procedure No. CI-R5-7
Operation Mode DC

Objective: AC loss measuremet. Discharge CSMC to 36.8 kA, and dump manually. CSIC circuit is open. Tau ~ 20 s.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

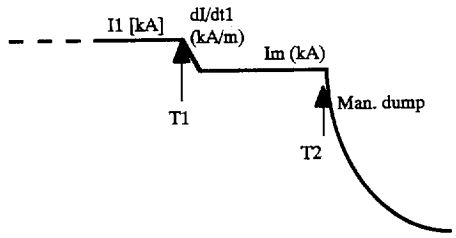
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = 40.6 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:45 T_2 17:09 T_3 ____

Heater W T_d = s

Results
Vouter = 622.3 V
Vinner = 523.4 V
Tau_CSMC = 17.9 s
V_CSIC = 22.6 V
1A inlet pressure rise = 0.098 MPa
1A outlet temperature rise = 0.56 K
CSI outlet temperatrure rise = 0.39 K

Remarks

CS Model Coil Experiment Log

Date 2000.7.27 Time 9:36 p. 538

Run No. 324 - 1
Procedure No. ____
Operation Mode DC

Objective: CSIC Ic measurement at 8.9 K - 13 T after 2001 cycles.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

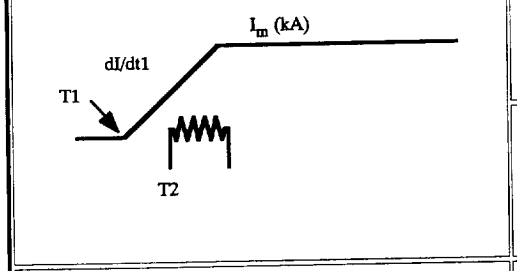
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 45.8 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:36 T_2 9:40 T_3 ____

Heater W T_d = s

Results
ICS_HR_IN: 322 W
ICS_TC_01: 9.60 K
ICS_TC_05H: 8.77 K (not calibrated)
ICS_TC_04H: 8.72 K (not calibrated)
ICS_TC_02: 8.38 K
Inlet pressure : 0.69 MPa
Inlet mass flow rate : 7.3 g/s

Remarks

CS Model Coil Experiment Log

Date 2000.7.27 Time 11:37 p. 539

Run No. 324 - 2

Procedure No.

Operation Mode DC

Objective: CSIC Ic measurement at 8.9 K - 13 T after 2001 cycles.

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.9 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

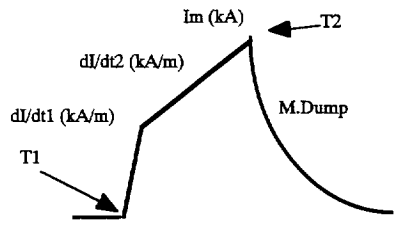
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ic



CSMC I_m = 45.8 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:37 T_2 12:28 T_3 ____

Heater W T_d = s

Results

CSIC current went down at 12:28.
Imax = 19.9 kA.
Ic = 17.6 kA at 8.75 K.
(Temperature was calibrated at 13 T)

Remarks

CS Model Coil Experiment Log

Date 2000.7.27 Time 12:34 p. 540

Run No. 325 - 1

Procedure No.

Operation Mode DC

Objective: CSIC Tcs measurement at 40 kA - 13 T after 2001 cycles. Reduce CSMC current to 44.5 kA and control CSIC temperature up to 6 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

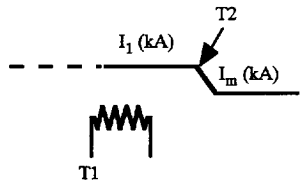
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 44.5 kA I_1 = 45.8 kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 12:34 T_2 12:28 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.27 Time 13:17 p. 541

Run No. 325 - 2
Procedure No.
Operation Mode DC

Objective: CSIC Tcs measurement at 40 kA - 13 T after 2001 cycles. Charge CSIC up to 40 kA.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

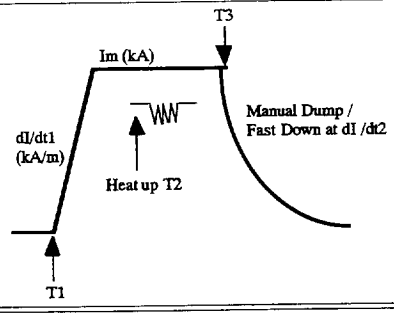
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:17 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.27 Time 13:32 p. 542

Run No. 325 - 3
Procedure No.
Operation Mode DC

Objective: CSIC Tcs measurement at 40 kA - 13 T after 2001 cycles. Increase CSIC temperature gradually.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

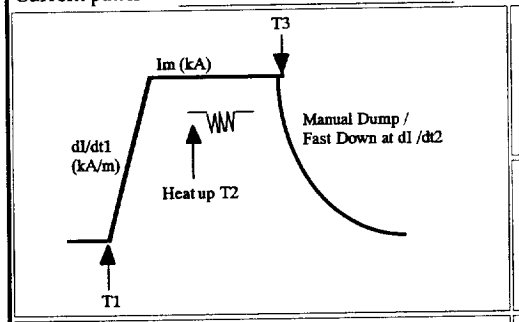
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = -50 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:17 T_2 13:32 T_3 16:22

Heater W T_d = s

Results

CSIC current went down at 16:22.
Tcs = 7.25 K (corresponds to 1 micro-V/cm).
Temperature was calibrated at 13 T.

Remarks

CS Model Coil Experiment Log

Date 2000.7.27 Time 16:25 p. 543

Run No. 325 - 4

Procedure No.

Operation Mode DC

Objective: Discharge CSMC.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

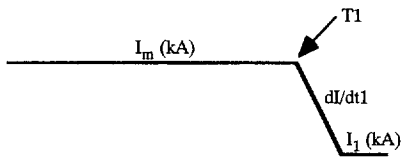
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp down



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:25 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.7.28 Time 9:50 p. 544

Run No. 326 - 1

Procedure No. CI-R6

Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

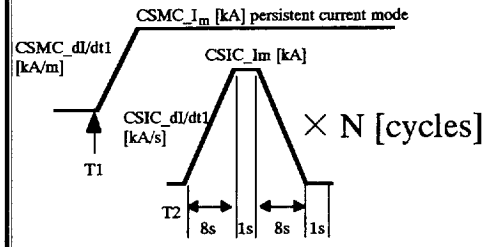
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 45.7 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 400 cycles

Time T_1 9:50 T_2 ____ T_3 ____

Heater W T_d = s

Results: Two sets of 400-cycle test had been performed. Total 2401 cycles.

Remarks

CS Model Coil Experiment Log

Date 2000.7.28 Time 13:05 p. 545

Run No. 326 – 2

Procedure No. CI-R6

Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

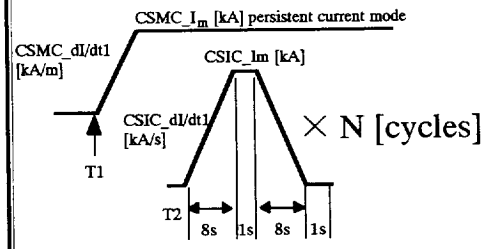
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 400 cycles

Time T_1 13:05 T_2 ____ T_3 ____

Heater W T_d = s

Results: Two sets of 400-cycle test had been performed. Total 2801 cycles.

Remarks:

CS Model Coil Experiment Log

Date 2000.7.28 Time 15:29 p. 546

Run No. 326 – 3

Procedure No. CI-R6

Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

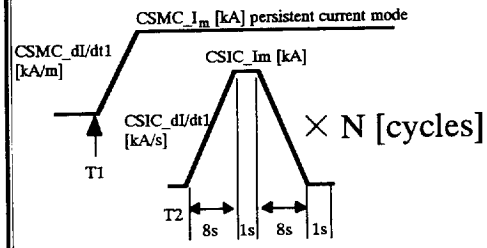
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 400 cycles

Time T_1 15:29 T_2 ____ T_3 ____

Heater W T_d = s

Results: Two sets of 400-cycle test had been performed. Total 3201 cycles.

Remarks:

CS Model Coil Experiment Log

Date 2000.7.28 Time 17:48 p. 547

Run No. 326 - 4

Procedure No.

Operation Mode DC

Objective: Discharge CSMC. Manual dump without AC loss measurement. Tau ~ 20 s.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

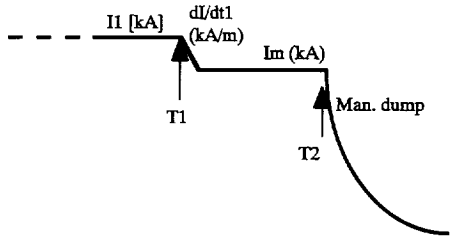
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = 40.4 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:48 T_2 18:01 T_3 ____

Heater W T_d = s

Results

Vouter = 622 V
Vinner = 523 V
Tau_CSMC = 17.9 s
V_CSIC = 24.7 V

Remarks

CS Model Coil Experiment Log

Date 2000.7.31 Time 9:51 p. 548

Run No. 327 - 1

Procedure No. CI-B3

Operation Mode DC

Objective: Weekly check. CSMC 9.2 kA and CSIC 5 kA manual dump.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

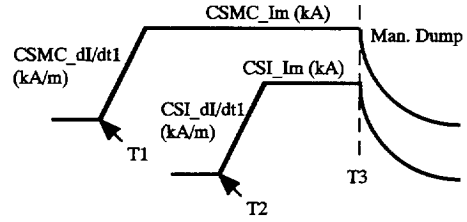
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:51 T_2 ____ T_3 ____

Heater W T_d = s

Results

Vouter = 169.4 V
Vinner = 124.9V
Tau_CSMC = 18.9 s
V_CSIC = 5.25 V

Remarks

CS Model Coil Experiment Log

Date 2000.7.31 Time 10:52 p. 549

Run No. 328 - 1
Procedure No. CI-R6
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

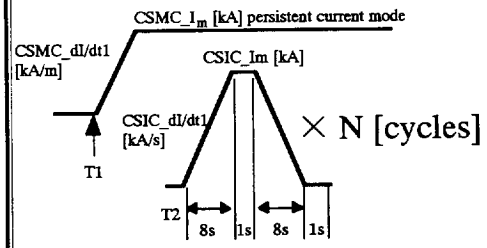
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 400 cycles

Time T_1 10:52 T_2 T_3

Heater W T_d = s

Results: Two sets of 200-cycle test had been performed. Total 3601 cycles.

Remarks:

CS Model Coil Experiment Log

Date 2000.7.31 Time 14:07 p. 550

Run No. 328 - 2
Procedure No. CI-R6
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 600 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

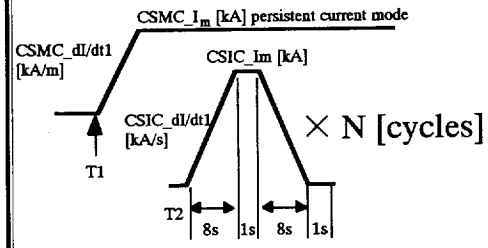
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 600 cycles

Time T_1 14:07 T_2 T_3

Heater W T_d = s

Results: Three sets of 200-cycle test had been performed. Total 4201 cycles.

Remarks:

CS Model Coil Experiment Log

Date 2000.7.31 Time 17:42 p. 551

Run No. 328 - 3

Procedure No.

Operation Mode DC

Objective: Discharge CSMC. Manual dump without AC loss measurement. Tau ~ 20 s.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

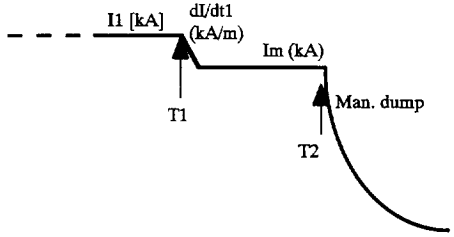
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = 40.4 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:42 T_2 17:52 T_3 ____

Heater W T_d = s

Results

Vouter = 623.1 V
Vinner = 524.4 V
Tau_CSMC = 17.95 s
V_CSIC = 22.5 V
1A inlet pressure rise = 0.100 MPa
1A outlet temperature rise = 0.56 K
CSI outlet temperatrure rise = 0.42 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.1 Time 9:39 p. 552

Run No. 329 - 1

Procedure No. CI-R6

Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

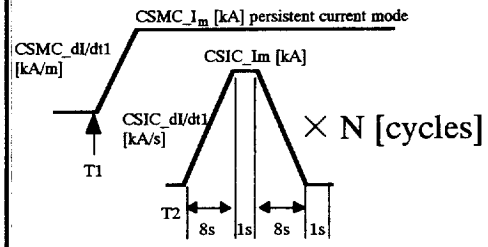
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 45.7 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 400 cycles

Time T_1 9:39 T_2 ____ T_3 ____

Heater W T_d = s

Results

Two sets of 200-cycle test had been performed. Total 4601 cycles.

Remarks

CS Model Coil Experiment Log

Date 2000.8.1 Time 12:52 p. 553

Run No. 329 - 2
Procedure No. CI-R6
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

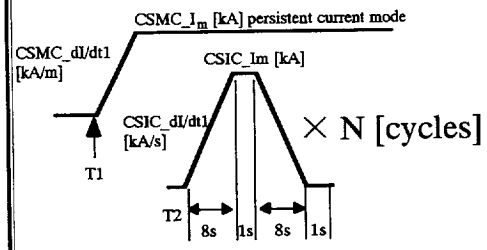
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 400 cycles

Time T_1 12:52 T_2 12:55 T_3

Heater W T_d = s

Results
Two sets of 200-cycle test had been performed. Total 5001 cycles.

Remarks

CS Model Coil Experiment Log

Date 2000.8.1 Time 15:16 p. 554

Run No. 330 - 1
Procedure No. CI-R6-7
Operation Mode DC

Objective: AC loss measurement. Manual dump from 36.8 kA (80 %). CSIC circuit is open. Tau ~ 20 s.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

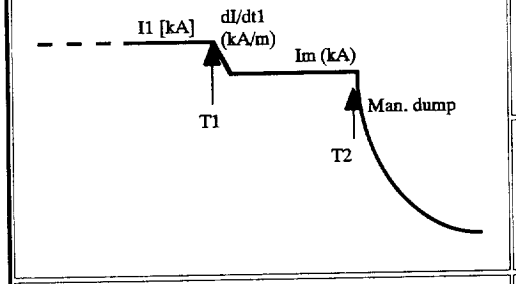
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = 40.4 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test cycles

Time T_1 15:16 T_2 15:56 T_3

Heater W T_d = s

Results
Vouter = 623.7 V
Vinner = 525.0 V
Tau_CSMC = 18.0 s
V_CSIC = 22.5 V
1A inlet pressure rise = 0.10 MPa
1A outlet temperature rise = 0.56 K
CSI outlet temperatrure rise = 0.36 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.1 Time 17:07 p. 555

Run No. 331 - 1

Procedure No. CI-R6-5

Operation Mode DC

Objective: AC loss measurement. Charge CSMC and CSIC up to 36.8 kA, and dump manually. Tau ~ 20 s.

Coolant condition (before this run): All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

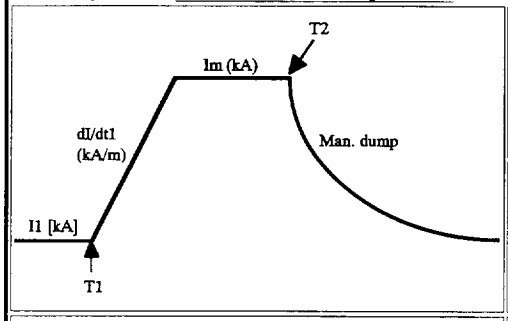
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:07 T_2 18:27 T_3 ____

Heater W T_d = s

Results

Vouter = 615.2 V
Vinner = 524.5 V
Tau = 18.5 s
V_CSIC = 23.6 V
1A inlet pressure rise = 0.096 MPa
1A outlet temperature rise = 0.525 K
CSI outlet temperatrure rise = 0.52 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.2 Time 9:37 p. 556

Run No. 332 - 1

Procedure No. CI-R6-8

Operation Mode DC

Objective: CSIC Ic measurement at 8.9 K - 13 T after 5001 cycles.

Coolant condition (before this run): All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

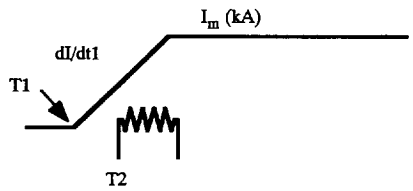
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 45.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:37 T_2 9:37 T_3 ____

Heater W T_d = s

Results

ICS_HR_IN: 328 W
ICS_TC_01: 9.78 K
ICS_TC_05H: 8.95 K (not calibrated)
ICS_TC_04H: 8.88 K (not calibrated)
ICS_TC_02: 8.53 K
Inlet pressure : 0.71 MPa
Inlet mass flow rate : 7.5 g/s

Remarks

CS Model Coil Experiment Log

Date 2000.8.2 Time 11:22 p. 557

Run No. 332 - 2
Procedure No. CI-R6-8
Operation Mode DC

Objective: CSIC Ic measurement at 8.9 K - 13 T after 5001 cycles.

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.9 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

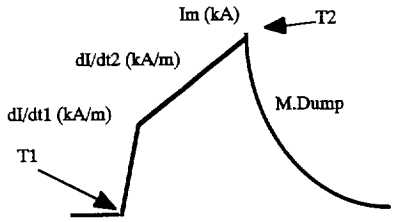
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ic



CSMC I_m = 46.0 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -20 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:22 T_2 12:00 T_3 ____

Heater W T_d = s

Results
CSIC current went down at 12:00.
Imax = 17.2 kA.
Ic = 15.1 kA at 8.97 K.
(Temperature was calibrated at 13 T)

Remarks

CS Model Coil Experiment Log

Date 2000.8.2 Time 12:05 p. 558

Run No. 333 - 1
Procedure No. CI-R6-1
Operation Mode DC

Objective: CSIC Tcs measurement at 40 kA - 13 T after 5001 cycles. Reduce CSMC current to 44.5 kA and control CSIC temperature up to 6 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

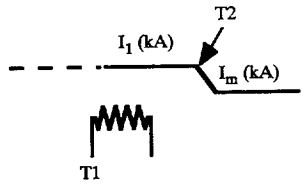
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 44.5 kA I_1 = 45.8 kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 12:16 T_2 12:41 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.2 Time 12:52 p. 559

Run No. 333 – 2
Procedure No. CI-R6-1
Operation Mode DC

Objective
CSIC Tcs measurement at 40 kA - 13 T after 5001 cycles. Charge CSIC up to 40 kA.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

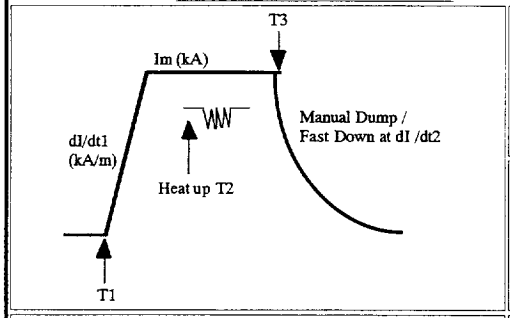
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 12:52 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.2 Time 13:11 p. 560

Run No. 333 – 3
Procedure No. CI-R6-1
Operation Mode DC

Objective
CSIC Tcs measurement at 40 kA - 13 T after 5001 cycles. Increase CSIC temperature gradually.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

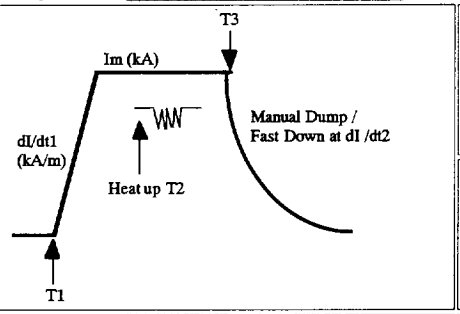
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = -50 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 12:52 T_2 13:11 T_3 15:00

Heater W T_d = s

Results
CSIC current went down at 16:22.
Tcs = 7.23 K (corresponds to 1 micro-V/cm).
Temperature was calibrated at 13 T.

Remarks

CS Model Coil Experiment Log

Date 2000.8.2 Time 15:04 p. 561

Run No. 333 - 4

Procedure No. CI-R6-1

Operation Mode DC

Objective: Discharge CSMC.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

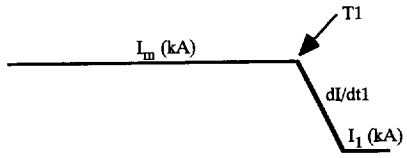
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp down



CSMC I_m = 44.5 kA I_1 = 0 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:04 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.3 Time 9:45 p. 562

Run No. 334 - 1

Procedure No. CI-R7

Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

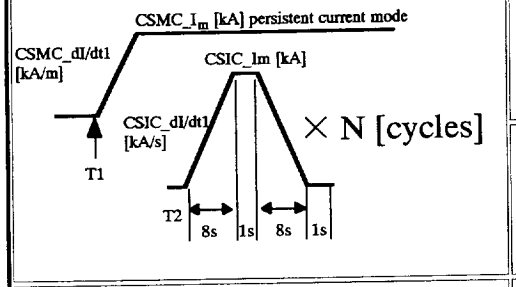
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 45.7 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 400 cycles

Time T_1 9:45 T_2 10:37 T_3 ____

Heater W T_d = s

Results: Two sets of 200-cycle test had been performed. Total 5401 cycles.

Remarks

CS Model Coil Experiment Log

Date 2000.8.3 Time 13:01 p. 563

Run No. 334 - 2
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

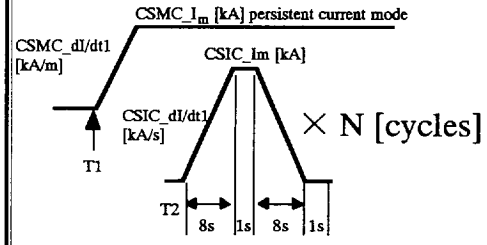
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 400 cycles

Time T_1 13:01 T_2 13:01 T_3

Heater W T_d = s

Results: Two sets of 200-cycle test had been performed. Total 5801 cycles.

Remarks:

CS Model Coil Experiment Log

Date 2000.8.3 Time 15:25 p. 564

Run No. 334 - 3
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

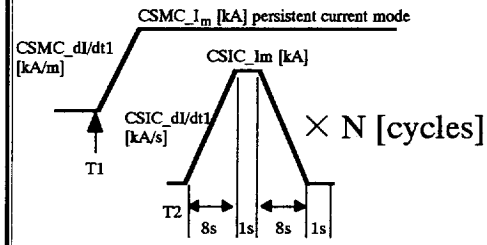
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 400 cycles

Time T_1 15:25 T_2 15:26 T_3

Heater W T_d = s

Results: Two sets of 200-cycle test had been performed. Total 6201 cycles.

Remarks:

CS Model Coil Experiment Log

Date 2000.8.3 Time 17:43 p. 565

Run No. 334 - 4

Procedure No.

Operation Mode DC

Objective: Discharge CSMC. Manual dump without AC loss measurement. Tau ~ 20 s.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

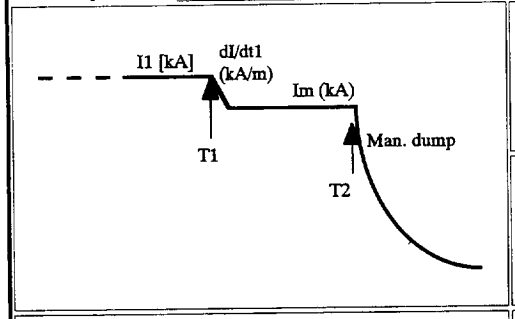
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = 40.4 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:43 T_2 17:58 T_3 ____

Heater W T_d = s

Results

Vouter = 612.8 V
Vinner = 512.6 V
Tau_CSMC = 18.0 s
V_CSIC = 22.4 V

Remarks

CS Model Coil Experiment Log

Date 2000.8.4 Time 9:38 p. 566

Run No. 335 - 1

Procedure No. CI-R7

Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

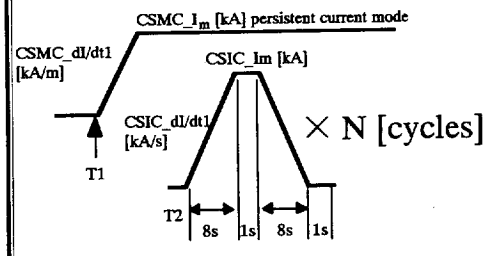
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 45.7 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 400 cycles

Time T_1 9:38 T_2 10:31 T_3 ____

Heater W T_d = s

Results

Two sets of 200-cycle test had been performed. Total 6601 cycles.

Remarks

CS Model Coil Experiment Log

Date 2000.8.4 Time 12:55 p. 567

Run No. 335 - 2
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

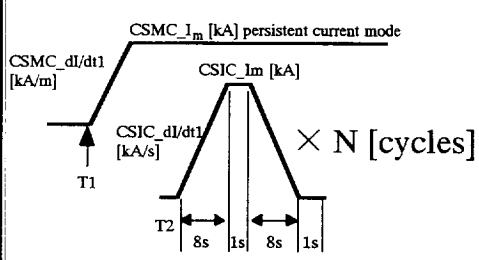
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 400 cycles

Time T_1 12:55 T_2 12:55 T_3

Heater W T_d = s

Results: Two sets of 200-cycle test had been performed. Total 7001 cycles.

Remarks:

CS Model Coil Experiment Log

Date 2000.8.4 Time 15:19 p. 568

Run No. 335 - 3
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

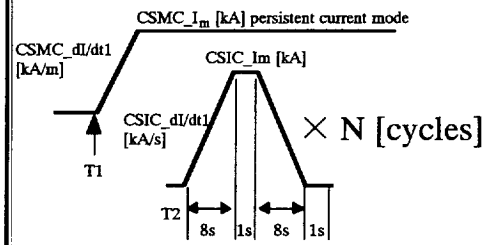
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 400 cycles

Time T_1 15:19 T_2 15:20 T_3

Heater W T_d = s

Results: Two sets of 200-cycle test had been performed. Total 7401 cycles.

Remarks: 7401 cycles were completed.

CS Model Coil Experiment Log

Date 2000.8.4 Time 17:37 p. 569

Run No. 335 - 4

Procedure No.

Operation Mode DC

Objective: Discharge CSMC. Manual dump without AC loss measurement. Tau ~ 20 s. CSIC circuit is open.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

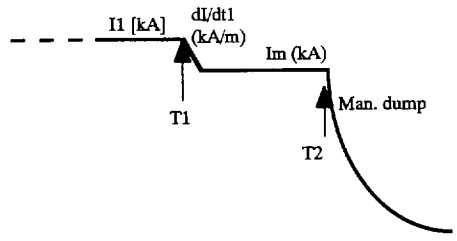
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = 40.4 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:37 T_2 17:55 T_3 ____

Heater W T_d = s

Results

Vouter = 618.5 V
Vinner = 520.5 V
Tau_CSMC = 18.0 s
V_CSIC = 22.5 V

Remarks

CS Model Coil Experiment Log

Date 2000.8.7 Time 13:24 p. 570

Run No. 336 - 1

Procedure No. CI-B3

Operation Mode DC

Objective: Weekly check. CSMC 9.2 kA and CSIC 5 kA manual dump.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

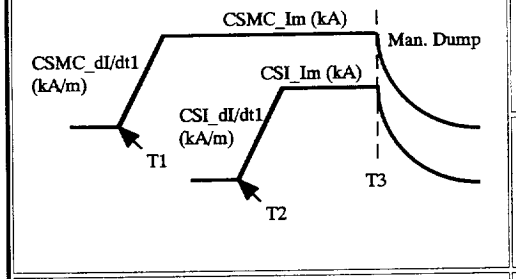
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 5 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:24 T_2 13:44 T_3 13:59

Heater W T_d = s

Results

Vouter = 169.5 V
Vinner = 125.3 V
Tau_CSMC = 18.9 s
V_CSIC = 12.1 V
Tau_CSIC = 18.5 s
01AI pressure rise = 0.013 MPa
01AO temperature rise = 0.065 K
TC02 temperature rise = 0.037 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.7 Time 14:39 p. 571

Run No. 337 - 1

Procedure No. CI-R7

Operation Mode Cyclic

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Objective

Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

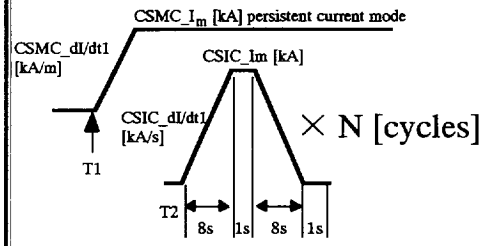
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 400 cycles

Time T_1 14:39 T_2 15:31 T_3

Heater W T_d = s

Results

Two sets of 200-cycle test had been performed. Total 7801 cycles.

Remarks

7801 cycles were completed.

CS Model Coil Experiment Log

Date 2000.8.7 Time 17:52 p. 572

Run No. 337 - 2

Procedure No.

Operation Mode DC

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Objective

Discharge CSMC. Manual dump without AC loss measurement. CSIC circuit is open. Tau ~ 20 s.

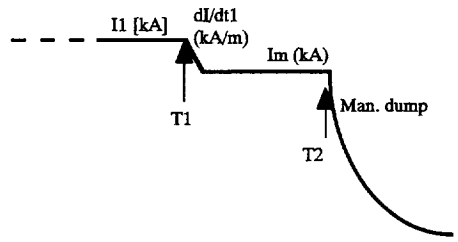
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = 40.4 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test cycles

Time T_1 17:52 T_2 18:13 T_3

Heater W T_d = s

Results

Vouter = 619.1V
Vinner = 520.9 V
Tau_CSMC = 18.0 s
V_CSIC = 22.5 V
01AI pressure rise = 0.100 MPa
01AO temperature rise = 0.558 K
TC02 temperature rise = 0.423 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.8 Time 9:35 p. 573

Run No. 338 - 1
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

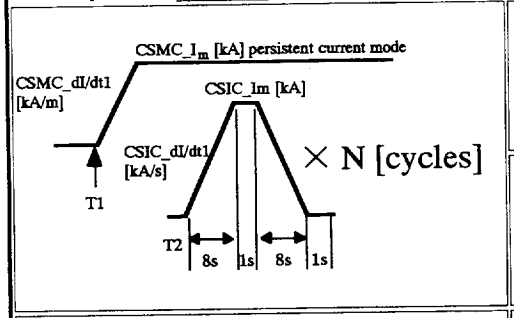
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 400 cycles

Time T_1 9:35 T_2 10:27 T_3

Heater W T_d = s

Results: Two sets of 200-cycle test had been performed. Total 8201 cycles.

Remarks

CS Model Coil Experiment Log

Date 2000.8.8 Time 12:51 p. 574

Run No. 338 - 2
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

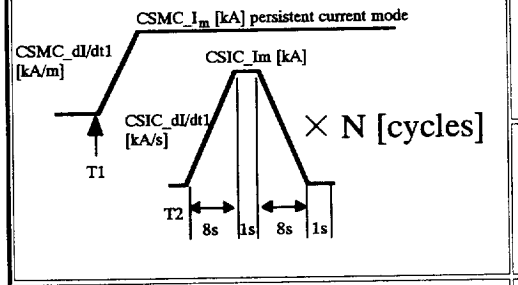
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 400 cycles

Time T_1 12:51 T_2 12:51 T_3

Heater W T_d = s

Results: Two sets of 200-cycle test had been performed. Total 8601 cycles.

Remarks

CS Model Coil Experiment Log

Date 2000.8.8 Time 15:16 p. 575

Run No. 338 - 3
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

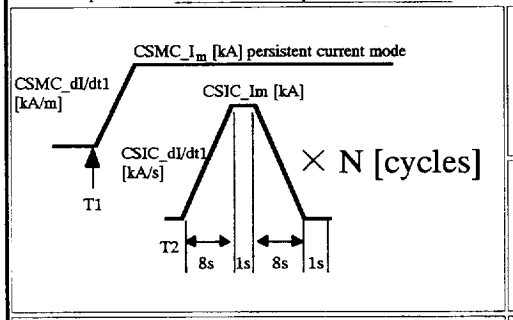
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 400 cycles

Time T_1 15:16 T_2 15:16 T_3

Heater W T_d = s

Results

At 16:05, CSMC and CSIC current were dumped at the 163rd cycle (162 cycles were completed) due to a electric power shut off (by thunderbolts).

Vouter = 755.1 V
Vinner = 547.2 V
Tau_CSMC = 17.7 s
V_CSIC = 23.5 V

I_dump_CSMC = 41.3 kA
I_dump_CSIC = 12.0 kA

Remarks

8763 cycles were completed.

CS Model Coil Experiment Log

Date 2000.8.9 Time 9:40 p. 576

Run No. 339 - 1
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

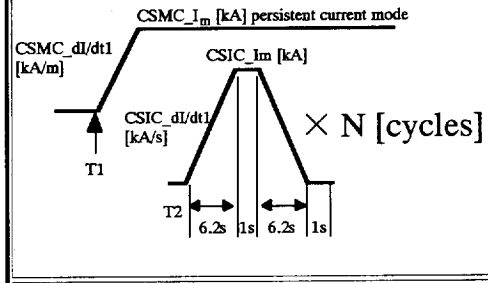
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 6.5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 496 cycles

Time T_1 9:40 T_2 10:30 T_3

Heater W T_d = s

Results

Two sets of 248-cycle test was performed.

Remarks

9259 cycles were completed.

CS Model Coil Experiment Log

Date 2000.8.9 Time 12:54 p. 577

Run No. 339 - 2
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

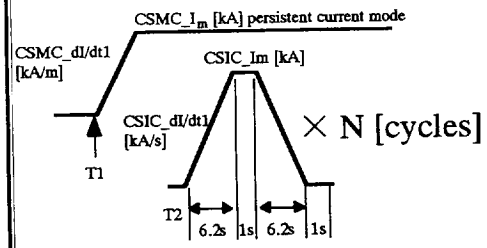
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 6.5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 496 cycles

Time T_1 12:54 T_2 12:55 T_3

Heater W T_d = s

Results
Two sets of 248-cycle test was performed.

Remarks
9755 cycles were completed.

CS Model Coil Experiment Log

Date 2000.8.9 Time 15:17 p. 578

Run No. 339 - 3
Procedure No. CI-R7
Operation Mode Cyclic

Objective: Cyclic test at 13 T. Re-charge CSMC up to 45.7 kA and 400 cycle test for CSIC.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

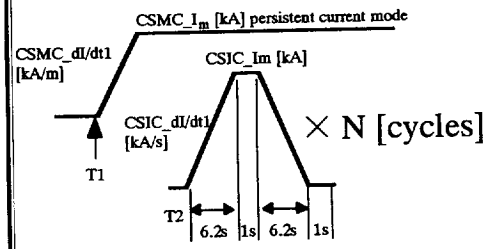
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Cyclic



CSMC I_m = 45.7 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 6.5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 248 cycles

Time T_1 15:17 T_2 15:18 T_3

Heater W T_d = s

Results
248-cycle test was performed.
The cyclic test has been completed at 4:17 p.m., August 9th, 2000!!

Remarks
10003 cycles were successfully completed.
The cyclic test has been completed at 4:17 p.m., August 9th, 2000!!

CS Model Coil Experiment Log

Date 2000.8.9 Time 16:17 p. 579

Run No. 339 - 4

Procedure No.

Operation Mode DC

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Objective

AC loss measurement after 10003 cycles. CSMC current manual dump from 36.8 kA (80 %). CSIC circuit is open. Tau ~ 20 s.

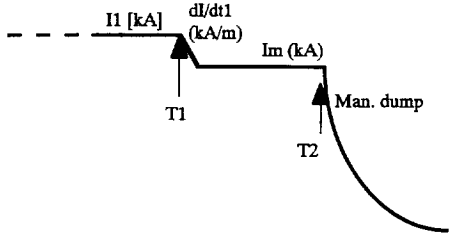
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 36.8 kA I_1 = 40.4 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:17 T_2 16:57 T_3 ____

Heater W T_d = s

Results

Vouter = 621.5 V
Vinner = 523.2 V
Tau_CSMC = 17.9 s
V_CSIC = 22.6 V
01AI pressure rise = 0.08 MPa
01AO temperature rise = 0.56 K
TC02 temperature rise = 0.46 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.10 Time 9:26 p. 580

Run No. 340 - 1

Procedure No. CI-R7-8

Operation Mode DC

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

Objective

CSIC Ic measurement at 8.9 K - 13 T after 10003 cycles.

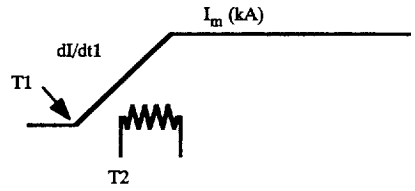
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 45.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:43 T_2 9:26 T_3 ____

Heater W T_d = s

Results

ICS_HR_IN:W
ICS_TC_01:K
ICS_TC_05H:K (not calibrated)
ICS_TC_04H:K (not calibrated)
ICS_TC_02:K
Inlet pressure :MPa
Inlet mass flow rate :g/s

Remarks

CS Model Coil Experiment Log

Date 2000.8.10 Time 11:01 p. 581

Run No. 340 - 2
Procedure No. CI-R7-8
Operation Mode DC

Objective
CSIC Ic measurement at 8.9 K - 13 T after 10003 cycles.

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.9 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

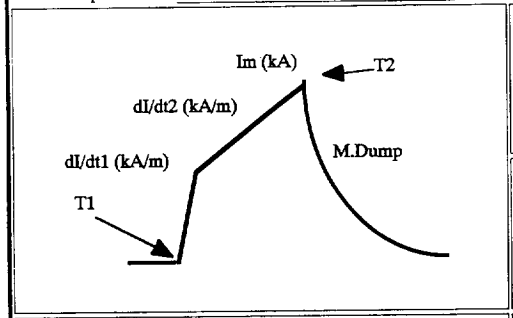
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ic



CSMC I_m = 45.8 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 20 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:01 T_2 11:44 T_3 ____

Heater W T_d = s

Results
CSIC current went down at 11:44.
Imax = 18.3 kA.
Ic = 16.0 kA at 8.86 K.
(Temperature was calibrated at 13 T)

Remarks

CS Model Coil Experiment Log

Date 2000.8.10 Time 13:03 p. 582

Run No. 341 - 1
Procedure No. CI-R7-1
Operation Mode DC

Objective
CSIC Tcs measurement at 40 kA - 13 T after 10003 cycles. Reduce CSMC current to 44.5 kA and control CSIC temperature up to 6 K.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

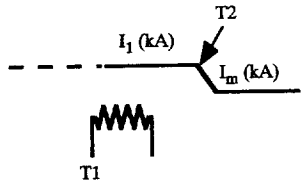
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 44.5 kA I_1 = 45.8 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:03 T_2 13:25 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.10 Time 13:48 p. 583

Run No. 341 - 2
Procedure No. CI-R7-1
Operation Mode DC

Objective
CSIC Tcs measurement at 40 kA - 13 T after 10003 cycles. Charge CSIC up to 40 kA.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

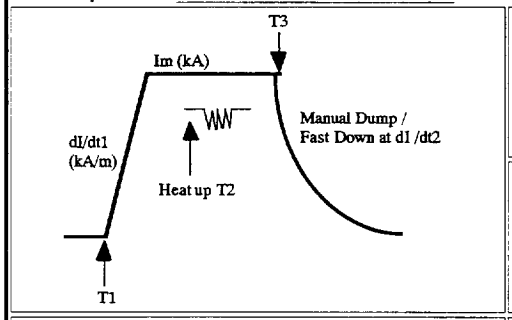
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:48 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.10 Time 14:00 p. 584

Run No. 341 - 3
Procedure No. CI-R7-1
Operation Mode DC

Objective
CSIC Tcs measurement at 40 kA - 13 T after 10003 cycles. Increase CSIC temperature gradually.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

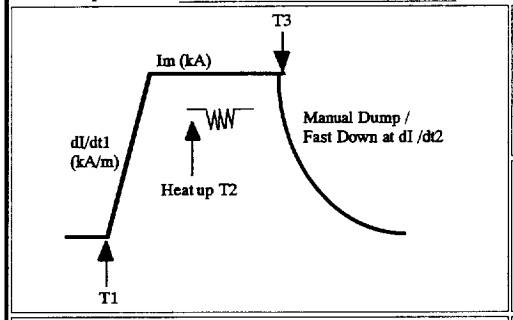
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = -50 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:48 T_2 14:00 T_3 15:55

Heater W T_d = s

Results
CSIC current went down at 15:55.
Tcs = 7.20 K (corresponds to 1 micro-V/cm).
Temperature was calibrated at 13 T.

Remarks

CS Model Coil Experiment Log

Date 2000.8.10 Time 16:00 p. 585

Run No. 341 - 4

Procedure No. CI-R7-1

Operation Mode DC

Objective: Discharge CSMC.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

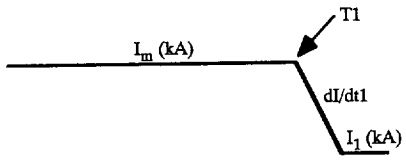
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp down



CSMC I_m = 44.5 kA I_1 = 0 kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:00 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 9:36 p. 586

Run No. 342 - 1

Procedure No. ____

Operation Mode DC

Objective: AC loss measurement. Charge CSMC and CSIC (series connection) up to 36.8 kA, and dump manually. Tau ~ 20 s.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

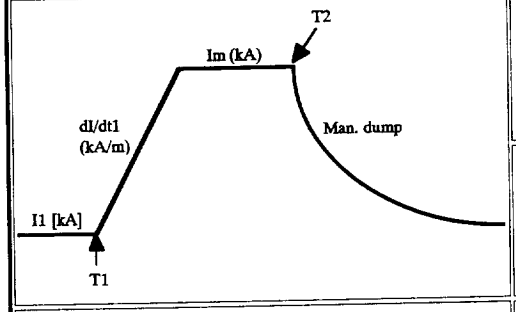
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:36 T_2 11:01 T_3 ____

Heater W T_d = s

Results

Vouter = 610 V
Vinner = 520 V
Tau = 18.7 s
V_CSIC = 23.7 V
1A inlet pressure rise = 0.073 MPa
1A outlet temperature rise = 0.52 K
CSI outlet temperature rise = 0.54 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 13:07 p. 587

Run No. 343 - 1
Procedure No. CI-R7-2
Operation Mode DC

Objective
CSIC stability test at 13 T, 40 kA, and 5.3 K.
Increase CSIC temperature to 5.3 K and charge CSMC up to 44.5 kA.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

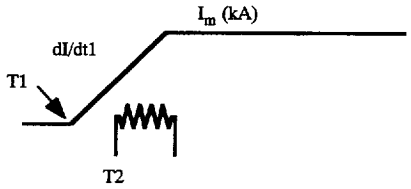
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:12 T_2 13:07 T_3 ____

Heater W T_d = s

Results
At 15:01 (before Run #343-4)
ICS_HR_IN : 54 W
TC_01: 5.37 K
TC_04H: 5.14 K (not calibrated)
TC_05H: 5.15 K (not calibrated)
TC_02: 5.29 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 14:10 p. 588

Run No. 343 - 2
Procedure No. CI-R7-2
Operation Mode DC

Objective
CSIC stability test at 13 T, 40 kA, and 5.3 K.
Inductive heater (ICS_HI_03) test.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

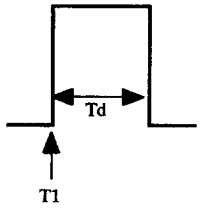
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:10 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater ICS_HI_03.
Imax = 133 V
Vmax = 141 V
I^2 integral = 134.6 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 14:24 p. 589

Run No. 343 – 3
Procedure No. CI-R7-2
Operation Mode DC

Objective
CSIC stability test at 13 T, 40 kA, and 5.3 K.
Charge CSIC up to 40 kA.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

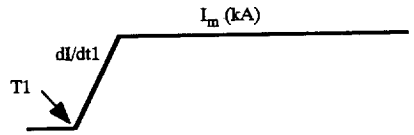
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Ramp up



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:24 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 15:02 p. 590

Run No. 343 – 4
Procedure No. CI-R7-2
Operation Mode DC

Objective
CSIC stability test at 13 T, 40 kA, and 5.3 K.
Energize inductive heater ICS_HI_03 with 20 ms duration.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

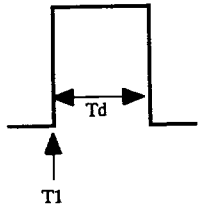
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:02 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 383 V
Vmax = 392 V
I^2 integral = 1065 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 15:11 p. 591

Run No. 343 - 5
Procedure No. CI-R7-2
Operation Mode DC

Objective
CSIC stability test at 13 T, 40 kA, and 5.3 K. Energize inductive heater ICS_HI_03 with 20 ms duration.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

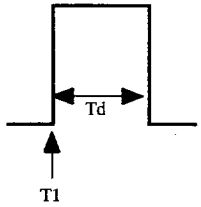
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:11 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 399 V
Vmax = 407 V
I^2 integral = 1162 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 15:21 p. 592

Run No. 343 - 6
Procedure No. CI-R7-2
Operation Mode DC

Objective
CSIC stability test at 13 T, 40 kA, and 5.3 K. Energize inductive heater ICS_HI_03 with 20 ms duration.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

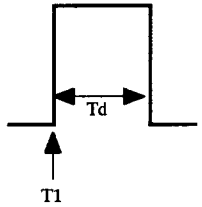
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:21 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 417 V
Vmax = 423 V
I^2 integral = 1241 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 15:30 p. 593

Run No. 343 - 7
Procedure No. CI-R7-2
Operation Mode DC

Objective
CSIC stability test at 13 T, 40 kA, and 5.3 K.
Energize inductive heater ICS_HI_03 with 20 ms duration.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

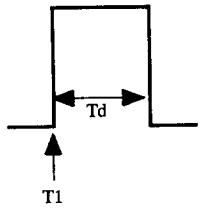
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:30 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 437 V
Vmax = 442 V
I^2 integral = 1384 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 15:39 p. 594

Run No. 343 - 8
Procedure No. CI-R7-2
Operation Mode DC

Objective
CSIC stability test at 13 T, 40 kA, and 5.3 K.
Energize inductive heater ICS_HI_03 with 20 ms duration.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

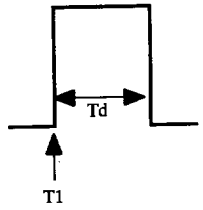
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern Heater pulse



CSMC I_m = 44.5 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:39 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
No quench.
Inductive heater ICS_HI_03.
Imax = 444 V
Vmax = 453 V
I^2 integral = 1429 A^2s

Remarks

CS Model Coil Experiment Log

Date 2000.8.11 Time 15:48 p. 595

Run No. 343 - 9

Procedure No. CI-R7-2

Operation Mode DC

Objective: CSIC stability test at 13 T, 40 kA, and 5.3 K. Energize inductive heater ICS_HI_03 with 20 ms duration.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

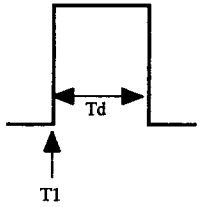
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	60	5 k	60	5 k	

Current pattern: Heater pulse



CSMC I_m = 44.5 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:48 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Quench.
Imax = 453 V
Vmax = 461 V
I^2 integral = 1507 A^2s
Vouter = 784 V
Vinner = 631 V
V_CSIC = 26.5 V
Tau = 17.7 s

Remarks

CS Model Coil Experiment Log

Date 2000.8.14 Time 9:41 p. 596

Run No. 344 - 1

Procedure No. CI-B5-1

Operation Mode DC

Objective: CSIC reverse charge. Charge CSMC up to 9.2 kA and CSIC up to -5 kA for instrumentation check.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

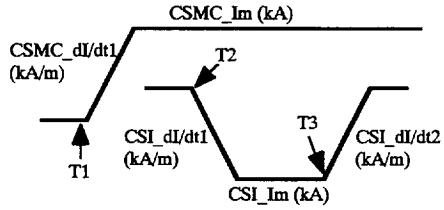
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 9.2 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -5 kA I_1 = kA

dI/dt_1 = -1 kA/m kA/s

dI/dt_2 = 5 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:41 T_2 9:59 T_3 10:12

Heater W T_d = s

Results

OK.

Remarks

CS Model Coil Experiment Log

Date 2000.8.14 Time 10:18 p. 597

Run No. 344 - 2
Procedure No. CI-B5-1
Operation Mode DC

Objective
CSIC reverse charge. CSIC -5 kA charge and simultaneous manual dump.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

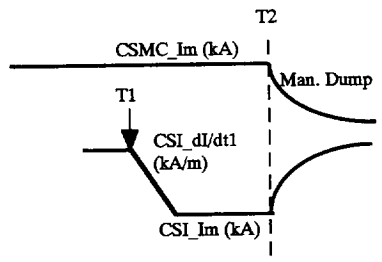
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 9.2 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -5 kA I_1 = kA
dI/dt_1 = -5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:18 T_2 10:26 T_3 ____

Heater W T_d = s

Results
Vouter = 171.9 V
Vinner = 120.2 V
Tau_CSMC = 19.7 s
V_CSIC = 12.0 V, -5.02 V
Tau_CSIC = ~19 s
01AI pressure rise = 0.013 MPa
01AO temperature rise = 0.072 K
TC02 temperature rise = 0.043 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.14 Time 10:58 p. 598

Run No. 345 - 1
Procedure No. CI-B5-3
Operation Mode DC

Objective
CSIC reverse charge. Charge CSMC up to 23 kA.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

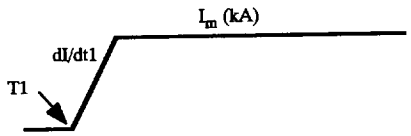
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:58 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.14 Time _____ p. 599

Run No. 345 - 2
Procedure No. CI-B5-3
Operation Mode DC

Objective
CSIC reverse charge and AC loss measurement.
CSIC -20 kA charge and manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

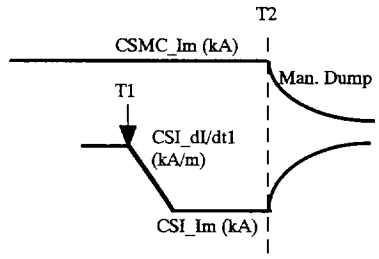
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -20 kA I_1 = kA
dI/dt_1 = -1 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 11:39 T_2 _____ T_3 _____

Heater W T_d = s

Results
Vouter = 440 V
Vinner = 296 V
Tau_CSMC = 18.74 s
V_CSIC = 29.13 V, 12.42 V
Tau_CSIC = 18.86 s
01AI pressure rise = 0.043 MPa
01AO temperature rise = 0.26 K
TC02 temperature rise = 0.17 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.14 Time 13:12 p. 600

Run No. 346 - 1
Procedure No. CI-B5-4
Operation Mode DC

Objective
CSIC reverse charge. Charge CSMC up to 23 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

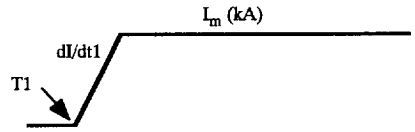
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 23 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 13:12 T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.14 Time 13:45 p. 601

Run No. 346 - 2

Procedure No. CI-B5-4

Operation Mode DC

Objective: CSIC reverse charge. Charge CSIC up to -40 kA.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

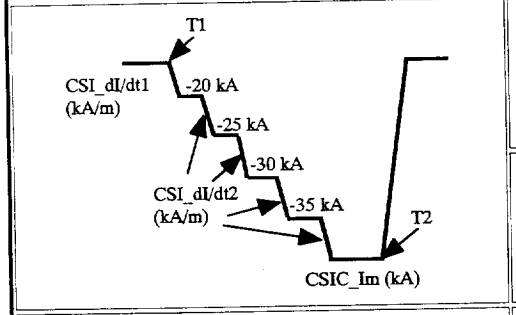
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Stepped Trapezoidal



CSMC I_m = 23 kA I_1 = kA

dI/dt_1 = kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -40 kA I_1 = kA

dI/dt_1 = -5 kA/m kA/s

dI/dt_2 = -1 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:45 T_2 ____ T_3 ____

Heater W T_d = s

Results: OK.

Remarks:

CS Model Coil Experiment Log

Date 2000.8.14 Time 14:48 p. 602

Run No. 347 - 1

Procedure No. CI-B5-6

Operation Mode DC

Objective: CSIC reverse charge. Increase CSMC current to 36.8 kA.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

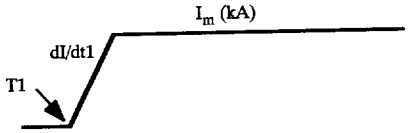
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:48 T_2 ____ T_3 ____

Heater W T_d = s

Results:

Remarks:

CS Model Coil Experiment Log

Date 2000.8.14 Time 15:12 p. 603

Run No. 347 - 2
Procedure No. CI-B5-6
Operation Mode DC

Objective: CSIC reverse charge. Charge CSIC up to -40 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

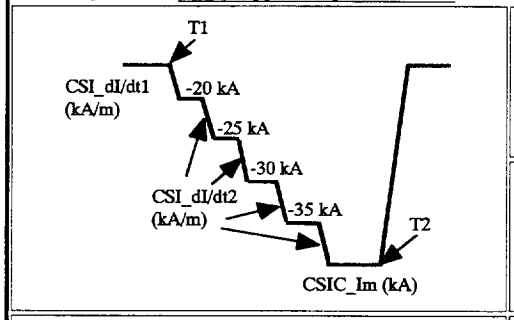
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Stepped Trapezoidal



CSMC I_m = 36.8 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -40 kA I_1 = kA
dI/dt_1 = -5 kA/m kA/s
dI/dt_2 = -1 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:12 T_2 15:54 T_3 ____

Heater W T_d = s

Results: Succeeded.

Remarks:

CS Model Coil Experiment Log

Date 2000.8.14 Time 16:13 p. 604

Run No. 348 - 1
Procedure No. CI-B5-6
Operation Mode DC

Objective: Discharge CSMC.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

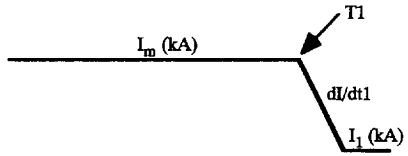
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp down



CSMC I_m = 36.8 kA I_1 = 0 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:13 T_2 ____ T_3 ____

Heater W T_d = s

Results:

Remarks:

CS Model Coil Experiment Log

Date 2000.8.15 Time 9:35 p. 605

Run No. 349 - 1
Procedure No. CI-B5-7
Operation Mode DC

Objective
CSIC reverse charge. Increase CSMC current to 46 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

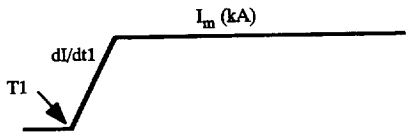
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp up



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:35 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks
The 23rd 100% charge.

CS Model Coil Experiment Log

Date 2000.8.15 Time 10:33 p. 606

Run No. 349 - 2
Procedure No. CI-B5-7
Operation Mode DC

Objective
CSIC reverse charge. Charge CSIC up to -40 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

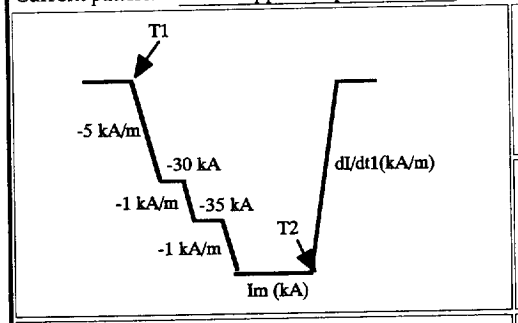
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Stepped Trapezoidal



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:33 T_2 11:02 T_3 ____

Heater W T_d = s

Results
CSIC current reached -40 kA at 10:58 a.m. Reverse charge was successfully completed.

Remarks

CS Model Coil Experiment Log

Date 2000.8.15 Time 11:30 p. 607

Run No. 349 - 3
Procedure No. CI-B5-8
Operation Mode DC

Objective: CSIC reverse charge. Charge CSIC up to -40 kA.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

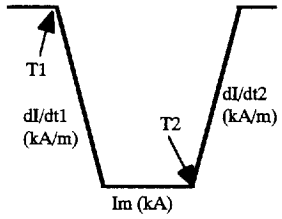
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Trapezoidal



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -40 kA I_1 = kA
dI/dt_1 = -5 kA/m kA/s
dI/dt_2 = 5 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:30 T_2 11:38 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.15 Time 13:04 p. 608

Run No. 349 - 4
Procedure No. CI-B5-9
Operation Mode DC

Objective: CSIC reverse charge. Charge CSIC up to -40 kA and dump manually.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

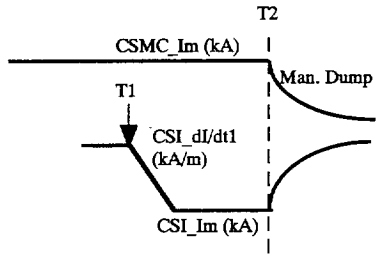
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Manual dump



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -40 kA I_1 = kA
dI/dt_1 = -5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:04 T_2 13:36 T_3 ____

Heater W T_d = s

Results

Vouter = 882 V
Vinner = 605 V
Tau_CSMC = 17.54 s
V_CSIC = 51.77 V, -25.21 V
Tau_CSIC = 17.4 s
01AI pressure rise = 0.162 MPa
01AO temperature rise = 0.81 K
TC02 temperature rise = 0.85 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.15 Time 14:36 p. 609

Run No. 350 - 1

Procedure No. CI-B6

Operation Mode DC

Objective: AC loss measurement. CSMC 36.8 kA manual dump. CSIC circuit is open.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

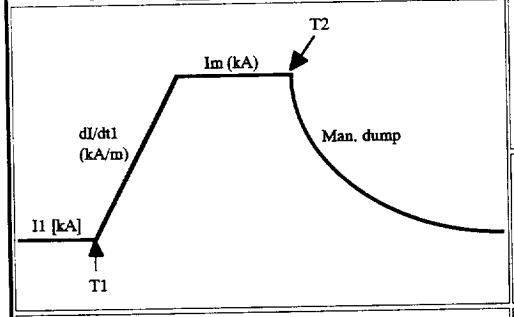
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Manual dump



CSMC I_m = 36.8 kA I_1 = kA

dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:36 T_2 15:52 T_3 ____

Heater W T_d = s

Results

Vouter = 630.7 V
Vinner = 531.8 V
Tau_CSMC = 17.83 s
V_CSIC = 25.27 V
01AI pressure rise = 0.101 MPa
01AO temperature rise = 0.55 K
TC02 temperature rise = 0.45 K

Remarks

CS Model Coil Experiment Log

Date 2000.8.16 Time 10:27 p. 610

Run No. 351 - 1

Procedure No. CI-E1-1

Operation Mode DC

Objective: CSIC 13 T - 40 kA Tcs measurement at reverse field. Charge CSMC up to 46 kA and increase CSIC temperature to 6 K.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

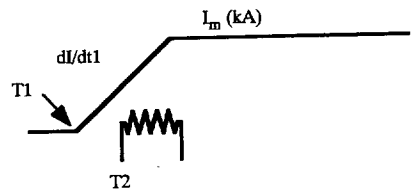
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:27 T_2 11:06 T_3 ____

Heater W T_d = s

Results

Remarks

The 24th 100% charge for CSMC.

CS Model Coil Experiment Log

Date 2000.8.16 Time 13:03 p. 611

Run No. 351 - 2
Procedure No. CI-E1-1
Operation Mode DC

Objective: CSIC 13 T - 40 kA Tcs measurement at reverse field. Charge CSIC up to -40 kA.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

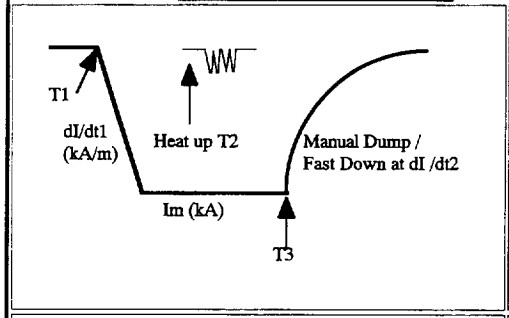
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -40 kA I_1 = kA
dI/dt_1 = -5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:03 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.16 Time 13:25 p. 612

Run No. 351 - 3
Procedure No. CI-E1-1
Operation Mode DC

Objective: CSIC 13 T - 40 kA Tcs measurement at reverse field. Increase CSIC temperature by energizing resistive heater ICS_HR_IN.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

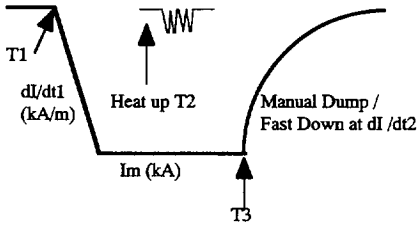
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -40 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:03 T_2 13:25 T_3 15:17

Heater W T_d = s

Results

CSIC current went down at .
Tcs = 6.77 K (corresponds to 1 micro-V/cm).
Temperature was calibrated at 13 T.

Remarks

CS Model Coil Experiment Log

Date 2000.8.16 Time _____ p. 613

Run No. 351 - 4
Procedure No. CI-E1-1
Operation Mode DC

Objective: Discharge CSMC.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

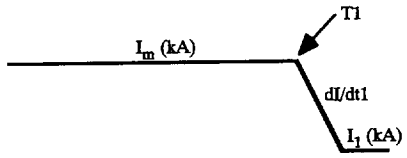
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp down



CSMC I_m = 46 kA I_1 = 0 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 15:24 T_2 _____ T_3 _____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.17 Time 9:29 p. 614

Run No. 352 - 1
Procedure No. CI-F1-1
Operation Mode DC

Objective: CSMC 13 T charge up for Ic measurement.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

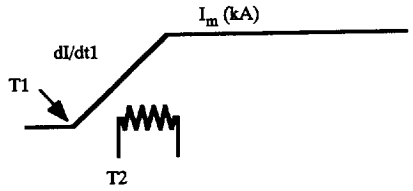
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 46 kA I_1 = 0 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 9:29 T_2 10:23 T_3 _____

Heater 288 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.17 Time 10:46 p. 615

Run No. 352 - 2
Procedure No. CI-F1-1
Operation Mode DC

Objective: Ic measurement of CS insert coil (CSIC) under reversed current. Field = 13 T.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 8.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

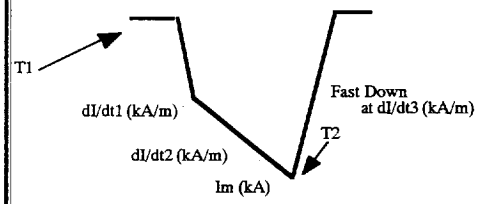
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ic



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 21.8 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = 0.2 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:46 T_2 ____ T_3 ____

Heater W T_d = s

Results: Ic = 18.5 kA @ 8.34 K (criteria 0.1 micro-V/cm).

Remarks

CS Model Coil Experiment Log

Date 2000.8.17 Time 13:04 p. 616

Run No. 353 - 1
Procedure No. C1-F1-1
Operation Mode DC

Objective: Increase CSIC temperature for Tcs measurement.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.3 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

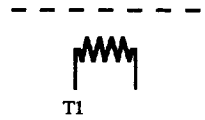
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Heater energize



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:04 T_2 ____ T_3 ____

Heater 129 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.17 Time 13:45 p. 617

Run No. 353 - 2
Procedure No. C1-F1-1
Operation Mode DC

Objective
CSIC charge up to -30 kA for Tcs measurement.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 7.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

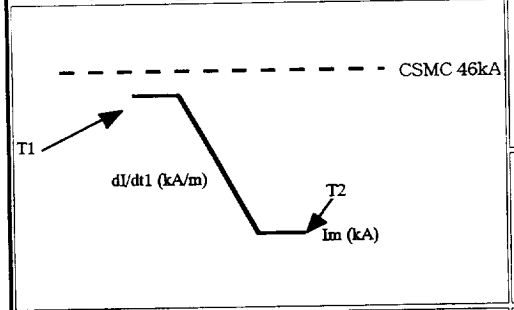
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -30 kA I_1 = kA
dI/dt_1 = -5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:52 T_2 15:58 T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.17 Time 13:52 p. 618

Run No. 353 - 3
Procedure No. C1-F1-1
Operation Mode DC

Objective
CSIC Tcs measurement at 13 T.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 7.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

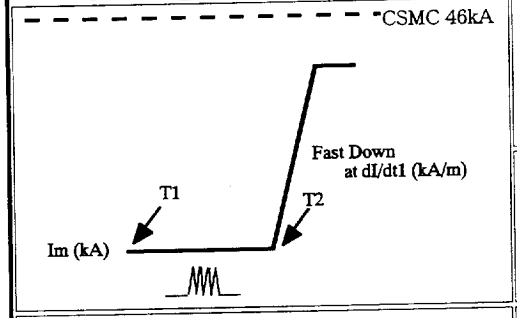
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = -30 kA I_1 = kA
dI/dt_1 = -50 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:52 T_2 15:58 T_3 ____

Heater 250 W T_d = s

Results
Tcs = 7.41 K @ -30 kA (criteria 0.1 micro-V/cm).

Remarks

CS Model Coil Experiment Log

Date 2000.8.17 Time 16:00 p. 619

Run No. 353 - 4
Procedure No. C1-F1-1
Operation Mode DC

Objective: CSMC discharge.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

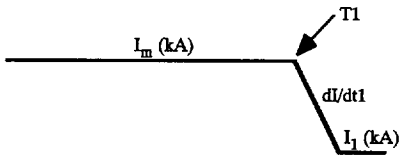
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp down



CSMC I_m = 0 kA I_1 = 0 kA
dI/dt_1 = -1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:00 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.18 Time 9:35 p. 620

Run No. 354 - 1
Procedure No. MC-B7
Operation Mode DC

Objective: Confirmation of CSMC perforrmance.

Coolant condition (before this run)

	All	
Temperature	~ 4.5 K	~ K
Mass Flow Rate	~ 10 g/s	~ g/s
Pressure	~ 0.6 MPa	

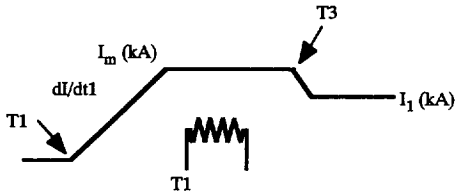
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Trapezoidal



CSMC I_m = 46 kA I_1 = 44.5 kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 0 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:35 T_2 9:43 T_3 10:38

Heater 120 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.18 Time 10:55 p. 621

Run No. 355 - 2
Procedure No. CI-B4-2
Operation Mode DC

Objective: CSIC charge up for Tcs measurement.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.6 MPa		

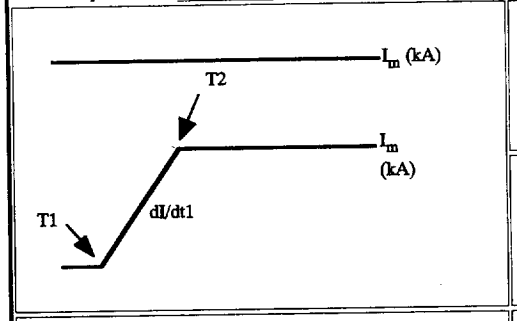
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Ramp up



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:55 T_2 11:03 T_3 ____

Heater 120 W T_d = s

Results

Remarks

CS Model Coil Experiment Log

Date 2000.8.18 Time 11:13 p. 622

Run No. 356 - 1
Procedure No. CI-C1-1
Operation Mode DC

Objective: CSIC Tcs measurement at 13 T, 46 kA (current direction is normal).

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	7 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

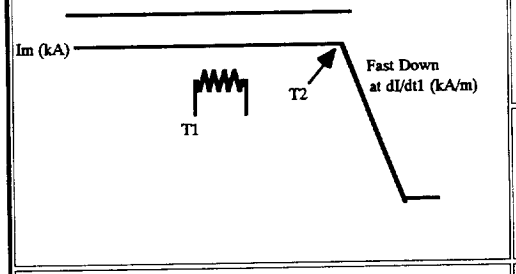
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern: Tcs



CSMC I_m = 46 kA I_1 = kA
dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = 40 kA I_1 = kA
dI/dt_1 = 50 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:17 T_2 13:18 T_3 ____

Heater 220 W T_d = s

Results: Tcs = 7.16 K at 13 T (criteria is 0.1 micro-V/cm)

Remarks

CS Model Coil Experiment Log

Date 2000.8.18 Time 13:21 p. 623

Run No. 356 - 2

Procedure No. CI-C1-1

Operation Mode DC

Objective

Discharge of CSMC.

Coolant condition (before this run)

All				
Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.6 MPa		

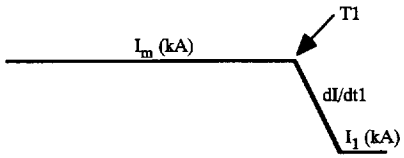
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.6 m-ohm
CSIC	60 kA	1.1 m-ohm

Data Acquisition System (DAS) CSI-Cyclic2(Tcs)

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	60	2 k	60	2 k	

Current pattern Ramp down



CSMC I_m = 46 kA I_1 = kA

dI/dt_1 = 1 kA/m kA/s dB/dt_1 = T/s

dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

CSI I_m = kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:22 T_2 14:19 T_3 ____

Heater W T_d = s

Results

Remarks

The CS Model Coil and the CS Insert Coil test was successfully completed.

Acknowledgement

The authors appreciate the strong support and encouragement by Drs. K. Murakami, S. Kishimoto, S. Matsuda and M. Seki of Japan Atomic Energy Research to the CS Model Coil Experiment.

All the experiment had been carried out by the dedicated effort of the CS Model Coil Test Group members. The authors are grateful to all people who contributed this large and well successful experiment.

Appendix

Short History of CS Model Coil and CS Insert Coil

Date	Events
July 1992	Initiated the development and fabrication of the coils
November 1998	Fabrication of the CS Model Coil Outer Module was completed and transferred to Naka Fusion Research Establishment of JAERI
February 1999	Fabrication of the CS Model Coil Inner Module was completed and shipped from the USA
May 1999	Arrival of the Inner Module at the JAERI-Naka
May 1999	Fabrication of the CS Insert was completed and transferred to JAERI-Naka
June 1, 1999	A international ceremony for the completed fabrication of the coils
June 2, 1999	Started the installation of the CS Model Coil Inner Module, Outer Module and the CS Insert Coil together with the Coil Supporting Structures fabricated by the US Team
October 1999	Completed the installation and started the initial checkouts
November 1999	Start of the initial cool down of the coil system whose total weight is 180 tons
December 1999	Detected helium leak at 20 K and stopped the cool down
January 2000	Warmed up the coil to 300 K
February 2000	Found the location of the leak from the cooling plumbing of the support structure and replaced it with a new cooling pipe
March 13, 2000	Restarted the initial cool down
April 4, 2000	Superconducting transition of all the modules at 17.5 K
April 11, 2000	Initiated the charging test of the CS Model Coil
April 19, 2000	Achieved the DC charging goal of the CS Model Coil (46 kA, 13 T, 640 MJ)
May 23, 2000	Achieved the first pulsed charging goal of the CS Model Coil (Charge up the coil up to 13 T by a ramp rate of +0.4 T/s) by the joint experiment with the JT-60 Power Supply Group
May 24, 2000	Achieved the second pulse charging goal of the CS Model Coil (Discharge the coil from 13 T by a ramp rate of -1.5 T/s)
June 5, 2000	Achieved the DC charging goal of the CS Insert Coil (40 kA, 13T) under a backup field of the CS Model Coil
July 3, 2000	Started the cyclic test of the CS Insert Coil between (0 kA, 13 T) and (40 kA, 13 T) under a backup field of the CS Model Coil
July 7, 2000	Initial 1,000 cycles done

July 11, 2000	Switched to the pulsed charging of the CS Insert Coil and CS Model Coil by the joint experiment with the JT-60 power supply group
July 20, 2000	Succeeded in the rapid charging of the CS Insert Coil by a ramp rate of +1.2 T/s up to 13 T
July 21, 2000	Succeeded in the rapid charging of the CS Model Coil by a ramp rate of +0.6 T/s up to 13 T
July 25, 2000	Resumed cyclic test of the CS Insert Coil
August 9, 2000	Successfully reached 10,003 cycles
August 11, 2000	Confirmed no major degradation of the superconducting performance of the CS Insert Coil by the cyclic operation for 10,000 times
August 14, 2000	Started the reverse field charging between the CS Model Coil and the CS Insert Coil and measured the superconducting performance under a compressive strain state
August 18, 2000	Completed all the charging tests of the CS Model Coil and the CS Insert Coil

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国際単位系 (SI) と換算表

表 1　SI 基本単位および補助単位

量	名　称	記　号
長　さ	メートル	m
質　量	キログラム	kg
時　間	秒	s
電　流	アンペア	A
熱力学温度	ケルビン	K
物質量	モル	mol
光　度	カンデラ	cd
平面角	ラジアン	rad
立体角	ステラジアン	sr

表 2　SI と併用される単位

名　称	記　号
分，時，日	min，h，d
度，分，秒	°，′，″
リットル	l，L
トン	t
電子ボルト	eV
原子質量単位	u

$1\ \mathrm{eV} = 1.60218 \times 10^{-19}\ \mathrm{J}$

$1\ \mathrm{u} = 1.66054 \times 10^{-27}\ \mathrm{kg}$

表 5　SI 接頭語

倍数	接頭語	記　号
10^{18}	エクサ	E
10^{15}	ペタ	P
10^{12}	テラ	T
10^{9}	ギガ	G
10^{6}	メガ	M
10^{3}	キロ	k
10^{2}	ヘクト	h
10^{1}	デカ	da
10^{-1}	デシ	d
10^{-2}	センチ	c
10^{-3}	ミリ	m
10^{-6}	マイクロ	μ
10^{-9}	ナノ	n
10^{-12}	ピコ	p
10^{-15}	フェムト	f
10^{-18}	アト	a

表 3　固有の名称をもつ SI 組立単位

量	名　称	記号	他の SI 単位による表現
周波数	ヘルツ	Hz	s^{-1}
力	ニュートン	N	$m \cdot kg/s^2$
圧力，応力	パスカル	Pa	N/m^2
エネルギー，仕事，熱量	ジュール	J	N·m
工率，放射束	ワット	W	J/s
電気量，電荷	クーロン	C	A·s
電位，電圧，起電力	ボルト	V	W/A
静電容量	ファラド	F	C/V
電気抵抗	オーム	Ω	V/A
コンダクタンス	ジーメンス	S	A/V
磁束	ウェーバ	Wb	V·s
磁束密度	テスラ	T	Wb/m^2
インダクタンス	ヘンリー	H	Wb/A
セルシウス温度	セルシウス度	℃	
光束	ルーメン	lm	cd·sr
照度	ルクス	lx	lm/m^2
放射能	ベクレル	Bq	s^{-1}
吸収線量	グレイ	Gy	J/kg
線量当量	シーベルト	Sv	J/kg

表 4　SI と共に暫定的に維持される単位

名　称	記　号
オングストローム	Å
バーン	b
バール	bar
ガル	Gal
キュリー	Ci
レントゲン	R
ラド	rad
レム	rem

$1\ \text{Å} = 0.1\ \mathrm{nm} = 10^{-10}\ \mathrm{m}$

$1\ \mathrm{b} = 100\ \mathrm{fm}^2 = 10^{-28}\ \mathrm{m}^2$

$1\ \mathrm{bar} = 0.1\ \mathrm{MPa} = 10^5\ \mathrm{Pa}$

$1\ \mathrm{Gal} = 1\ \mathrm{cm/s}^2 = 10^{-2}\ \mathrm{m/s}^2$

$1\ \mathrm{Ci} = 3.7 \times 10^{10}\ \mathrm{Bq}$

$1\ \mathrm{R} = 2.58 \times 10^{-4}\ \mathrm{C/kg}$

$1\ \mathrm{rad} = 1\ \mathrm{cGy} = 10^{-2}\ \mathrm{Gy}$

$1\ \mathrm{rem} = 1\ \mathrm{cSv} = 10^{-2}\ \mathrm{Sv}$

（注）

1. 表 1 ― 5 は「国際単位系」第 5 版，国際度量衡局　1985 年刊行による。ただし，1 eV および 1 u の値は CODATA の 1986 年推奨値によった。
2. 表 4 には海里，ノット，アール，ヘクタールも含まれているが日常の単位なのでここでは省略した。
3. bar は，JIS では流体の圧力を表わす場合に限り表 2 のカテゴリーに分類されている。
4. EC 閣僚理事会指令では bar，barn および「血圧の単位」mmHg を表 2 のカテゴリーに入れている。

換　算　表

力	N(=10^5dyn)	kgf	lbf
	1	0.101972	0.224809
	9.80665	1	2.20462
	4.44822	0.453592	1

粘　度　1 Pa·s(N·s/m^2)=10 P(ポアズ)(g/(cm·s))

動粘度　1 m^2/s=10^4St(ストークス)(cm^2/s)

圧力	MPa(=10 bar)	kgf/cm^2	atm	mmHg(Torr)	lbf/in^2(psi)
	1	10.1972	9.86923	7.50062×10^3	145.038
	0.0980665	1	0.967841	735.559	14.2233
	0.101325	1.03323	1	760	14.6959
	1.33322×10^{-4}	1.35951×10^{-3}	1.31579×10^{-3}	1	1.93368×10^{-2}
	6.89476×10^{-3}	7.03070×10^{-2}	6.80460×10^{-2}	51.7149	1

エネルギー・仕事・熱量	J(=10^7erg)	kgf·m	kW·h	cal(計量法)	Btu	ft·lbf	eV
	1	0.101972	2.77778×10^{-7}	0.238889	9.47813×10^{-4}	0.737562	6.24150×10^{18}
	9.80665	1	2.72407×10^{-6}	2.34270	9.29487×10^{-3}	7.23301	6.12082×10^{19}
	3.6×10^6	3.67098×10^5	1	8.59999×10^5	3412.13	2.65522×10^6	2.24694×10^{25}
	4.18605	0.426858	1.16279×10^{-6}	1	3.96759×10^{-3}	3.08747	2.61272×10^{19}
	1055.06	107.586	2.93072×10^{-4}	252.042	1	778.172	6.58515×10^{21}
	1.35582	0.138255	3.76616×10^{-7}	0.323890	1.28506×10^{-3}	1	8.46233×10^{18}
	1.60218×10^{-19}	1.63377×10^{-20}	4.45050×10^{-26}	3.82743×10^{-20}	1.51857×10^{-22}	1.18171×10^{-19}	1

1 cal = 4.18605 J（計量法）
= 4.184 J　（熱化学）
= 4.1855 J　（15 °C）
= 4.1868 J（国際蒸気表）

仕事率　1 PS（仏馬力）
= 75 kgf·m/s
= 735.499 W

放射能	Bq	Ci
	1	2.70270×10^{-11}
	3.7×10^{10}	1

吸収線量	Gy	rad
	1	100
	0.01	1

照射線量	C/kg	R
	1	3876
	2.58×10^{-4}	1

線量当量	Sv	rem
	1	100
	0.01	1

（86 年 12 月 26 日現在）

CS Model Coil Experiment Log Book