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TF INSERT EXPERIMENT LOG BOOK
— 2ND EXPERIMENT OF CS MODEL COIL —

December 2001

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TF Insert Experiment Log Book --2nd Experiment of CS model coil--

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(Received on November 16, 2001)

The cool down of CS model coil and TF insert was started on August 20, 2001. It took almost one month and immediately started coil charge since September 17, 2001. The charge test of TF insert and CS model coil was completed on October 19, 2001.

In this campaign, total shot numbers were 88 and the size of the data file in the DAS (Data Acquisition System) was about 4 GB. This report is a database that consists of the log list and the log sheets of every shot.

This is an experiment logbook for 2nd experiment of CS model coil and TF insert for charge test.

Keywords: ITER, CS Model Coil, TF Insert, Experiment, Log, Database

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*1 Atomic Energy General Services Co.
*2 KCS Co.
*3 Nuclear Engineering Co. Ltd,

第2回CSモデル・コイル実験記録

--TFインサート・コイル実験--

日本原子力研究所那珂研究所核融合工学部
杉本　誠・礒野 高明・松井 邦浩・布谷 嘉彦・堤　史明*1・田宮 忠俊*2
押切 雅幸・若林　宏*3・奥野　清・辻　博史

（2001年11月16日受理）

CSモデル・コイルの第2回実験が2001年8月より開始した。第2回目の実験では、CSモデル・コイルの内側にTFインサート・コイルを設置し、実験を行った。CSモデル・コイルとTFインサート・コイルの予冷は同年8月20日から開始して、約1ヶ月を費やした。その後直ちに9月17日より通電試験を行った。同年10月19日に通電試験を完了した。

この間，実験番号は88を数え，収集したデータはバイナリ形式で4 GBに達した。本報告書は5週間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。

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1 TF Insert Experiment Log List

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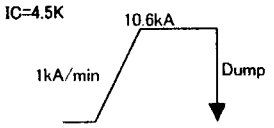
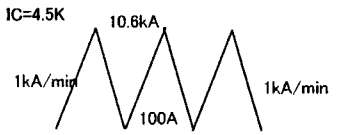
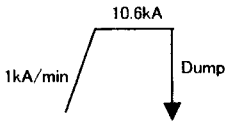
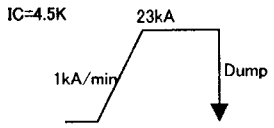
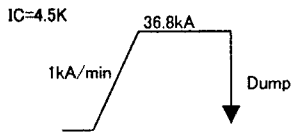
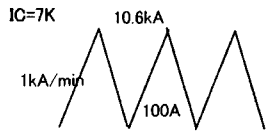
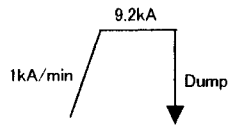
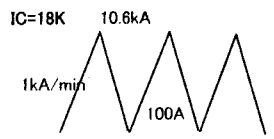
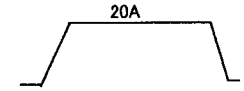
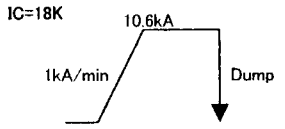
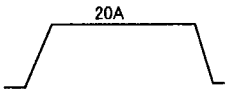
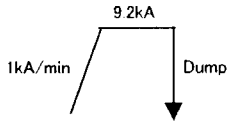
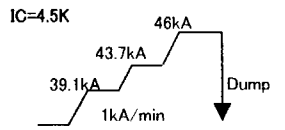
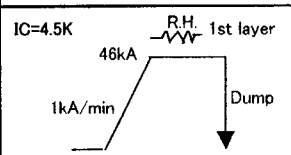
Test Procedure of TF Insert

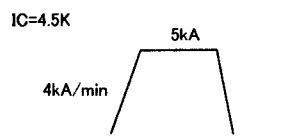
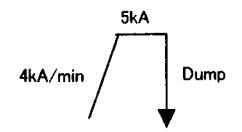
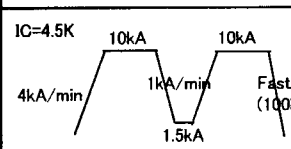
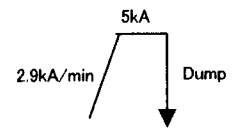
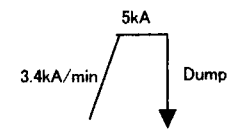
Revision
Y.Takahashi (2001.3.1)
S.Egorov (2001.3.12)
Draft #3 S.Egorov (2001.3.26)
Draft #4 T.Isono (2001.4.5)
Draft #5.1 T.Isono (2001.8.29)
Draft #5.2 T.Isono (2001.10.3)

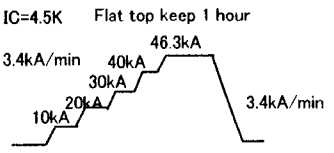
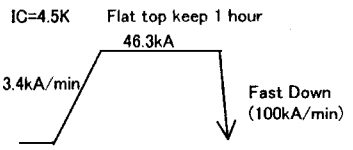
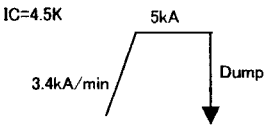
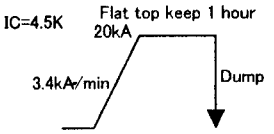
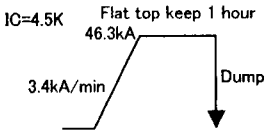
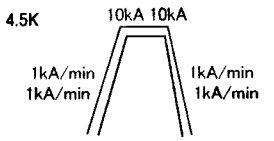
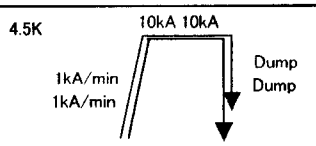
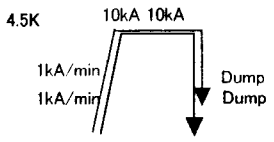
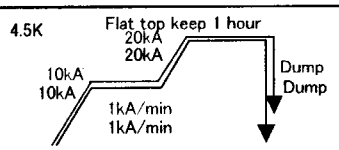
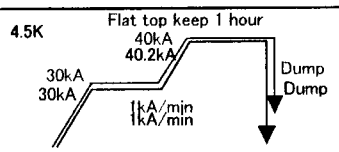
week	day	Run No.	No.	Test Item	Red : Current of TFIC Blue : Current of CSMC
			0	**Cooldown and hydraulic tests**	
		1-1	**0.0**	RRR Measurement	
	13,Sep		**0.1**	High potential test	CSMC=DC2.25kV, 10min TFIC=DC500V megger, 1min
	14,Sep		**0.2**	Pressur Drop Measurements	5,10,15 g/s at 4.5K
	29,Sep	45-1,45-2, 45-3,45-4, 45-5,45-6, 45-7,45-8	**0.3**	Heaters calibration for AC loss. Energize inlet heaters(MCI_HR_IN, MCO_HR1_IN1,2, ITF_HR_IN).	IC=4.5K R.H.
	14,Sep	2-1 (10K) 2-2 (18k)	**0.4**	Heaters calibration for Tcs. Energize inlet heater(ITF_HR_IN) up to 18K	IC=4.5K R.H.
			1	**TF insert virgin state AC loss test before charge (TFCI: open; CSMC: t_d=20 s)**	
1st week	1st day (17,Sep)	3-1	**1.1**	Check of Protection System	IC=4.5K, 9.2kA, 5.6kA, 1kA/min, 1kA/min
		4-1	**1.1**	Check of Protection System	IC=4.5K, 9.2kA, 9.2kA, 1kA/min, 1.5kA, 1kA/min

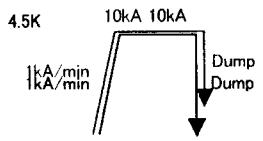
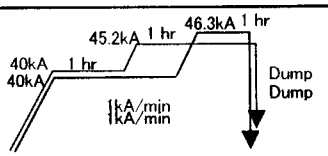
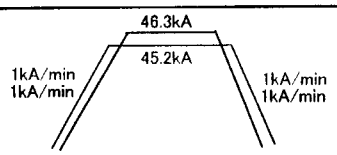
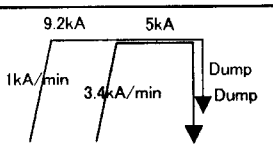
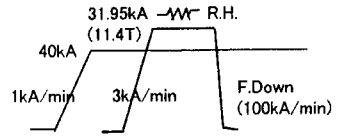
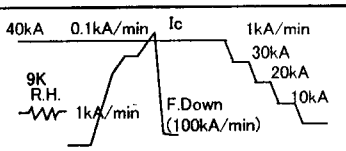
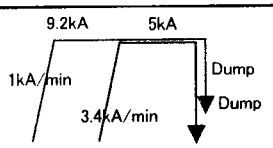
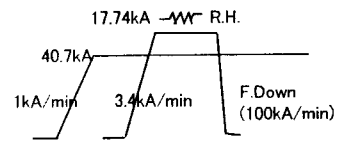
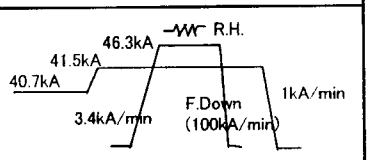
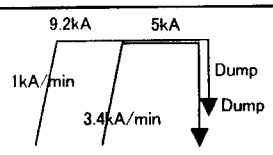
	5-1	**1.3**	CSMC 23% ramp up with 1 kA/min & M. Dump. TFCI 3T coupling loss measurement	
	6-1	**1.2**	CSMC 23% triangular ramp up/down with 1 kA/min three times. TFCI 3T hysteresis loss measurement at 4.5K	
2nd day (18,Sep)	7-1	**1.0**	daily check	
	8-1	**1.4**	CSMC 50% ramp up with 1 kA/min & M. Dump.	
	9-1	**1.5**	CSMC 75% ramp up with 1 kA/min and step at 65%, and M. Dump.	
	10-1		Heating of TFCI up to 7K	Reduce flow of TFCI and mandrel. Energize inlet heater of TFCI
	11-1	**1.6**	CSMC 23% triangular ramp up/down with 1 kA/min three times. TFCI 3T hysteresis loss measurement at 7K	
			Cool TFCI during a night.	
3rd day (19,Sep)	12-1 13-2		Heating of TFCI up to 18K	Reduce flow of TFCI and mandrel. Energize inlet heater of TFCI
	13-1	**1.0**	daily check	
	14-1	**1.7**	Hold TFCI at the normal state. CSMC 23% triangular ramp up/down with 1 kA/min three times. TFCI 3T hysteresis loss measurement at 18K	
	15-1		20A current was run in the coil in order to confirm the normal conduction.	

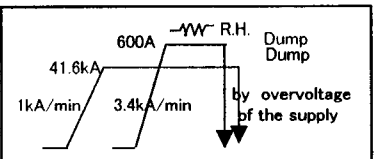
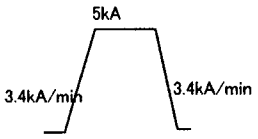
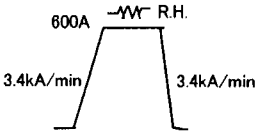
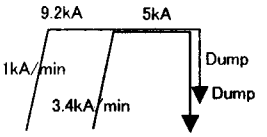
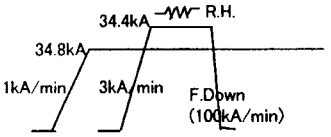
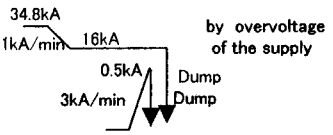
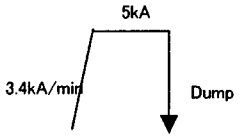
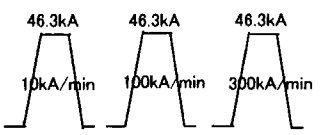
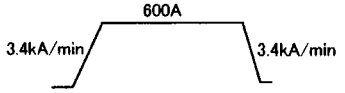
	16-1	**1.8**	CSMC 23% ramp up with 1 kA/min & M. Dump. TFCI 3T coupling loss measurement	
	17-1,2		20A current was run in the coil in order to confirm the normal conduction.	
			Cool TFCI during a night.	
4th day (20,Sep)	18-1	**1.0**	daily check	
	19-1,2,3	**1.11**	CSMC 100 % charge at 1 kA/min ramp rate with steps at 85% and 95%, and then M. dump	
	20-1,2	**1.12**	Charge CSMC up to 100%, energize resistive heater at inlet of 1st layer, and measure Tcs.	

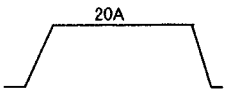
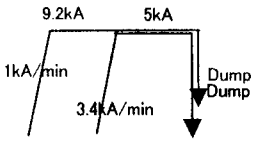
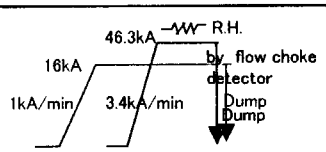
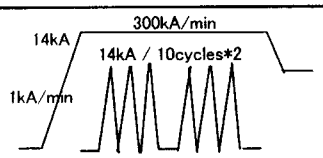
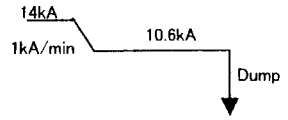
2 TFCI self field test (TFCI: td=0.2 s)

5th day (21,Sep)	21-1	**2.1**	Check of Protection System	
	22-1	**2.1**	Check of Protection System	
	23-1	**2.1**	Check of Protection System	
	24-1	**2.1**	Check of Protection System	
	25-1	**2.1**	Check of Protection System	

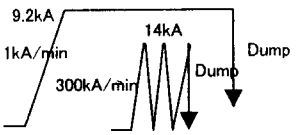
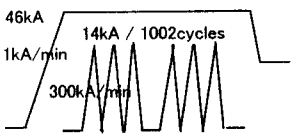
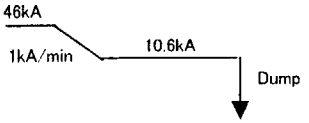
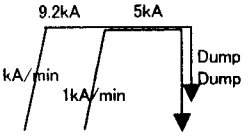
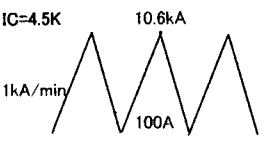
2nd week	6th day (24,Sep) the Autumnal Equinox	26-1	**2.2**	TFCI 46kA ramp up at 3kA/min rate with steps at 10, 20, 30, 40 kA and down. Each step and flat top keep 1 hour.	
		27-1	**2.5**	TFCI 46kA up and fast down. keep flat top 1 hour to measure loop current.	
		28-1	**2.0**	daily check	
		29-1	**2.3**	20 kA at 3 kA/min ramp up rate with 1 hour flat top and M. Dump at 20 kA.	
		30-1	**2.4**	46 kA at 3 kA/min ramp up rate with 1 hour flat top and M. Dump at 46 kA.	
			3	**TFCI nominal current test (CSMC t_d=20 s)**	
		31-1	**3.1**	Check of Protection System	
		32-1	**3.1**	Check of Protection System	
	7th day (25,Sep)	33-1	**3.0**	daily check	
		34-1	**3.2**	Charge the CSMC and TFCI simultaneously step by step up to 10, 20 kA with 1 kA/min ramp up rate and 1 hour flat tops at each step. M. Dump at 20 kA.	
		35-1	**3.3**	Charge the CSMC and TFCI simultaneously up to 30 and 40 kA with 1 kA/min ramp up rate and 1 hour flat tops at each step. M. Dump at 40 kA.	

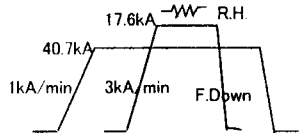
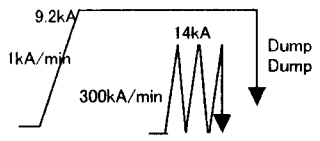
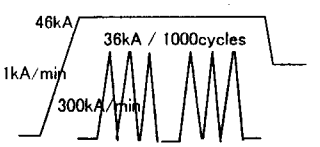
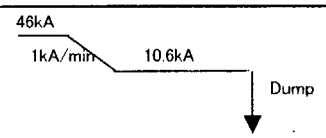
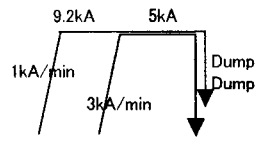
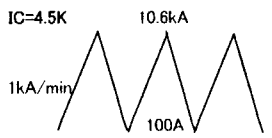
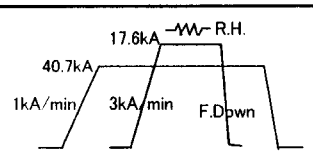
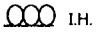
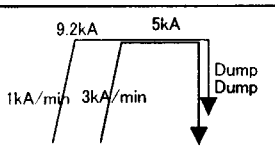
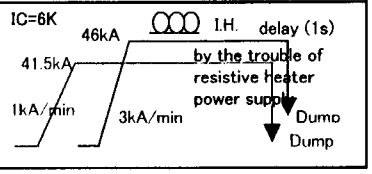
8th day (26,Sep)	36-1	**3.0**	daily check	
	37-1 37-2 37-3 37-4	**3.4**	Charge the CSMC and TFCI simultaneously up to 40 kA with 1 kA/min ramp up rate. 1 hour flat top. Charge the CSMC up to 12.5 T. 1 hour flat top. Charge the TFCI up to 46 kA. 1 hour flat top. M. Dump	
	38-1	**3.5**	Charge CSMC 12.5T, charge TFCI up to 46kA and down.	
		4	**I_c & T_{CS} measurements**	
9th day (27,Sep)	39-1	**4.0**	daily check	
	40-1 40-2 40-3	**4.13**	Charge CSMC up to (11)T, charge TFCI up to 31.8kA, energize inlet heater of TFCI, and measure Tcs of TFCI Ref. Strand data: 11.4T, 27.6A, 9K	
	41-1 41-2	**4.19**	Charge CSMC upto (11)T, energize inlet heater of TFCI up to Tcs result of 4.13, and measure Ic of TFCI calibration of TWO sensor	
10th day (28,Sep)	42-1	**4.0**	daily check	
	43-1 43-2 43-3	**4.14**	Charge CSMC up to (11)T, charge TFCI up to 17.6kA, energize inlet heater of TFCI, and measure Tcs of TFCI Ref. Strand data: 11.4T, 15.3A, 9.9K	
	44-1 44-2 44-3	**4.1**	Charge CSMC up to (11.5)T, charge TFCI up to 46kA, energize inlet heater of TFCI, and measure Tcs of TFCI	
3rd week 1th day (1,Oct)	46-1	**4.0**	daily check	

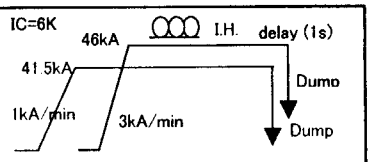
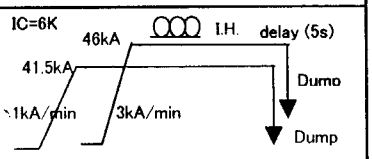
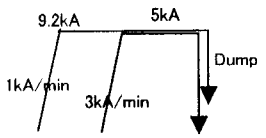
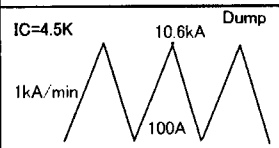
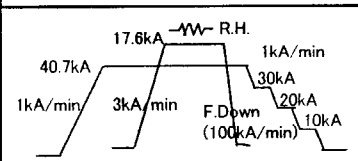
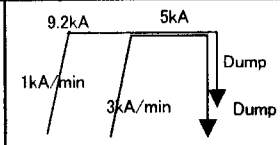
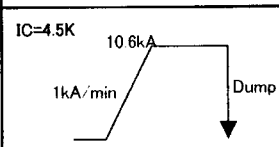
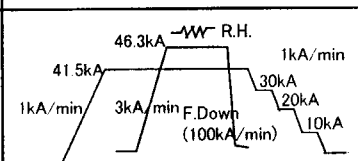
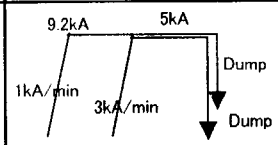
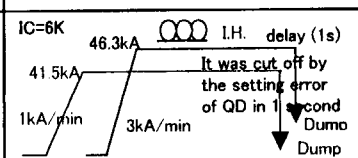
1	47-1 47-2 47-3	**4.15**	Charge CSMC up to (11.4)T, charge TFCI up to 1kA, energize inlet heater of TFCI, and measure Tcs of TFCI Ref. Strand data:	
	48-1 48-2 48-3 48-4		test of the DC power supply	
	49-1	**4.9**	Charge TFCI up to 1kA, energize inlet heater of TFCI, and measure Tcs of TFCI Ref. Strand data:	
12th day (2,Oct)	50-1 50-2 50-3		test of the DC power supply	(short circuit)
	51-1	**4.0**	daily check	
	52-1 52-2 52-3	**4.16**	Charge CSMC up to (9.5)T, charge TFCI up to 34.4kA, energize inlet heater of TFCI, and measure Tcs of TFCI Ref. Strand data: 10T, 29.8A, 10K	
	53-1	**4.18**	Charge CSMC up to (4.5)T, charge TFCI up to 46kA, energize inlet heater of TFCI, and measure Tcs of TFCI Strand data: Series at 5T	
13th day (3,Oct)			test of the DC power supply	(short circuit)
	54-1		test of the DC power supply	
	54-2 54-3 54-4		test of the DC power supply	
	54-5		test of the DC power supply	

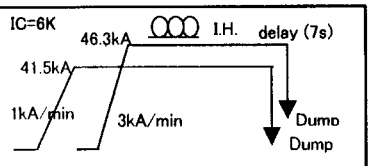
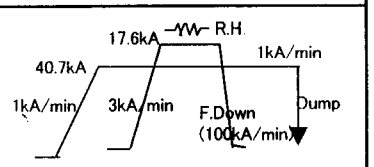
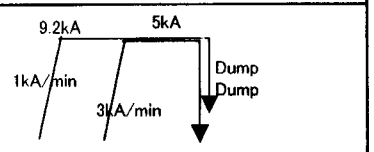
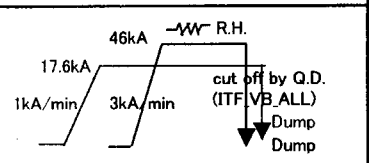
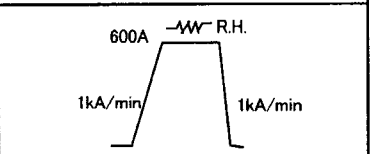
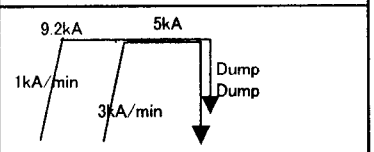
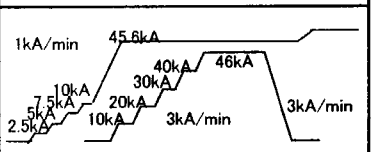
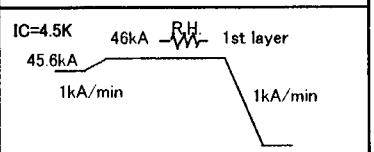
	14th day (4,Oct)	55-1 55-2 55-3		20A current was run in the coil in order to confirm the normal conduction.	
	15th day (5,Oct)	56-1	**4.0**	daily check	
		57-1 57-2 57-3	**4.18**	Charge CSMC up to (4.5)T, charge TFCI up to 46kA, energize inlet heater of TFCI, and measure Tcs of TFCI Strand data: Series at 5T	
		58-1	**5.1**	Check of Cyclic System CSMC 14kA; 10 cycles 0 – 14 kA – 0.	
		58-2	**5.3**	M. Dump. Test run of TFCI 3T coupling loss measurement	

5 1st series of cyclic tests at d e = 0.04%

4th week	16th day (8,Oct) Health Sports Day	59-1	**5.0**	Check of Protection System	
		60-1 60-2	**5.2**	CSMC 12 T; 1002 cycles 0 – 14 kA – 0.	
		60-3	**5.3**	CSMC 23% ramp up with 1 kA/min & M. Dump. TFCI 3T coupling loss measurement	
	17th day (9,Oct)	61-1	**4.0**	daily check	
		62-1	**5.5**	CSMC 23% triangular ramp up/down with 1 kA/min three times. TFCI 3T hysteresis loss measurement at 4.5K	

	63-1 63-2 63-3	**5.6**	Charge CSMC up to (11)T, charge TFCI up to 17.6kA, energize inlet heater of TFCI, and measure Tcs of TFCI Strand data:	
		6	**2nd series of cyclic tests at d e = 0.11%**	
18th day (10,Oct)	64-1	**5.1**	daily check	
	65-1 65-2 65-3	**6.1**	CSMC 12 T; 1000 cycles 0 – 36 kA – 0	
	65-4	**6.2**	CSMC 23% ramp up with 1 kA/min & M. Dump. TFCI 3T coupling loss measurement	
19th day (11,Oct)	66-1	**4.0**	daily check	
	67-1	**6.4**	CSMC 23% triangular ramp up/down with 1 kA/min three times. TFCI 3T hysteresis loss measurement at 4.5K	
	68-1 68-2 68-3	**6.5**	Charge CSMC up to (11)T, charge TFCI up to 17.6kA, energize inlet heater of TFCI, and measure Tcs of TFCI Strand data:	
	69-1,2,3,4 5,6,7,8		Inductive heaters calibration for stability test	
		7	**Stability and Quench test**	
20th day (12,Oct)	70-1	**4.0**	daily check	
	71-1,2,3,4, 5,6,7,8,9, 10,11	**7.5**	Charge CSMC up to (12)T, charge TFCI up to 46kA, energize inductive heater until quench. Detection delay is 1s.	

		72-1,2,3	**7.5**	Charge CSMC up to (12)T, charge TFCI up to 46kA, energize inductive heater until quench. Detection delay is 1s.	
		73-1,2,3,4	**7.2**	Charge CSMC up to (12)T, charge TFCI up to 46kA, energize inductive heater until quench. Detection delay is 0.1s and keep currents for 5s after detection.	
			8	**AC loss and I_c & T_{cs} measurements after the quench tests**	
5th week	21th day (15,Oct)	74-1	**4.0**	daily check	
		75-1	**8.1**	CSMC 23% triangular ramp up/down with 1 kA/min three times. TFCI 3T hysteresis loss measurement at 4.5K	
		76-1 76-2 76-3	**8.4**	Charge CSMC up to (11)T, charge TFCI up to 17.6kA, energize inlet heater of TFCI, and measure Tcs of TFCI Strand data: calibration of TWO sensor	
	22th day (16,Oct)	77-1	**4.0**	daily check	
		78-1	**8.3**	CSMC 23% ramp up with 1 kA/min & M. Dump. TFCI 3T coupling loss measurement	
		79-1,2	**8.2**	Charge CSMC up to (11.5)T, charge TFCI up to 46kA, energize inlet heater of TFCI, and measure Tcs of TFCI Strand data:	
	23th day (17,Oct)	80-1	**4.0**	daily check	
		81-1,2,3,4	**7.7**	Charge CSMC up to (12)T, charge TFCI up to 46kA, energize inductive heater until quench. Detection delay is 7s.	

		82-1,2,3,4	**7.7**	Charge CSMC up to (12)T, charge TFCI up to 46kA, energize inductive heater until quench. Detection delay is 7s.	
		83-1,2,3	**8.4**	Charge CSMC up to (11)T, charge TFCI up to 17.6kA, energize inlet heater of TFCI, and measure Tcs of TFCI Strand data:	
	24th day (18,Oct)	84-1	**4.0**	daily check	
		85-1,2,3	**4.18**	Charge CSMC up to (4.5)T, charge TFCI up to 46kA, energize inlet heater of TFCI, and measure Tcs of TFCI Ref. Strand data: Series at 5T	
		86-1,2	**4.9**	Charge TFCI up to 600A, energize inlet heater of TFCI, and measure Tcs of TFCI	
	25th day (19,Oct)	87-1	**4.0**	daily check	
		88-1,2	**8.15**	Charge CSMC up to 12.5T, charge TFCI up to 46kA, hold 1hour, and down. calibration of TWO sensor.	
		89-1,2	**1.12**	Charge CSMC up to 100%, energize resistive heater at inlet of 1st layer, and measure Tcs.	

2. TF Insert Experiment Log Sheets

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CSMC-TF insert Experiment Log

Date 2001.9.14 Time 10:00 p. 1

Run No. 2 - 1

Procedure No. 0.4

Operation Mode No Current

Objective: Check tempereture profile for Tcs measurement of TF insert.

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		

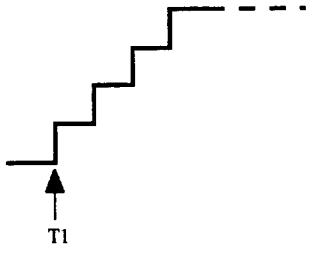
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

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

Current pattern Heater energize



CSMC I_m = kA I_t = kA

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

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

TFI I_m = kA I_t = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:22 T_2 11:55 T_3 ____

Heater 320 W T_d = s

Results

Max. Heater power =320 W
Heater off =11:55
OK.

Remarks

Heat up by ITF_HR_IN

CSMC-TF insert Experiment Log

Date 2001.9.14 Time 13:10 p. 2

Run No. 2 - 2

Procedure No. 0.4

Operation Mode No Current

Objective: Check tempereture profile for Tcs measurement of TF insert. Temperature is up to 18K.

Coolant condition (before this run)

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

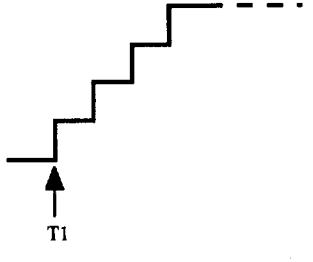
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

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

Current pattern Heater energize



CSMC I_m = kA I_t = kA

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

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

TFI I_m = kA I_t = 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 517 W T_d = s

Results

Max. Heater power =517 W
Heater off =18:25
OK.

Remarks

Heat up by ITF_HR_IN

CSMC-TF insert Experiment Log

Date 2001.9.17 Time 11:00 p. 3

Run No. 3 - 1

Procedure No. 1.1

Operation Mode DC

Objective

Check the coil performance and instrumentation system.

Coolant condition (before this run)

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

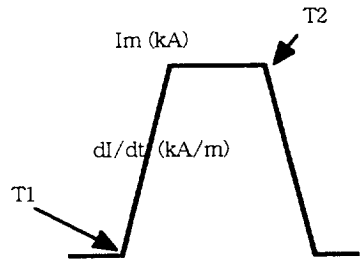
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 11:15 T_2 11:41 T_3 ____

Heater W T_d = s

Results

OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.17 Time 13:10 p. 4

Run No. 4 - 1

Procedure No. 1.1

Operation Mode DC

Objective

Set QD voltage

Coolant condition (before this run)

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

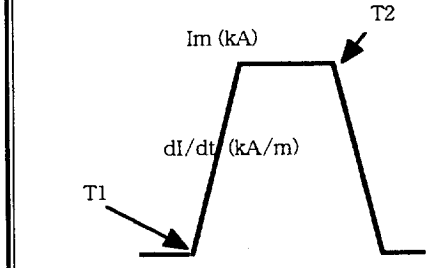
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 ____ T_3 ____

Heater W T_d = s

Results

OK.

Remarks

Since this shot, amplifier gain is changed as follows
ITF_VD_ALL1:x10000 --> x1000
ITF_VD_0102:x1000 --> x100

CSMC-TF insert Experiment Log

Date 2001.9.17 Time 14:38 p. 5

Run No. 5 - 1

Procedure No. 1.3

Operation Mode DC

Objective: Measure coupling loss of TFCI at 3T.

Coolant condition (before this run)

All

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

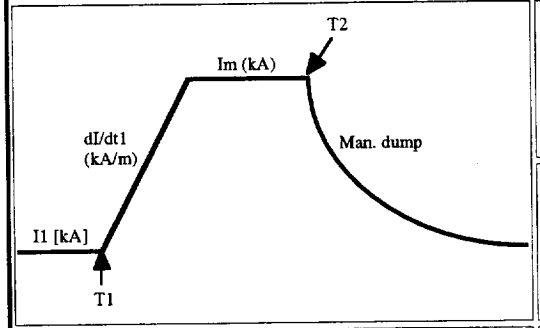
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	300	300	300	

Current pattern Manual dump



CSMC I_m = 10.6 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

TFI 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 13:38 T_2 15:24 T_3 ____

Heater W T_d = s

Results

Vi=147V, Vo=176V, Vins=2.1V,Taumc=19s, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.17 Time 16:36 p. 6

Run No. 6 - 1

Procedure No. 1.2

Operation Mode DC

Objective: Measure hysteresis loss of TFCI at 3T, 4.5K.

Coolant condition (before this run)

All

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

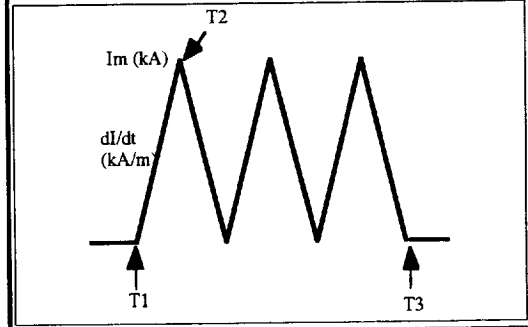
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	25ms
Pre-trigger	300	300	300	300	1 k

Current pattern Triple Triangular



CSMC I_m = 10.6 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

TFI 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 16:40 T_2 18:05 T_3 ____

Heater W T_d = s

Results

OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.18 Time 9:50 p. 7

Run No. 7 - 1
Procedure No. 1.3
Operation Mode DC

Objective
Measure coupling loss of TFCI at 3T, 4.5K.

Coolant condition (before this run)

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

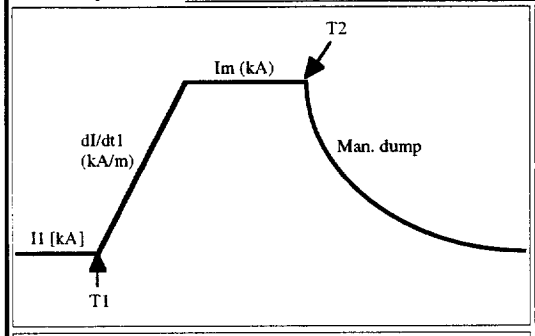
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	300	300	300	

Current pattern Manual dump



CSMC I_m = 10.6 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

TFI 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 10:25 T_3 ____

Heater W T_d = s

Results
Vi=153V, Vo=182V, Vins=2.1V,Taumc=19.1s, OK.

Remarks
Since this shot, amplifier gain is changed as follows
ITF_VD_01: x100--> x1
ITF_VD_02: x100--> x1
ITF_VD_03: x100--> x1
ITF_VD_1011: x10000 --> x1000

CSMC-TF insert Experiment Log

Date 2001.9.18 Time 11:00 p. 8

Run No. 8 - 1
Procedure No. 1.4
Operation Mode DC

Objective
Measure AC losses of CSMC and TFCI.

Coolant condition (before this run)

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

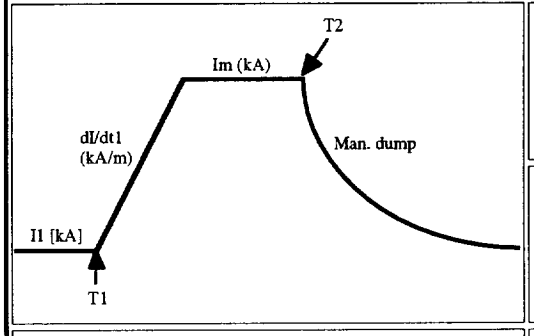
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 11:05 T_2 11:58 T_3 ____

Heater W T_d = s

Results
Vi=330V, Vo=392V, Vins=4.5V,Taumc=18.5s, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.18 Time 13:15 p. 9

Run No. 9 - 1

Procedure No. 1.5

Operation Mode DC

Objective

Measure AC losses of CSMC and TFCI.

Coolant condition (before this run)

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

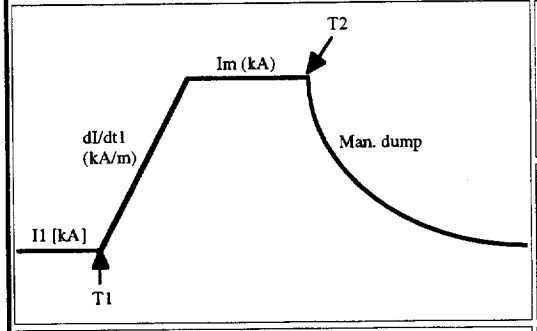
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 14:26 T_3 ____

Heater W T_d = s

Results

Vi=528V, Vo=628V, Vins=17.2V,Taumc=17.5s, OK.

Remarks

ITF_VC_03: ACC Break (Open in Vaccum tank)

CSMC-TF insert Experiment Log

Date 2001.9.18 Time 15:07 p. 10

Run No. 10 - 1

Procedure No. ____

Operation Mode DC

Objective

Heat TFCI up 7K

Coolant condition (before this run)

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

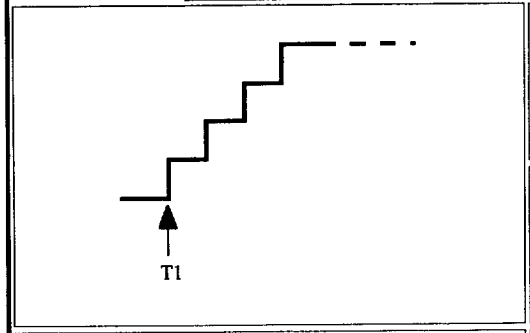
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	300	300	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

TFI 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 15:40 T_3 ____

Heater 213 W T_d = s

Results

ITF_TC_01 achieved to 7.21K. OK.

Remarks

Heat up by ITF_HR_IN
Since this shot, amplifier gain is changed as follows
ITF_VD_01: x1--> x100
ITF_VD_02:x1--> x100
ITF_VD_03:x1--> Zero

CSMC-TF insert Experiment Log

Date 2001.9.18 Time 16:05 p. 11

Run No. 11 - 1

Procedure No. 1.6

Operation Mode DC

Objective

TFCI hysteresis loss at 3T, 7K

Coolant condition (before this run)

All

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

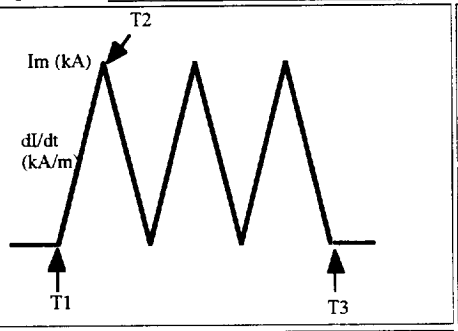
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	25 ms
Pre-trigger	300	300	300	300	1 k

Current pattern Triple Triangular



CSMC I_m = 10.6 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

TFI 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 16:17 T_2 ____ T_3 17:45

Heater W T_d = s

Results

OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.19 Time 8:00 p. 12

Run No. 12 - 1

Procedure No. ____

Operation Mode DC

Objective

Heat TFCI up 18K.

Coolant condition (before this run)

All

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

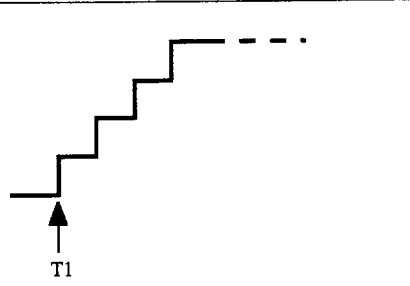
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s				
Pre-trigger	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

TFI 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 8:09 T_2 ____ T_3 9:36

Heater 410 W T_d = s

Results

Inlet temp (ITF_TC_IN) acheived 15.5K.

Remarks

Heat up by ITF_HR_IN
Next shot is done during the heating.

CSMC-TF insert Experiment Log

Date 2001.9.19 Time 9:00 p. 13

Run No. 13 - 1

Procedure No. 1.0

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		

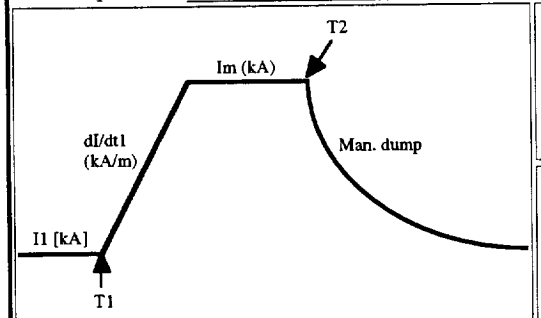
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	300	100	300	

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

TFI 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 9:48 T_2 10:09 T_3 ____

Heater 410 W T_d = s

Results

Vi=133V, Vo=158V, Vins=1.8V,Taumc=19.2s, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.19 Time 10:17 p. 14

Run No. 13 - 2

Procedure No. ____

Operation Mode DC

Objective: Heat TFCI up 18K.

Coolant condition (before this run)

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

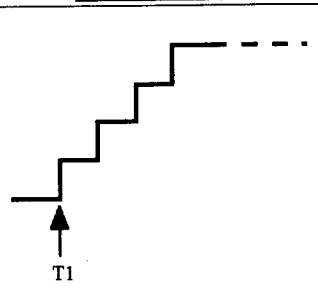
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

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

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

TFI 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 10:17 T_2 ____ T_3 ____

Heater 410 W T_d = s

Results

Inlet temp (ITF_TC_IN) acheived 25K.

Remarks

Heat up by ITF_HR_IN
Check source current of TW_08, TW_09 during the heating.

CSMC-TF insert Experiment Log

Date 2001.9.19 Time 11:10 p. 15

Run No. 14 - 1
Procedure No. 1.7
Operation Mode DC

Objective: TFCI hysteresis loss at 3T, 18K

Coolant condition (before this run)

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

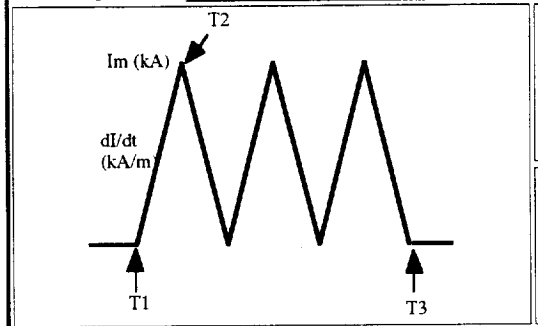
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	25ms
Pre-trigger	100	300	100	300	1 k

Current pattern Triple Triangular



CSMC I_m = 10.6 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

TFI 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 11:16 T_2 11:28 T_3 12:48

Heater W T_d = s

Results: OK.

Remarks:

CSMC-TF insert Experiment Log

Date 2001.9.19 Time 13:00 p. 16

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

Objective: Confirm the normal state of TFCI.

Coolant condition (before this run)

	Insert		All
Temperature	~ 18 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

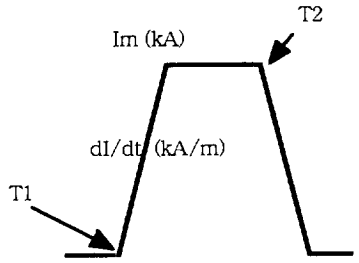
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

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

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

TFI I_m = 0.02 kA I_1 = kA
dI/dt_1 = 0.01 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:01 T_2 13:13 T_3

Heater 410 W T_d = s

Results:

Remarks: Temporary power supply (20A-DC) is applied. 19.99A supplied.

CSMC-TF insert Experiment Log Date 2001.9.19 Time 13:20 p. 17

Run No. 15 - 2

Procedure No.

Operation Mode DC

Objective

Coolant condition (before this run)

	Insert		All
Temperature	~ 18 K	~	4.5 K
Mass Flow Rate	~ 2 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

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

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

TFI 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

CSMC-TF insert Experiment Log Date 2001.9.19 Time 14:05 p. 18

Run No. 16 - 1

Procedure No. 1.8

Operation Mode DC

Objective

TFCI coupling loss at 3T, 18K

Coolant condition (before this run)

	Insert		All
Temperature	~ 18 K	~	4.5 K
Mass Flow Rate	~ 2 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

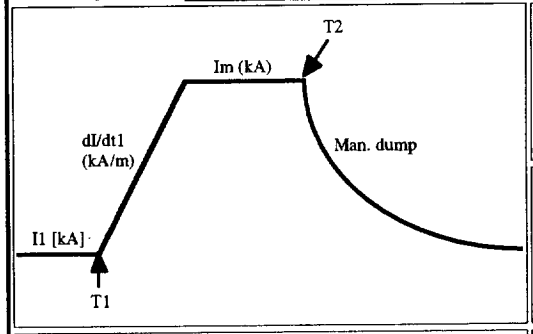
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	300	100	300	

Current pattern Manual dump



CSMC I_m = 10.6 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

TFI 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 14:12 T_2 14:36 T_3 ____

Heater 410 W T_d = s

Results

Vi=153V, Vo=182V, Vins=2.1V,Taumc=19.2s, OK.

Remarks

Low pass filter on (100Hz) : ITF_VD_0809, ITF_VD_0910

CSMC-TF insert Experiment Log

Date 2001.9.19 Time 14:50 p. 19

Run No. 17 - 1

Procedure No.

Operation Mode DC

Objective: Check the superconducitity transition

Coolant condition (before this run)

Insert			
Temperature	~ 18 K	~ 4.5 K	
Mass Flow Rate	~ 2 g/s	~ 10 g/s	
Pressure	~ 0.6 MPa		

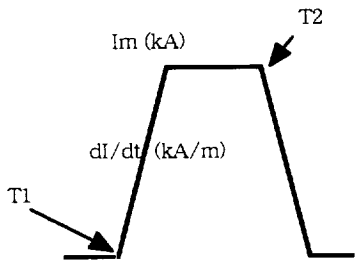
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

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

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

TFI I_m = 0.02 kA I_1 = kA

dI/dt_1 = 0.01 kA/m kA/s

dI/dt_2 = 0.01 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:51 T_2 ____ T_3 ____

Heater 410 W T_d = s

Results

Remarks

Temporary power supply (20A-DC) is applied.
20.01A supplied.

Inlet temperature is reduced step by step.

CSMC-TF insert Experiment Log

Date 2001.9.19 Time 15:27 p. 20

Run No. 17 - 2

Procedure No.

Operation Mode DC

Objective: Check the superconducitity transition

Coolant condition (before this run)

Insert			
Temperature	~ 18 K	~ 4.5 K	
Mass Flow Rate	~ 2 g/s	~ 10 g/s	
Pressure	~ 0.6 MPa		

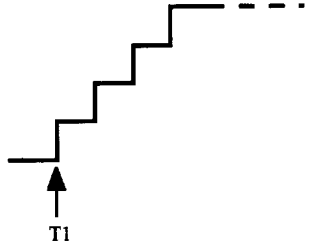
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

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

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

TFI I_m = 0.02 kA I_1 = kA

dI/dt_1 = 0.01 kA/m kA/s

dI/dt_2 = 0.01 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:27 T_2 ____ T_3 ____

Heater 0 W T_d = s

Results

Remarks

Heter off at 15:27

CSMC-TF insert Experiment Log

Date 2001.9.20 Time 9:00 p. 21

Run No. 18 - 1

Procedure No. 1.0

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		

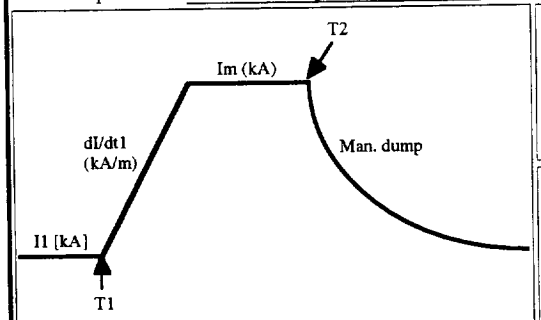
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	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 = 1 kA/m kA/s dB/dt_2 = T/s

TFI 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 10:15 T_3 ____

Heater W T_d = s

Results

Vi=133V, Vo=158V, Vins=1.8V,Taumc=19.2s, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.20 Time 10:56 p. 22

Run No. 19 - 1

Procedure No. 1.11

Operation Mode DC

Objective: CSMC 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		

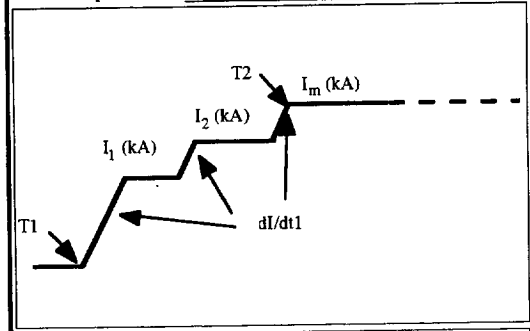
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Ramp up with two steps



CSMC I_m = 46 kA I_1 = 39.1 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

TFI 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 13:45 T_3 ____

Heater W T_d = s

Results

OK.

Remarks

Current steps are 39.1kA(I1) and 43.7kA (I2).
Manual dump at 46kA (Shot #19-2)
Since this shot, amplifier gain is changed as follows
ITF_VC_01: x1--> x0.5
ITF_VC_02:x1--> x0.5

CSMC-TF insert Experiment Log

Date 2001.9.20 Time 14:00 p. 23

Run No. 19 - 2

Procedure No. 1.11

Operation Mode DC

Objective

Manual dump at 46kA.

Coolant condition (before this run)

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

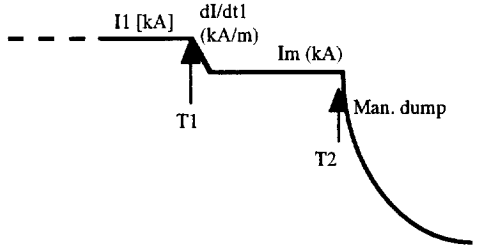
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Manual dump discharge



CSMC I_m = 46 kA I_1 = 43.7 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

TFI 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 14:10 T_3 ____

Heater W T_d = s

Results

Vi=658V, Vo=782V, Vins=9.0V,Taumc=17.3sOK.

Remarks

This shot is contiued from shot#19-1.

CSMC-TF insert Experiment Log

Date 2001.9.20 Time 15:30 p. 24

Run No. 20 - 1

Procedure No. 1.12

Operation Mode DC

Objective

Tcs measurement on 1A of CS Model Coil.

Coolant condition (before this run)

	1A&B		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

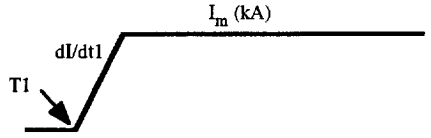
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Charge up and hold



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

TFI 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 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.20 Time 16:40 p. 25

Run No. 20 - 2

Procedure No. 1.12

Operation Mode DC

Objective

Tcs measurement on 1A of CS Model Coil.

Coolant condition (before this run)

	1A&B		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

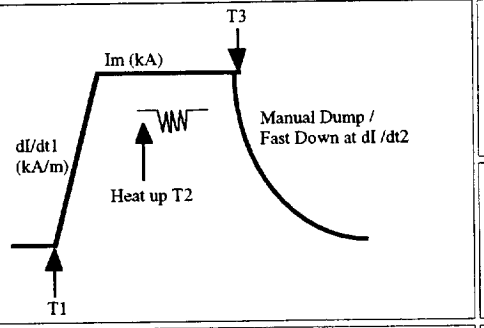
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	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 = 1 kA/m kA/s dB/dt_2 = T/s

TFI 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 16:41 T_3 18:41

Heater 244 W T_d = s

Results

OK.

Remarks

Low pass filter on (0.2Hz): MCI_VD_01A, MCI_VD_01.
Charge up is defined by previous shot (#19-1).

CSMC-TF insert Experiment Log

Date 2001.9.21 Time 9:00 p. 26

Run No. 21 - 1

Procedure No. 2.1

Operation Mode DC

Objective

Check 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		

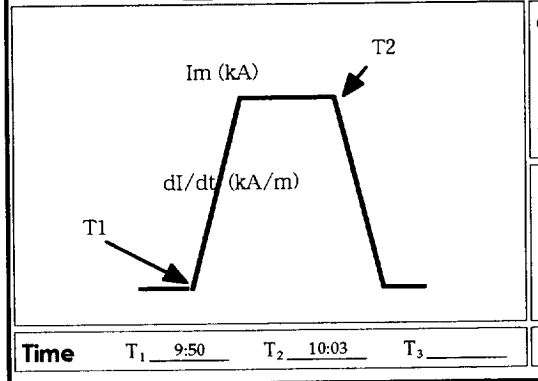
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:50 T_2 10:03 T_3 ____

Heater W T_d = s

Results

OK.

Remarks

Since this shot, amplifier gain is changed as follows
ITF_VC_01: x0.5--> x100
ITF_VC_02:x0.5--> x100

CSMC-TF insert Experiment Log

Date 2001.9.21 Time 10:10 p. 27

Run No. 22 - 1
Procedure No. 2.1
Operation Mode DC

Objective: Check 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		

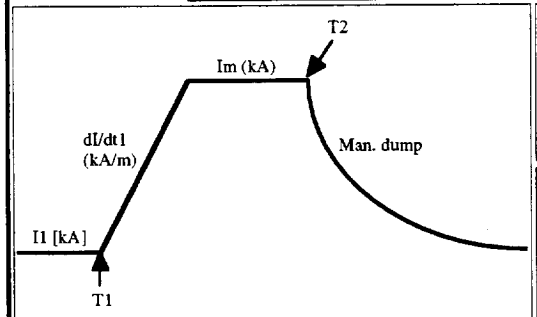
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:11 T_2 10:17 T_3 ____

Heater W T_d = s

Results: Vi=83.9V, Vo=28.4V, Vins=6.7V, OK.

Remarks:

CSMC-TF insert Experiment Log

Date 2001.9.21 Time 10:38 p. 28

Run No. 23 - 1
Procedure No. 2.1
Operation Mode DC

Objective: Check protection system. Set QD voltage zero.

Coolant condition (before this run): All

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

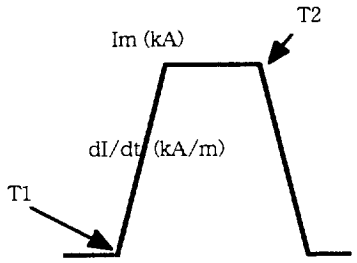
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 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

TFI I_m = 10 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = 1 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:42 T_2 10:52 T_3 ____

Heater W T_d = s

Results: OK.

Remarks: TW_08, TW_09, TW_10: Current off 10:51-11:21

CSMC-TF insert Experiment Log

Date 2001.9.21 Time 11:27 p. 29

Run No. 24 - 1

Procedure No. 2.1

Operation Mode DC

Objective: Check 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		

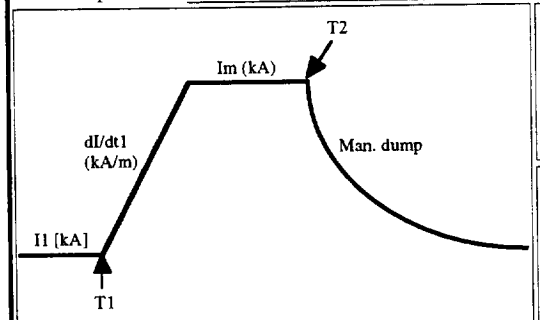
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:33 T_2 11:41 T_3 ____

Heater W T_d = s

Results: Vi=82.3V, Vo=28.3V, Vins=6.7V,Tauins=0.064s, OK.

Remarks: TW_08, TW_09, TW_10: Current off 11:31-11:44

CSMC-TF insert Experiment Log

Date 2001.9.21 Time 13:10 p. 30

Run No. 25 - 1

Procedure No. 2.1

Operation Mode DC

Objective: Check 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		

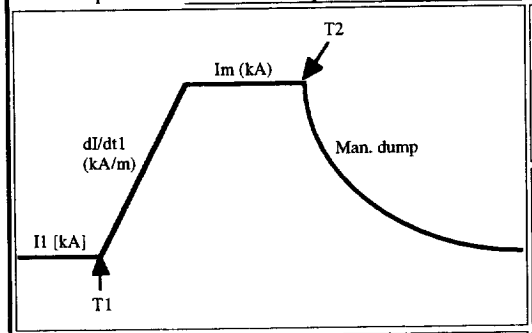
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:24 T_2 13:29 T_3 ____

Heater W T_d = s

Results: Vi=82.9V, Vo=28.3V, Vins=6.8V,Tauins=0.064s, OK.

Remarks:

CSMC-TF insert Experiment Log

Date 2001.9.21 Time 13:40 p. 31

Run No. 26 - 1

Procedure No. 2.2

Operation Mode DC

Objective: TF insert single 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		

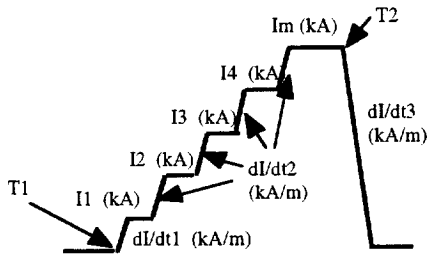
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern: Trapezoidal with four steps



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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:41 T_2 15:22 T_3 ____

Heater W T_d = s

Results: OK.

Remarks: Current steps:10kA, 20kA, 30kA, 40kA

CSMC-TF insert Experiment Log

Date 2001.9.21 Time 15:45 p. 32

Run No. 27 - 1

Procedure No. 2.4

Operation Mode DC

Objective: TF insert single 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		

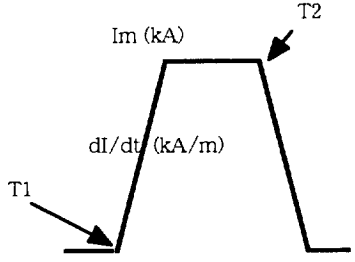
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = 100 kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:51 T_2 ____ T_3 ____

Heater W T_d = s

Results:

Remarks:
Since this shot, low pass filter changed as follows
(Total 8 tags)
FAC_VD>JIP:500Hz --> 100 Hz
SCB_VD_JIP :500Hz --> 100 Hz
ITF_VD_JT:500Hz --> 100 Hz
ITF_VD_JB:500Hz --> 100 Hz
FAC_VD_JIN:500Hz --> 100 Hz
MCI_VD_JB10ASCB:500Hz --> 100 Hz
MCI_VD_JB08B07A:500Hz --> 100 Hz
MCI_VD_JT05A06A:500Hz --> 100 Hz

CSMC-TF insert Experiment Log Date 2001.9.24 Time 9:40 p. 33

Run No. 28 - 1
Procedure No. 2.0
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		

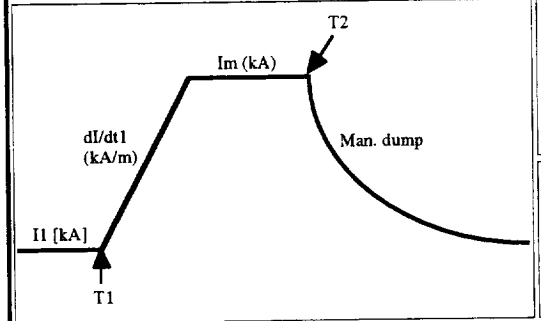
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:51 T_2 10:01 T_3 ____

Heater W T_d = s

Results
Vi=84V, Vo=28.6V, Vins=6.8V,Tauins=0.063s, OK.

Remarks
Since this shot, low pass filter changed as follows
(Total 8 tags)
ITF_VD_0102:100Hz --> 10 Hz
ITF_VD_0203:100Hz --> 10 Hz
ITF_VD_0304:100Hz --> 10 Hz
ITF_VD_0405:100Hz --> 10 Hz
ITF_VD_0708:100Hz --> 10 Hz
ITF_VD_0809:100Hz --> 10 Hz
ITF_VD_0910:100Hz --> 10 Hz
ITF_VD_1011:100Hz --> 10 Hz

CSMC-TF insert Experiment Log Date 2001.9.24 Time 10:20 p. 34

Run No. 29 - 1
Procedure No. 2.0
Operation Mode DC

Objective: TFI single 20kA 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		

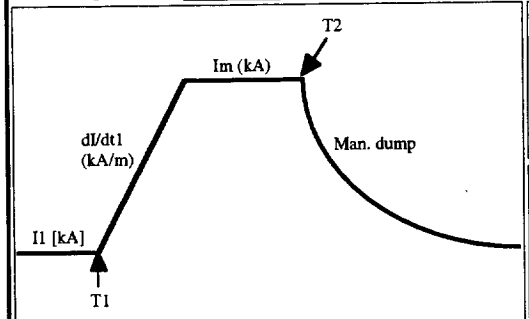
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 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

TFI I_m = 20 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:16 T_2 11:30 T_3 ____

Heater W T_d = s

Results
Vi=184V, Vo=63.8V, Vins=14.5V,Tauins=0.163s, OK.

Remarks
Keep 20kA flat top one hour.

CSMC-TF insert Experiment Log

Date 2001.9.24 Time 12:00 p. 35

Run No. 30 - 1

Procedure No. 2.0

Operation Mode DC

Objective: TFI single 46kA 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		

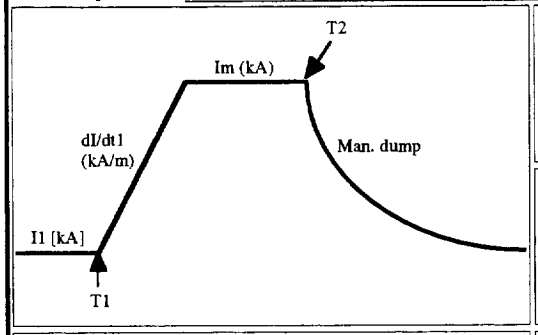
Facility condition

	Power Supply	Resistor
CSMC		
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 12:07 T_2 13:25 T_3 ____

Heater W T_d = s

Results

Vi=447V, Vo=161V, Vins=27.7V,Tauins=0.215s, OK

Remarks

Keep 20kA flat top one hour.
Since this shot, Amp. gain changed as follows
ITF_VC_01:x100 --> x10
ITF_VC_02:x100 --> x10

CSMC-TF insert Experiment Log

Date 2001.9.24 Time 14:02 p. 36

Run No. 31 - 1

Procedure No. 3.1

Operation Mode DC

Objective: Check of the synchronized charge. CSMC+TFI 10kA up and down

Coolant condition (before this run)

All

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

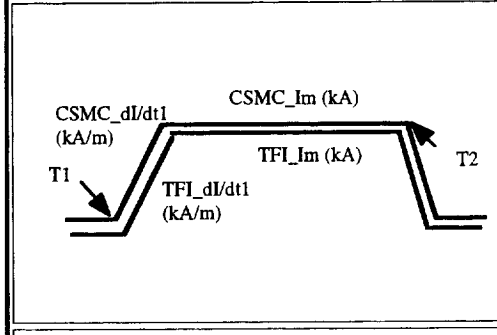
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern Synchronized charge



CSMC I_m = 10 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

TFI I_m = 10 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 14:08 T_2 14:45 T_3 ____

Heater W T_d = s

Results

OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.24 Time 15:20 p. 37

Run No. 32 - 1

Procedure No. 3.1

Operation Mode DC

Objective: Check of the synchronized charge. CSMC+TFI 10kA up 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		

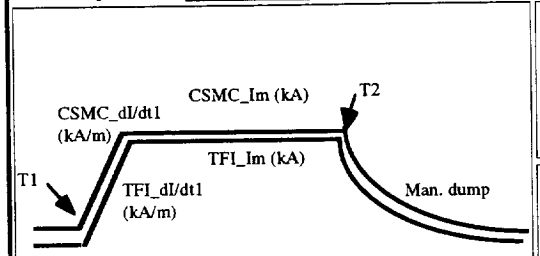
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern: Manual dump with synchro. charge



CSMC I_m = 10 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

TFI I_m = 10 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 15:22 T_2 15:55 T_3 ____

Heater W T_d = s

Results

Vi=141V, Vo=175V, Vins=7.6V, Taumc=19s, Tauins=0.088s/17.8s, OK

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.25 Time 9:30 p. 38

Run No. 33 - 1

Procedure No. 3.0

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	~ 0.7 MPa		

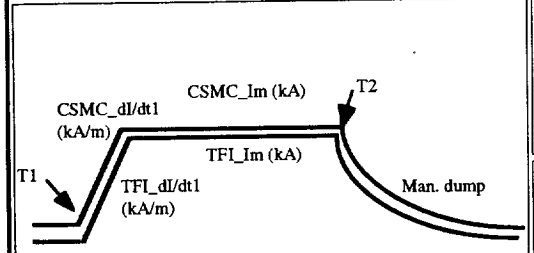
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern: Manual dump with synchro. charge



CSMC I_m = 10 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

TFI I_m = 10 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 9:47 T_2 10:15 T_3 ____

Heater W T_d = s

Results

Vi=141V, Vo=175V, Vins=8V, Taumc=19s, Tauins=0.086s/18.2s, OK

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.25 Time 10:40 p. 39

Run No. 34 - 1

Procedure No. 3.2

Operation Mode DC

Objective

CSMC+TFI synchronized charge. CSMC+TFI 20kA up with 10kA step and Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

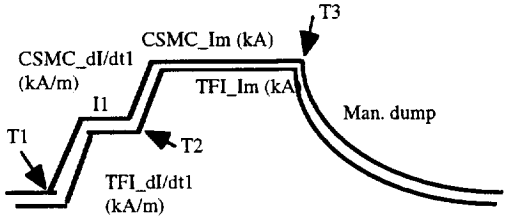
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern Manual dump with one step synchro charge



CSMC I_m = 20 kA I_1 = 10 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

TFI I_m = 20 kA I_1 = 10 kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 10:46 T_2 11:45 T_3 13:03

Heater W T_d = s

Results

Vi=282V, Vo=346V, Vins=12.9V, Taumc=18.7s, Tauins=0.124s/18.6s, OK.

Remarks

Keep 10kA and 20 kA flat top one hour.

CSMC-TF insert Experiment Log

Date 2001.9.25 Time 13:35 p. 40

Run No. 35 - 1

Procedure No. 3.3

Operation Mode DC

Objective

CSMC+TFI synchronized charge. CSMC+TFI 40kA up with 30kA step and Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

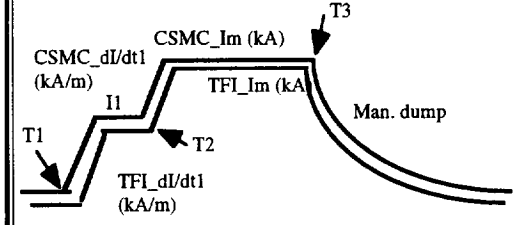
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern Manual dump with one step synchro charge



CSMC I_m = 40 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

TFI I_m = 40 kA I_1 = 30 kA

dI/dt_1 = 1 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 13:43 T_2 15:00 T_3 16:15

Heater W T_d = s

Results

Vi=568V, Vo=691V, Vins=24.3V, Taumc=17.7s, Tauins=0.17s/18.5s, OK.

Remarks

Keep 30kA and 40 kA flat top one hour.
Bmax=11.5T at 40kA on the innermost of TFI.

CSMC-TF insert Experiment Log Date 2001.9.26 Time 9:35 p. 41

Run No. 36 - 1
Procedure No. 3.0
Operation Mode DC

Objective
Daily check. CSMC+TFI 10kA up and Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

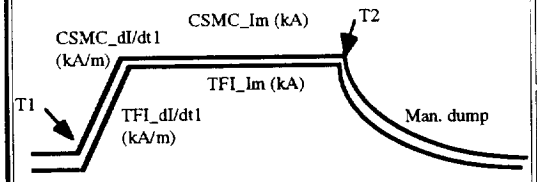
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern Manual dump with synchro. charge



CSMC I_m = 10 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

TFI I_m = 10 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 9:45 T_2 10:18 T_3 ____

Heater W T_d = s

Results
Vi=141V, Vo=173V, Vins=7.8V, Taumc=19s, Tauins=0.089s/18.3s, OK.

Remarks
Since this shot, the following temperature sensors are available which are calibrated by Hamada-san; ITF_TW_02N, ITF_TW_03N, ITF_TW_04N, ITF_TW_05N, ITF_TW_06N.

CSMC-TF insert Experiment Log Date 2001.9.26 Time 10:45 p. 42

Run No. 37 - 1
Procedure No. 3.4
Operation Mode DC

Objective
CSMC+TFI 100% charge and Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

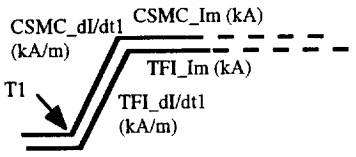
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern synchro. charge ramp up



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

TFI 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 10:50 T_2 ____ T_3 ____

Heater W T_d = s

Results
BH_01=10.4T, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.26 Time 10:45 p. 43

Run No. 37 - 2

Procedure No. 3.4

Operation Mode DC

Objective

CSMC+TFI 100% charge and Manual dump.

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

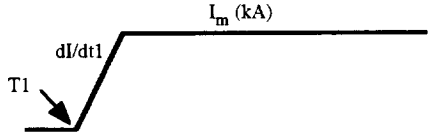
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern Charge up and hold



CSMC I_m = 45.2 kA I_1 = 40 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

TFI 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 11:40 T_2 ____ T_3 ____

Heater W T_d = s

Results

BH_01=12.3T, OK.

Remarks

CSMC is ramped up 45.2kA from 40kA. TFI current keeps at 40kA.

CSMC-TF insert Experiment Log

Date 2001.9.26 Time 10:45 p. 44

Run No. 37 - 3

Procedure No. 3.4

Operation Mode DC

Objective

CSMC+TFI 100% charge and Manual dump.

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

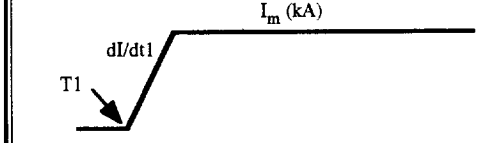
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern Charge up and hold



CSMC I_m = 45.2 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

TFI I_m = 46 kA I_1 = 45 kA

dI/dt_1 = 1 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

TF insert was achieved the target of 13T at 46kA on 13:10. We are very happy!! Congratulations! Ura!!.

Remarks

TF insert is ramped up 46kA from 40kA. CSMC current keeps at 45.2kA.

CSMC-TF insert Experiment Log

Date 2001.9.26 Time 10:45 p. 45

Run No. 37 - 4

Procedure No. 3.4

Operation Mode DC

Objective: CSMC+TFI 100% charge and Manual dump.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

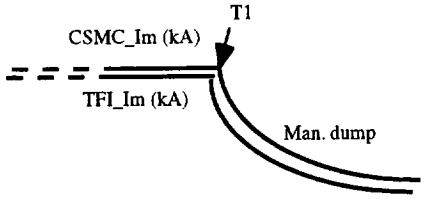
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern: Manual dump (synchronized)



CSMC I_m = 45.2 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

TFI I_m = 46 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 = s

Results

Vi=642V, Vo=780V, Vins=17.4V, Taumc=17.4s, Tauins=0.183s/18.4s, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.26 Time 15:00 p. 46

Run No. 38 - 1

Procedure No. 3.4

Operation Mode DC

Objective: CSMC+TFI 100% up and down

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

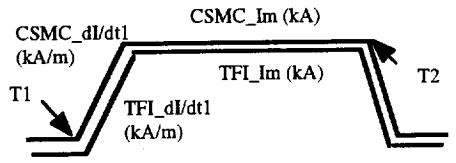
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	1 k	100	1 k	

Current pattern: Synchronized charge



CSMC I_m = 45.2 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

TFI I_m = 46 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 15:15 T_2 16:40 T_3 ____

Heater W T_d = s

Results

BH_01=12.38T, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.27 Time 9:30 p. 47

Run No. 39 - 1

Procedure No. 4.0

Operation Mode DC

Objective: Daily check.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 8 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

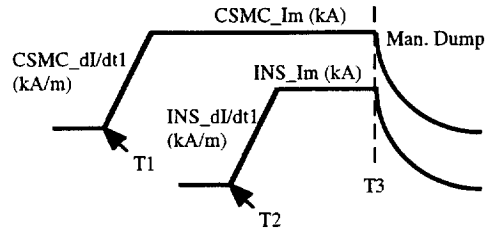
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:02 T_2 10:23 T_3 10:44

Heater W T_d = s

Results

Vi=129V, Vo=162V, Vins=5.4V, Taumc=19.1s, Tauins=0.054s/18.2s, OK.

Remarks

Mass flow rate of bus bars for TFI is reduced to 8g/s.

CSMC-TF insert Experiment Log

Date 2001.9.27 Time 11:20 p. 48

Run No. 40 - 1

Procedure No. 4.13

Operation Mode DC

Objective: Tcs measurement of TF insert at 11.4T, 31.8kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 8 g/s	~	10 g/s
Pressure	~ 0.6 MPa		

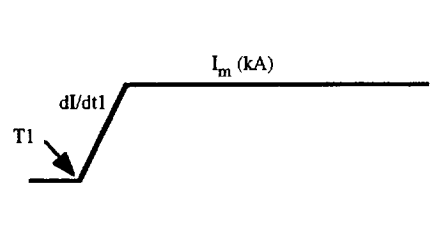
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Charge up and hold



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

TFI 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

BH01=10.56T, OK

Remarks

Mass flow rate of bus bars for TFI is reduced to 8g/s.

CSMC-TF insert Experiment Log Date 2001.9.27 Time 11:20 p. 49

Run No. 40 - 2
Procedure No. 4.13
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 31.8kA

Coolant condition (before this run)

	Insert	All
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 8 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

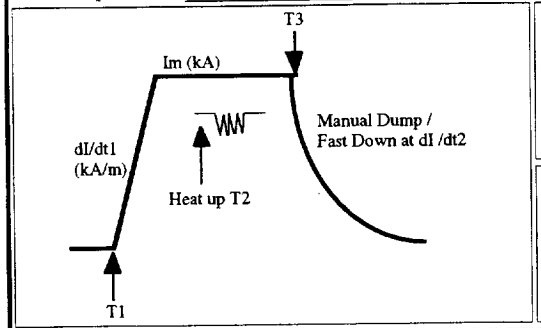
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

TFI I_m = 31.8 kA I_1 = kA
dI/dt_1 = 3 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
BH01=10.86T, OK

Remarks
Heat up of the resistive heater is defined by the following shot(#40-3).

CSMC-TF insert Experiment Log Date 2001.9.27 Time 11:20 p. 50

Run No. 40 - 3
Procedure No. 4.13
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 31.8kA

Coolant condition (before this run)

	Insert	All
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 8 g/s	~ 10 g/s
Pressure	~ 0.6 MPa	

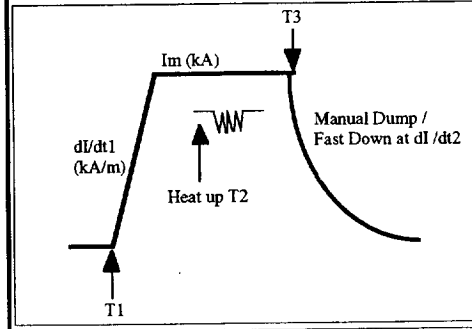
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 40 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

TFI I_m = 31.8 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = 100 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:00 T_2 13:32 T_3 14:58

Heater 223 W T_d = s

Results
ITF_TC_IN=9.0K, ITF_TC_OUT=8.25K, Tcs=8.6K(Preliminay, 0.3microV/cm criteria, at VD0405, VD0506), OK.

Remarks
Mass flow rate of the mandrel for TFI is reduced to 0 g/s.
Charge up of TF insert is defined by the previous shot(#40-2).
Low pass filter is applied as follows since this shot.
ITF_VD_ALL1:100Hz-->0.2Hz,
ITF_VD_0910:10Hz-->0.2Hz,
ITF_VD_0708:10Hz-->0.2Hz,
ITF_VD_0405:10Hz-->0.2Hz,
ITF_VD_0607:100Hz-->10Hz,
ITF_VD_0506:100Hz-->10Hz,
Low pass filter for others is as follows (no chagne)
ITF_VD_1011:10Hz, ITF_VD_0809:10Hz,
ITF_VD_0304:10Hz, ITF_VD_0203:10Hz,
ITF_VD_0102:10Hz

CSMC-TF insert Experiment Log

Date 2001.9.27 Time 15:00 p. 51

Run No. 41 - 1

Procedure No. 4.19

Operation Mode DC

Objective

Ic measurement of TF insert at 11.4T,8.5K

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.8 K	~	4.5 K
Mass Flow Rate	~ 8 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

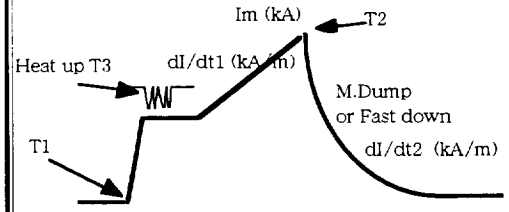
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Ic



CSMC I_m = 40 kA I_1 = kA

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

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

TFI I_m = 31.7 kA I_1 = kA

dI/dt_1 = 0.1 kA/m kA/s

dI/dt_2 = 100 kA/m kA/s

Cyclic Test _____ cycles

Time T_1 15:18 T_2 16:53 T_3 14:58

Heater 223 W T_d = s

Results

ITF_TC_IN=9.14K, ITF_TC_OUT=8.24K,
Ic=31.7kA (Preliminary, 200 microV at VD_0203), OK.

Remarks

Current of CSMC is kept at 40kA since the previous shot (#40-3). Also the resistive heater is kept at 233W since the previous shot(#40-3).

CSMC-TF insert Experiment Log

Date 2001.9.27 Time 15:00 p. 52

Run No. 41 - 2

Procedure No. 4.19

Operation Mode DC

Objective

Ic measurement of TF insert at 11.4T,8.5K. Calibration of tempetature sensors on TF insert conductor (TW_02 to 06) for magnetic field effects.

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.8 K	~	4.5 K
Mass Flow Rate	~ 8 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

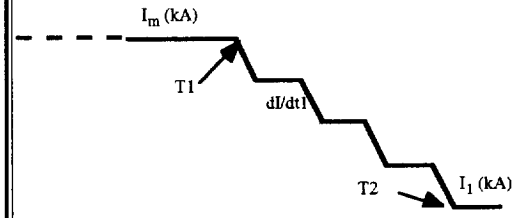
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Discharge with steps



CSMC I_m = 40 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

TFI 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 19:00 T_2 20:24 T_3 _____

Heater 223 W T_d = s

Results

ITF_TC_IN=7.94K, ITF_TC_OUT=7.54K at 40kA,
ITF_TC_IN=7.89K, ITF_TC_OUT=7.49K at 30kA,
ITF_TC_IN=7.77K, ITF_TC_OUT=7.39K at 10kA,
ITF_TC_IN=7.74K, ITF_TC_OUT=7.37K at 0kA, OK.

Remarks

Mass flow of SC bus bars for TF insert is reduced to zero. CS MC is ramped down with steps. TF insert current is 0kA. Resistive heater is kept at 233W since the previous shot(#41-1).
CSMC current is down to 0kA from 40kA with step of 30kA, 20kA, 10kA.

CSMC-TF insert Experiment Log

Date 2001.9.28 Time 9:45 p. 53

Run No. 42 - 1
Procedure No. 4.0
Operation Mode DC

Objective: Daily check

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.8 K	~	4.5 K
Mass Flow Rate	~ 8 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

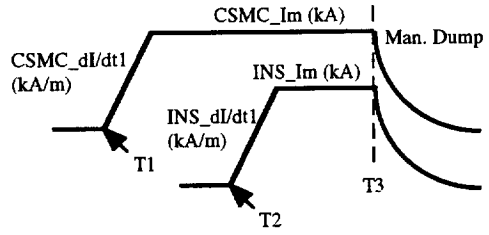
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:57 T_2 10:29 T_3 10:39

Heater W T_d = s

Results
Vi=129V, Vo=162V, Vins=5.5V, Taumc=19.0s, Tauins=0.053s/17.8s, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.28 Time 11:20 p. 54

Run No. 43 - 1
Procedure No. 4.14
Operation Mode DC

Objective: Tcs measurement of TF insert at 11.4T, 17.6kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.8 K	~	4.5 K
Mass Flow Rate	~ 8 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

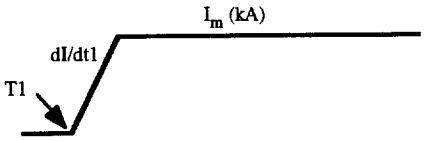
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Charge up and hold



CSMC I_m = 40.7 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

TFI 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 11:27 T_2 ____ T_3 ____

Heater W T_d = s

Results
BH01=10.74T, OK.

Remarks
Mass flow of the mandrel for TF insert is reduced to 2 g/s at 11:23.
CSMC charges up at 40.7kA.

CSMC-TF insert Experiment Log

Date 2001.9.28 Time 11:20 p. 55

Run No. 43 - 2

Procedure No. 4.14

Operation Mode DC

Objective

Tcs measurement of TF insert at 11.4T, 17.6kA

Coolant condition (before this run)

	Insert	All
Temperature	~ 8.8 K	~ 4.5 K
Mass Flow Rate	~ 8 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

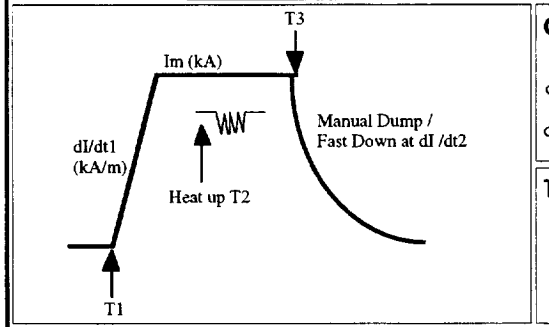
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 40.7 kA I_1 = kA

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

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

TFI I_m = 17.6 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 13:02 T_2 _____ T_3 _____

Heater W T_d = s

Results

BH01=10.9T, OK.

Remarks

Heat up of the resistive heater is defined by the following shot(#43-3).

CSMC-TF insert Experiment Log

Date 2001.9.28 Time 11:20 p. 56

Run No. 43 - 3

Procedure No. 4.14

Operation Mode DC

Objective

Tcs measurement of TF insert at 11.4T, 17.6kA

Coolant condition (before this run)

	Insert	All
Temperature	~ 8.8 K	~ 4.5 K
Mass Flow Rate	~ 8 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

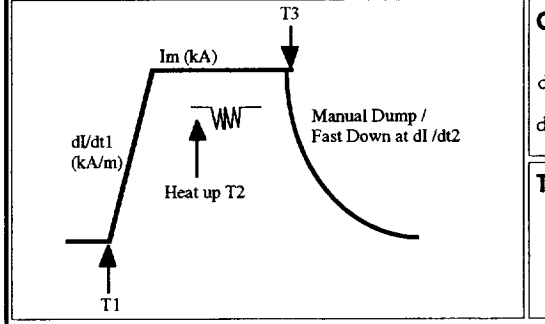
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 40.7 kA I_1 = kA

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

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

TFI I_m = 17.6 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = 100 kA/m kA/s

Cyclic Test _____ cycles

Time T_1 13:03 T_2 13:23 T_3 14:35

Heater W T_d = s

Results

ITF_TC_IN=10.3K, ITF_TC_OUT=8.76K, Tcs=9.6K (Preliminary, 1 microV/cm at VD_0203),OK.

Remarks

Charge up of TF insert is defined by the previous shot(#43-2).
Resistive heater off after the fast down of TF insert.

CSMC-TF insert Experiment Log Date 2001.9.28 Time 14:40 p. 57

Run No. 44 - 1
Procedure No. 4.1
Operation Mode DC

Objective
Tcs measurement of TF insert at 12T, 46kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.8 K	~	4.5 K
Mass Flow Rate	~ 8 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

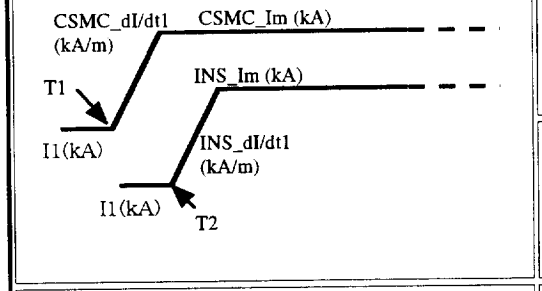
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Double charge up



CSMC I_m = 41.5 kA I_1 = 40.7 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

TFI I_m = 46 kA I_1 = 0 kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:40 T_2 14:56 T_3 ____

Heater W T_d = s

Results
BH01=11.39T, OK.

Remarks
Heat up of the resistive heater is defined by the following shot(#44-2).

CSMC-TF insert Experiment Log Date 2001.9.28 Time 14:40 p. 58

Run No. 44 - 2
Procedure No. 4.1
Operation Mode DC

Objective
Tcs measurement of TF insert at 12T, 46kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.8 K	~	4.5 K
Mass Flow Rate	~ 8 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

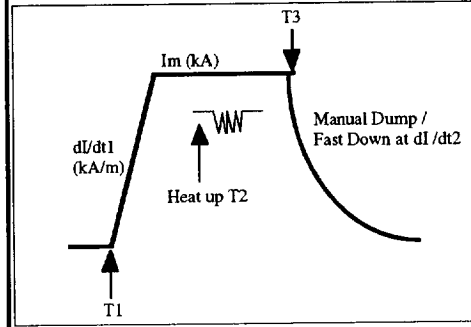
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = 100 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:56 T_2 15:23 T_3 17:03

Heater 144.5 W T_d = s

Results
ITF_TC_IN=7.59K, ITF_TC_OUT=7.49K, Tcs= 7.5K (Preliminary, 0.3 microV/cm at VD_0203),OK.

Remarks
Charge up of TF insert is defined by the previous shot(#44-1).
Low pass filter is applied as follows since this shot.
ITF_VD_0405:0.2Hz-->10Hz,

CSMC-TF insert Experiment Log

Date 2001.9.28 Time 14:40 p. 59

Run No. 44 - 3

Procedure No. 4.1

Operation Mode DC

Objective

Tcs measurement of TF insert at 12T, 46kA
Calibration of tempetature sensors on TF insert conductor (TW_02 to 06) for magnetic field effects.

Coolant condition (before this run)

	Insert		All
Temperature	~ 8.8 K	~	4.5 K
Mass Flow Rate	~ 8 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

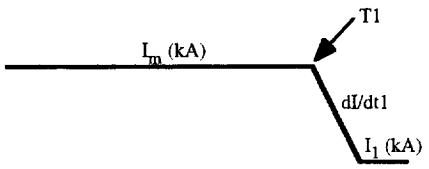
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Discharge



CSMC I_m = 41.5 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

TFI 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 17:19 T_2 18:20 T_3 ____

Heater 144.5 W T_d = s

Results

Remarks

Resistive heater turns off at 18:25.

CSMC-TF insert Experiment Log

Date 2001.9.29 Time 8:45 p. 60

Run No. 45 - 1

Procedure No. 0.3

Operation Mode DC

Objective

Calibration of the heaters for AC losses. Total 550W-60sec.

Coolant condition (before this run)

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

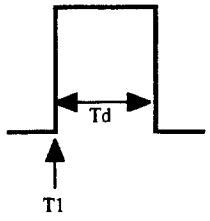
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms	1 s	100 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 8:54 T_2 ____ T_3 ____

Heater 550 W T_d = 60 s

Results

ITF_IN=54W, MC_IN=215W, MCO_IN1=82W, MCO_IN2=152W, (IM+OM=449W), OK.

Remarks

Valve close: mandrel of TF insert, SC bus burs of TF insert.

CSMC-TF insert Experiment Log Date 2001.9.29 Time 12:10 p. 61

Run No. 45 - 2
Procedure No. 0.3
Operation Mode DC

Objective
Calibration of the heaters for AC losses. Total 110W-60sec.

Coolant condition (before this run)

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

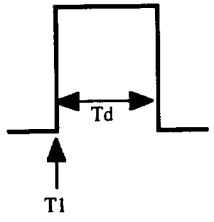
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms	1 s	100 ms	
Pre-trigger	300	300	300	300	

Current pattern Heater pulse



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

TFI I_m = 0 kA I_t = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 12:12 T_2 ____ T_3 ____

Heater 110 W T_d = 60 s

Results
ITF_IN=6W, MC_IN=51W, MCO_IN1=18W, MCO_IN2=33W, (IM+OM=102W), OK.

Remarks
Valve open at 9:40: mandrel of TF insert, SC bus burs of TF insert.

CSMC-TF insert Experiment Log Date 2001.9.29 Time 12:45 p. 62

Run No. 45 - 3
Procedure No. 0.3
Operation Mode DC

Objective
Calibration of the heaters for AC losses. Total 220W-60sec.

Coolant condition (before this run)

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

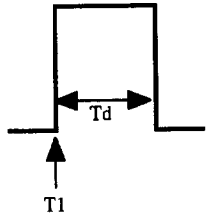
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms	1 s	100 ms	
Pre-trigger	300	300	300	300	

Current pattern Heater pulse



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

TFI I_m = 0 kA I_t = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 12:51 T_2 ____ T_3 ____

Heater 220 W T_d = 60 s

Results
ITF_IN=23W, MC_IN=96W, MCO_IN1=34W, MCO_IN2=64W, (IM+OM=194W), OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.29 Time 13:25 p. 63

Run No. 45 - 4

Procedure No. 0.3

Operation Mode DC

Objective

Calibration of the heaters for AC losses. Total 330W-60sec.

Coolant condition (before this run)

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

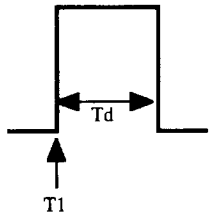
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms	1 s	100 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 ____ T_3 ____

Heater 330 W T_d = 60 s

Results

ITF_IN=31W, MC_IN=140W, MCO_IN1=52W, MCO_IN2=96W, (IM+OM=288W), OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.29 Time 14:00 p. 64

Run No. 45 - 5

Procedure No. 0.3

Operation Mode DC

Objective

Calibration of the heaters for AC losses. Total 440W-60sec.

Coolant condition (before this run)

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

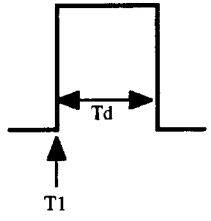
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms	1 s	100 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 440 W T_d = 60 s

Results

ITF_IN=41W, MC_IN=180W, MCO_IN1=68W, MCO_IN2=127W, (IM+OM=375W), OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.29 Time 14:46 p. 65

Run No. 45 - 6

Procedure No. 0.3

Operation Mode DC

Objective: Calibration of the heaters for AC losses. Total 550W-60sec.

Coolant condition (before this run)

All

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

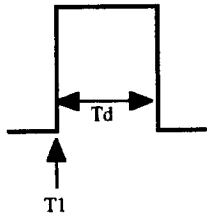
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms	1 s	100 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 14:52 T_2 ____ T_3 ____

Heater 550 W T_d = 60 s

Results

ITF_IN=54W, MC_IN=216W, MCO_IN1=83W, MCO_IN2=155W, (IM+OM=454W), OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.29 Time 15:32 p. 66

Run No. 45 - 7

Procedure No. 0.3

Operation Mode DC

Objective: Calibration of the heaters for AC losses. Total 550W-120sec.

Coolant condition (before this run)

All

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

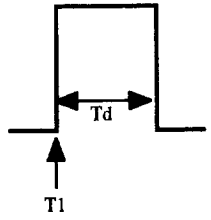
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms	1 s	100 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 15:37 T_2 ____ T_3 ____

Heater 550 W T_d = 120 s

Results

ITF_IN=53W, MC_IN=210W, MCO_IN1=82W, MCO_IN2=153W, (IM+OM=445W), OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.9.29 Time 16:35 p. 67

Run No. 45 - 8
Procedure No. 0.3
Operation Mode DC

Objective
Calibration of the heaters for AC losses. Total 550W-180sec.

Coolant condition (before this run)

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

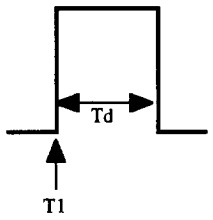
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	100 ms	1 s	100 ms	
Pre-trigger	300	300	300	300	

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

TFI 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 16:37 T_2 ____ T_3 ____

Heater 550 W T_d = 180 s

Results
ITF_IN=53W, MC_IN=200W, MCO_IN1=83W, MCO_IN2=153W, (IM+OM=436W), OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.1 Time 9:40 p. 68

Run No. 46 - 1
Procedure No. 4.0
Operation Mode DC

Objective
Daily check.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

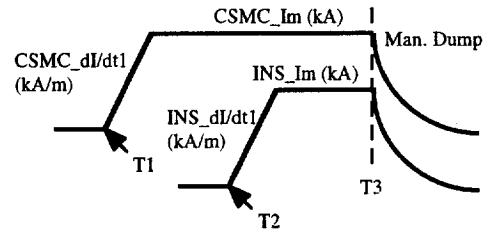
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:45 T_2 10:05 T_3 10:41

Heater W T_d = s

Results
Vi=128V, Vo=161V, Vins=5.7V, Taumc=19.2s, Tauins=0.053s/18.3s, OK.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.1 Time 11:25 p. 69

Run No. 47 - 1
Procedure No. 4.0
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 600A.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

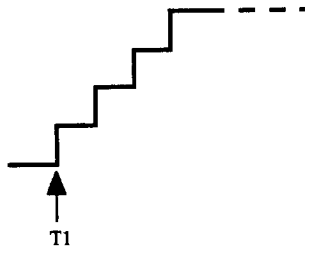
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Heater energize



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

TFI I_m = 0 kA I_t = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:26 T_2 ____ T_3 ____

Heater 174 W T_d = s

Results
ITF_TC_ IN: 10.1K, TF_TC_ OUT: 18.6K,
ITF_FCT_IN:3.6g/s, OK.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.1 Time 11:25 p. 70

Run No. 47 - 2
Procedure No. 4.0
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 600A.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

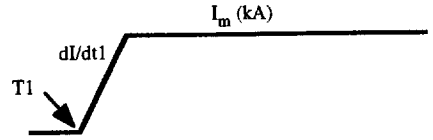
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Charge up and hold



CSMC I_m = 41.6 kA I_t = 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

TFI I_m = 0 kA I_t = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:23 T_2 ____ T_3 ____

Heater W T_d = s

Results
BH01=10.98T, OK.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.1 Time 11:25 p. 71

Run No. 47 - 3
Procedure No. 4.0
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 600A.

Coolant condition (before this run)

	Insert	All
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

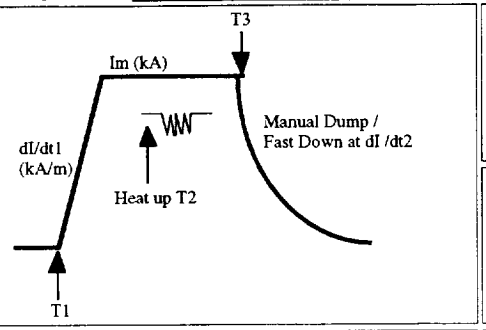
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 41.6 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

TFI I_m = 0.6 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = M.D. kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:20 T_2 14:29 T_3 15:58

Heater W T_d = s

Results
ITF_TC_ IN: 12.9K, TF_TC_ OUT: 10.44K,
ITF_FCT_IN:3.3g/s, OK.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.1 Time 17:00 p. 72

Run No. 48 - 1
Procedure No. 4.0
Operation Mode DC

Objective
Check of power supply system

Coolant condition (before this run)

	Insert	All
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

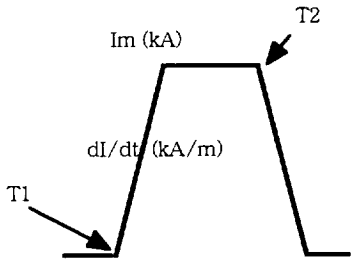
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern 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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:03 T_2 ____ T_3 ____

Heater W T_d = s

Results
OK.

Remarks
PS1

CSMC-TF insert Experiment Log

Date 2001.10.1 Time 17:00 p. 73

Run No. 48 - 2

Procedure No. 4.0

Operation Mode DC

Objective: Check of power supply system

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

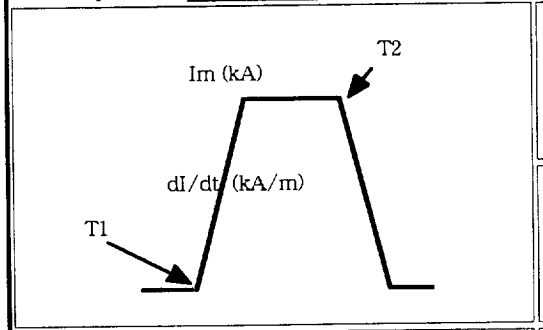
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern 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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 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 = s

Results: OK.

Remarks: PS2

CSMC-TF insert Experiment Log

Date 2001.10.1 Time 17:00 p. 74

Run No. 48 - 3

Procedure No. 4.0

Operation Mode DC

Objective: Check of power supply system

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

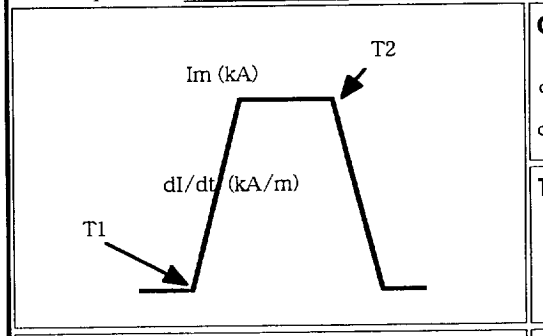
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern 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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:37 T_2 ____ T_3 ____

Heater W T_d = s

Results: OK.

Remarks: PS1+PS2

CSMC-TF insert Experiment Log

Date 2001.10.1 Time 17:00 p. 75

Run No. 48 - 4
Procedure No. 4.0
Operation Mode DC

Objective: Check of power supply system

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

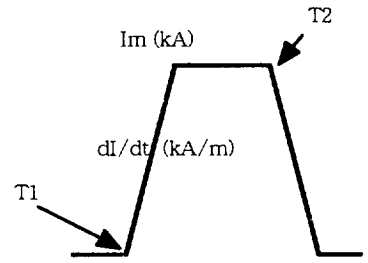
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: 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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 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 = s

Results: OK.

Remarks: PS1

CSMC-TF insert Experiment Log

Date 2001.10.1 Time 18:00 p. 76

Run No. 49 - 1
Procedure No. 4.0
Operation Mode DC

Objective: Tcs measurement of TF insert at 600A, 0T.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 4 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

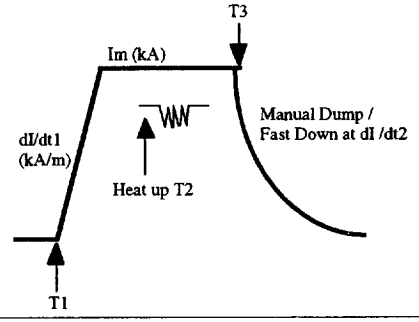
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Tcs



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

TFI I_m = 0.6 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = 3 kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:45 T_2 17:11 T_3 20:01

Heater W T_d = s

Results: ITF_TC_ IN: 20.8K, TF_TC_ OUT: 15.8K, ITF_FCT_IN:2.7g/s, OK.

Remarks:

CSMC-TF insert Experiment Log

Date 2001.10.2 Time 9:20 p. 77

Run No. 50 - 1

Procedure No.

Operation Mode DC

Objective: Check power supply systems.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

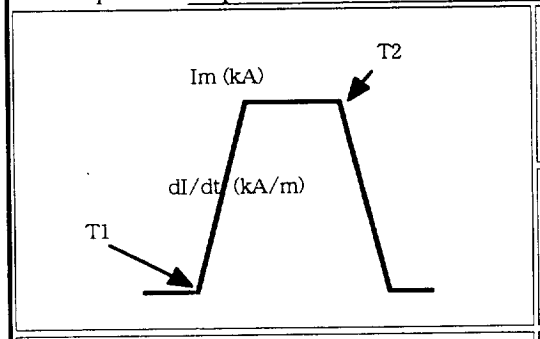
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	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

TFI I_m = 46 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: Current supplies by short circuit in PS. No current supply on the CSMC and TFI. PS1+PS2

CSMC-TF insert Experiment Log

Date 2001.10.2 Time 9:20 p. 78

Run No. 50 - 2

Procedure No.

Operation Mode DC

Objective: Check power supply systems.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

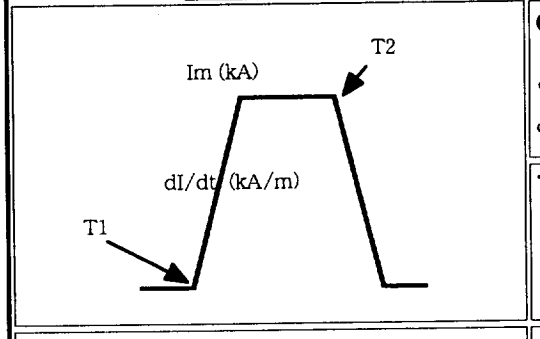
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	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

TFI I_m = 25 kA I_1 = kA

dI/dt_1 = 10 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

Remarks: Current supplies by short circuit in PS. No current supply on the CSMC and TFI. PS1

CSMC-TF insert Experiment Log

Date 2001.10.2 Time 9:20 p. 79

Run No. 50 - 3

Procedure No.

Operation Mode DC

Objective

Check power supply systems.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

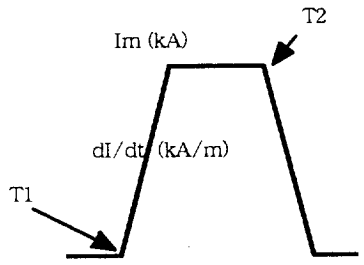
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	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

TFI I_m = 25 kA I_1 = kA

dI/dt_1 = 10 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 10:46 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

Current supplies by short circuit in PS. No current supply on the CSMC and TFI. PS2

CSMC-TF insert Experiment Log

Date 2001.10.2 Time 11:10 p. 80

Run No. 51 - 1

Procedure No. 4.0

Operation Mode DC

Objective

Daily check

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

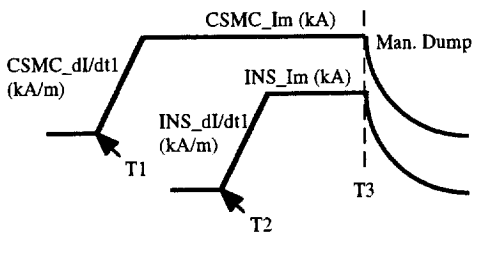
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 11:12 T_2 11:41 T_3 11:51

Heater W T_d = s

Results

Vi=129V, Vo=162V, Vins=3.6V, Taumc=19.2s, Tauins=0.055s/18.0s, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.2 Time 13:05 p. 81

Run No. 52 - 1

Procedure No. 4.16

Operation Mode DC

Objective

Tcs measurement of TF insert at 10T, 34.3kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

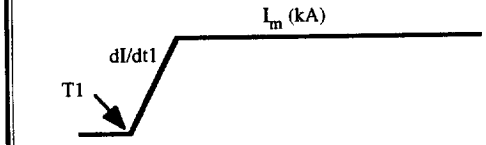
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Charge up and hold



CSMC I_m = 34.8 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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 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

BH01=9.18T, OK.

Remarks

Mass flow of the mandrel for TF insert is reduced to 2.3g/s at 13:06.

CSMC-TF insert Experiment Log

Date 2001.10.2 Time 13:05 p. 82

Run No. 52 - 2

Procedure No. 4.16

Operation Mode DC

Objective

Tcs measurement of TF insert at 10T, 34.3kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

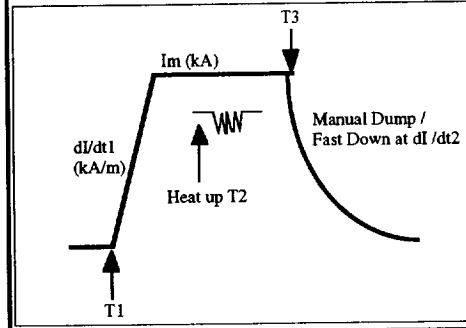
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 34.8 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

TFI I_m = 34.3 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:02 T_2 ____ T_3 ____

Heater W T_d = s

Results

BH01=9.52T, OK.

Remarks

Heat up of the resistive heater is defined by the following shot(#52-3).

CSMC-TF insert Experiment Log

Date 2001.10.2 Time 13:05 p. 83

Run No. 52 - 3
Procedure No. 4.16
Operation Mode DC

Objective
Tcs measurement of TF insert at 10T, 34.3kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

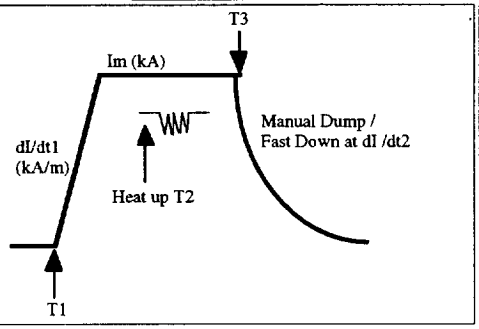
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 34.8 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

TFI I_m = 34.3 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:02 T_2 14:24 T_3 15:23

Heater 204 W T_d = s

Results
ITF_TC_IN=11.7K, ITF_TC_OUT=8.72K,Tcs=K
(Preliminary, 0.3 microV/cm at VD_0405), OK.

Remarks
Charge up of TF insert is defined by the previous shot(#52-2).

CSMC-TF insert Experiment Log

Date 2001.10.2 Time 15:30 p. 84

Run No. 53 - 1
Procedure No. 4.18
Operation Mode DC

Objective
Tcs measurement of TF insert at 5T, 46kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

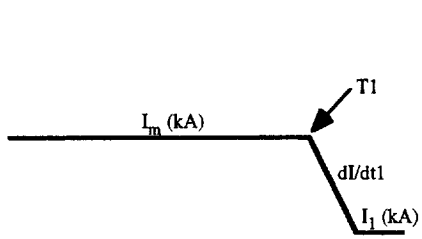
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Discharge



CSMC I_m = 34.8 kA I_1 = 16 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

TFI I_m = 34.3 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:31 T_2 ____ T_3 ____

Heater 204 W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log Date 2001.10.2 Time 15:30 p. 85

Run No. 53 - 1

Procedure No. 4.18

Operation Mode DC

Objective

Tcs measurement of TF insert at 5T, 46kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

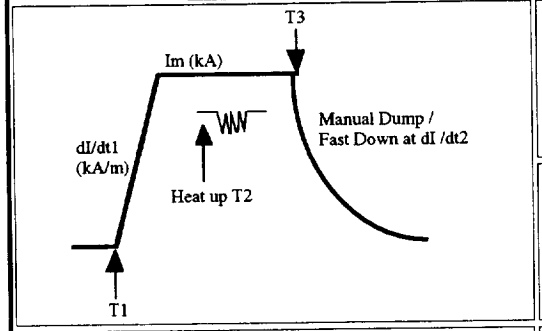
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 34.8 kA I_t = 16 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

TFI I_m = 34.3 kA I_t = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:01 T_2 ____ T_3 16:01

Heater 204 W T_d = s

Results

Dump at 16:01 by o 60kA-PS.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.3 Time 14:05 p. 86

Run No. 54 - 1

Procedure No. ____

Operation Mode DC

Objective

Check 60kA-PS.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

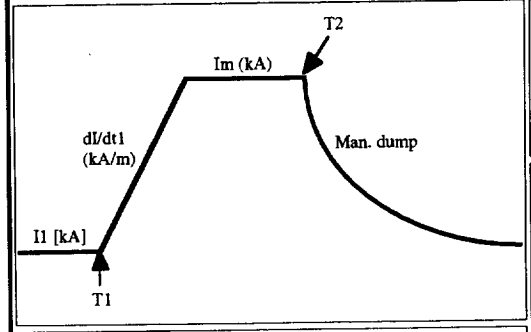
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Manual dump



CSMC I_m = kA I_t = kA

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

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

TFI I_m = 5 kA I_t = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:52 T_2 14:57 T_3 ____

Heater W T_d = s

Results

Vi=83.4V, Vo=28.2V, Vins=6.8V,Tauins=0.062s/19.0s, OK.

Remarks

Amp gain is changed as follows since this shot.
ITF_VC_01:x10-->x1
ITF_VC_02:x10-->x1
ITF_VD_ALL1:x1000-->x20
ITF_VD_0102:x100-->x10
ITF_VD_0203:x10000-->x200
ITF_VD_0304:x10000-->x200
ITF_VD_0405:x10000-->x200
ITF_VD_0506:x10000-->x200
ITF_VD_0708x10000-->x200,
ITF_VD_0809:x10000-->x200,
ITF_VD_0910:x10000-->x200
ITF_VD_1011:x1000-->x50

CSMC-TF insert Experiment Log

Date 2001.10.3 Time 14:05 p. 87

Run No. 54 - 2

Procedure No.

Operation Mode DC

Objective

Check 60kA-PS.

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

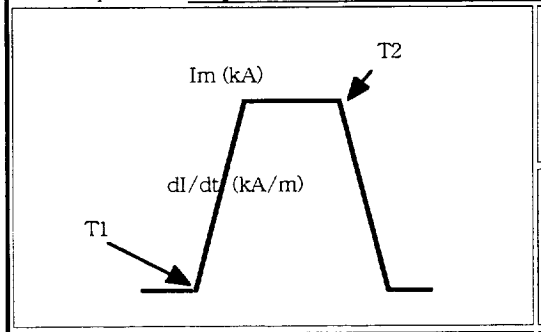
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 10 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:09 T_2 15:44 T_3 ____

Heater W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.3 Time 14:05 p. 88

Run No. 54 - 3

Procedure No.

Operation Mode DC

Objective

Check 60kA-PS.

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

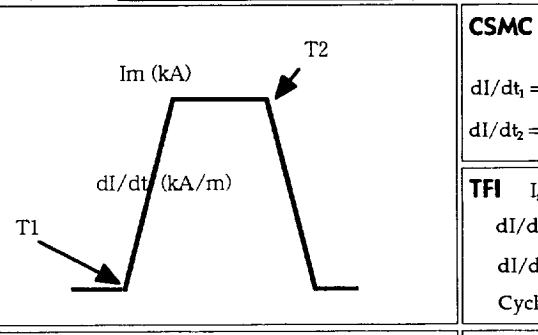
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 100 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 15:54 T_2 16:00 T_3 ____

Heater W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.3 Time 14:05 p. 89

Run No. 54 - 4

Procedure No.

Operation Mode DC

Objective: Check 60kA-PS.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.7 MPa		

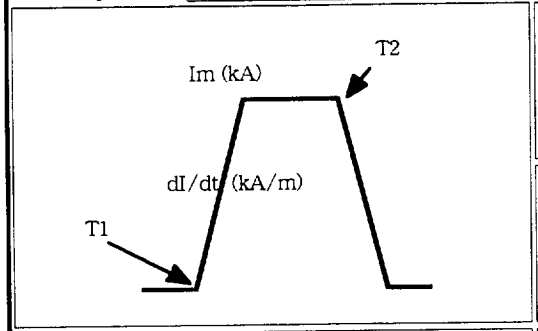
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 300 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:05 T_2 16:11 T_3 ____

Heater W T_d = s

Results: OK

Remarks:

CSMC-TF insert Experiment Log

Date 2001.10.3 Time 14:05 p. 90

Run No. 54 - 4

Procedure No.

Operation Mode DC

Objective: Check 60kA-PS.

Coolant condition (before this run): All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.7 MPa		

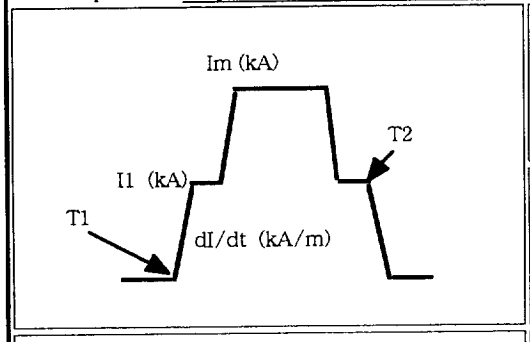
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Trapezoidal with one step



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

TFI I_m = 0.6 kA I_1 = kA

dI/dt_1 = 3.4 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:17 T_2 18:20 T_3 ____

Heater W T_d = s

Results: OK

Remarks:

CSMC-TF insert Experiment Log

Date 2001.10.4 Time 9:00 p. 91

Run No. 55 - 1

Procedure No.

Operation Mode DC

Objective

Calibration of TW temperature sonsors, 0T-20A
Tcs measurement.

Coolant condition (before this run)

	Insert	All
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 5 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

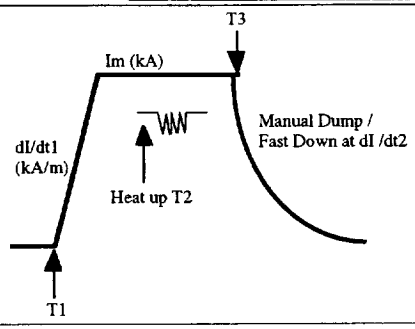
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

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

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

TFI I_m = 0.02 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:19 T_2 9:30 T_3 ____

Heater 394 W T_d = s

Results

Remarks

Temporary power supply is used for 20A charge.
Amp gain is changed as follows since this shot.
ITF_VC_01:x1-->x10
ITF_VC_02:x1-->x10
ITF_VD_ALL1:x20-->x1000
ITF_VD_0102:x10-->x100
ITF_VD_0203:x200-->x10000
ITF_VD_0304:x200-->x10000
ITF_VD_0405:x200-->x10000
ITF_VD_0506:x200-->x10000
ITF_VD_0708:x200-->x10000
ITF_VD_0809:x200-->x10000
ITF_VD_0910:x200-->x10000
ITF_VD_1011:x50-->x1000

CSMC-TF insert Experiment Log

Date 2001.10.4 Time 9:00 p. 92

Run No. 55 - 2

Procedure No.

Operation Mode DC

Objective

Calibration of TW temperature sonsors, 0T-20A
Tcs measurement.

Coolant condition (before this run)

	Insert	All
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 5 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

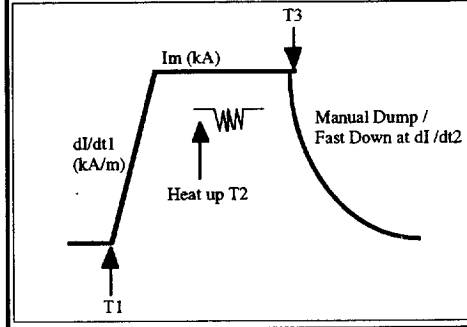
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	2 s		2 s		
Pre-trigger	100		100		

Current pattern curr



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

TFI I_m = 0.02 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:19 T_2 9:30 T_3 ____

Heater 250 W T_d = s

Results

Remarks

Temporary power supply is used for 20A charge.
Inlet temperature is reduced to 17.5K from 32K at 13:33.

CSMC-TF insert Experiment Log

Date 2001.10.4 Time 9:00 p. 93

Run No. 55 - 3

Procedure No.

Operation Mode DC

Objective

Calibration of TW temperature sonsors, 0T-20A
Tcs measurement.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 5 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

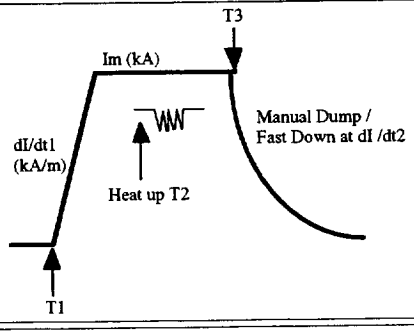
Facility condition

	Power Supply	Resistor
CSMC		
TFI		

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	2 s		2 s		
Pre-trigger	100		100		

Current pattern Tcs



CSMC I_m = kA I_t = kA

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

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

TFI I_m = 0.02 kA I_t = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:19 T_2 9:30 T_3 20:46

Heater 194 W T_d = s

Results

Remarks

Temporary power supply is used for 20A charge.
Inlet temperature is reduced to 10K from17.5K at 17:30.
20:37 Heater off. 20:46 current off.

CSMC-TF insert Experiment Log

Date 2001.10.5 Time 9:30 p. 94

Run No. 56 - 1

Procedure No. 4.0

Operation Mode DC

Objective

Daily check.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

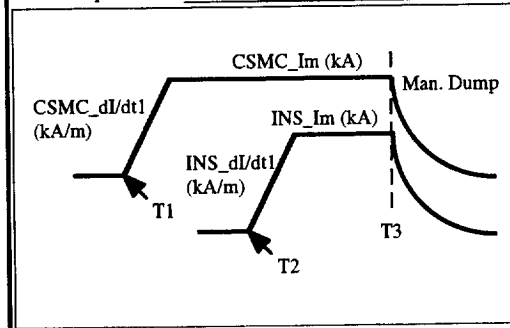
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Simultaneous daily check



CSMC I_m = 9.2 kA I_t = 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

TFI I_m = 5 kA I_t = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:45 T_2 10:15 T_3 10:35

Heater W T_d = s

Results

Vi=129V, Vo=162V, Vins=5.5V, Taumc=19.2s,
Tauins=0.052s/18.2s, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.5 Time 11:15 p. 95

Run No. 57 - 1

Procedure No. 4.18

Operation Mode DC

Objective

Tcs measurement of TF insert at 5T, 46kA

Coolant condition (before this run)

	Insert	All
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 6 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

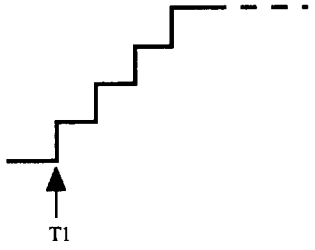
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Heater energize



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

TFI 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 192 W T_d = s

Results

Remarks

Valve of the mandrel of TF insert is closed on 11:15.

CSMC-TF insert Experiment Log

Date 2001.10.5 Time 11:15 p. 96

Run No. 57 - 2

Procedure No. 4.18

Operation Mode DC

Objective

Tcs measurement of TF insert at 5T, 46kA

Coolant condition (before this run)

	Insert	All
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 6 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

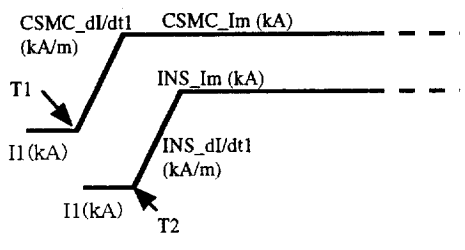
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Double charge up



CSMC I_m = 16 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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:18 T_2 13:44 T_3 ____

Heater 192 W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log Date 2001.10.5 Time 11:15 p. 97

Run No. 57 - 3
Procedure No. 4.18
Operation Mode DC

Objective
Tcs measurement of TF insert at 5T, 46kA

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

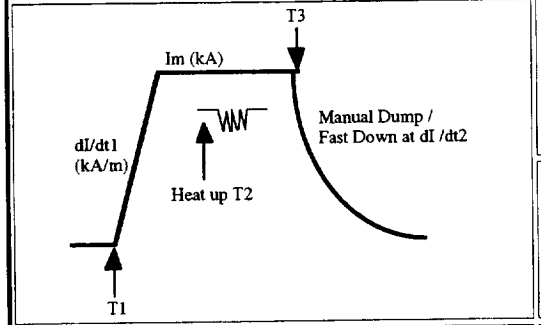
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 16 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = Dump kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:44 T_2 14:08 T_3 15:17

Heater W T_d = s

Results
ITF_TC_IN=14.2K, ITF_TC_OUT=10.0K, OK.
Dump at 15:17 by QD (ITF_FL_OUT).

Remarks
Charge up of TF insert is defined by the previous shot(#57-2).

CSMC-TF insert Experiment Log Date 2001.10.5 Time 16:30 p. 98

Run No. 58 - 1
Procedure No. 5.1
Operation Mode DC

Objective
Check the cycle test procedure.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

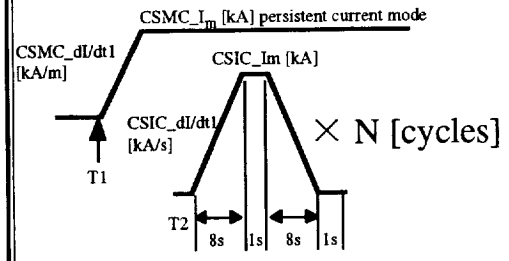
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Cyclic



CSMC I_m = 14 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

TFI I_m = 14 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 20 cycles

Time T_1 16:47 T_2 17:08 T_3 ____

Heater W T_d = s

Results

Remarks
Amp gain is changed as follows since this shot.
ITF_VC_01:x10-->x1
ITF_VC_02:x10-->x1
ITF_VD_ALL1:x1000-->x200
ITF_VD_0102:x100-->x10
ITF_VD_0203:x10000-->x500
ITF_VD_0304:x10000-->x500
ITF_VD_0405:x10000-->x500
ITF_VD_0506:x10000-->x1000
ITF_VD_0708x10000-->x1000
ITF_VD_0809:x10000-->x1000
ITF_VD_0910:x10000-->x1000
ITF_VD_1011:x1000-->x50
All low pass filter is changed to 100Hz since this shot.

CSMC-TF insert Experiment Log

Date 2001.10.5 Time 16:30 p. 99

Run No. 58 - 2

Procedure No. 5.1

Operation Mode DC

Objective: Check the cycle test procedure.

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

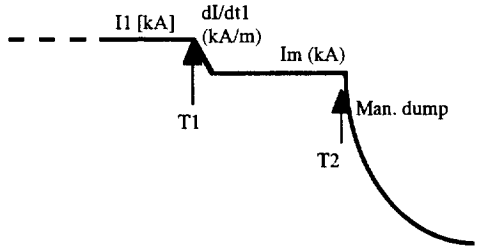
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Manual dump discharge



CSMC I_m = 10.6 kA I_1 = 14 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

TFI 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 17:17 T_2 18:09 T_3 ____

Heater W T_d = s

Results: Vi=152V, Vo=181V, Vins=2.1V, Taumc=19.0s, OK.

Remarks:

CSMC-TF insert Experiment Log

Date 2001.10.8 Time 9:47 p. 100

Run No. 59 - 1

Procedure No. 5.1

Operation Mode DC

Objective: Daily check for cycle test

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

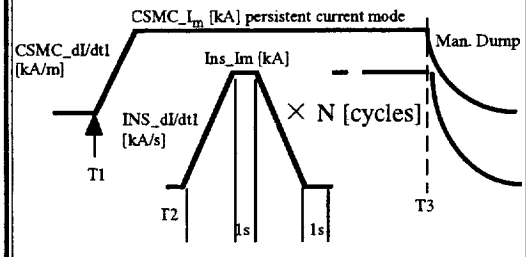
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Cyclic daily check



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

TFI I_m = 14 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 9:53 T_2 10:33 T_3 10:34

Heater W T_d = s

Results: Vi=128V, Vo=160V, Vins=9.0V, Taumc=19.3s, Tauins=0.1s/18.8s, OK.

Remarks:

CSMC-TF insert Experiment Log Date 2001.10.8 Time 11:08 p. 101

Run No. 60 - 1
Procedure No. 5.2
Operation Mode DC

Objective
Cycle test 1(0-14kA, 1000 cycles), 1st-334th cycle.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

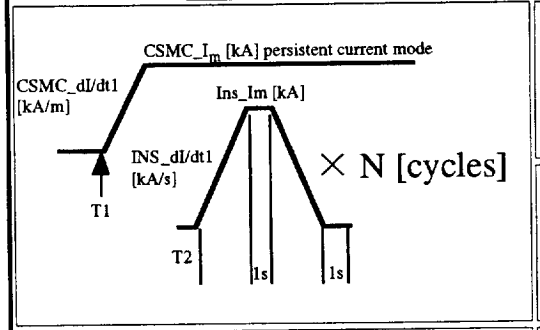
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Cyclic



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

TFI I_m = 14 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 334 cycles

Time T_1 11:20 T_2 12:12 T_3

Heater W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log Date 2001.10.8 Time 11:08 p. 102

Run No. 60 - 2
Procedure No. 5.2
Operation Mode DC

Objective
Cycle test 1 (0-14kA, 1000 cycles), 335th cycle - 1002nd cycle.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

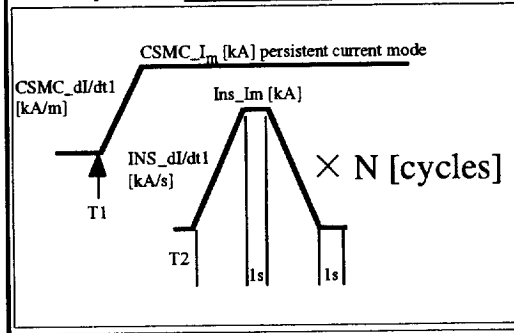
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Cyclic



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

TFI I_m = 14 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 668 cycles

Time T_1 T_2 13:10 T_3

Heater W T_d = s

Results

Remarks
Charge up of CS MC is defined by the previous shot(#60-1).
668th cycle is started on 14:10.

CSMC-TF insert Experiment Log

Date 2001.10.8 Time 11:08 p. 103

Run No. 60 - 3

Procedure No. 5.3

Operation Mode DC

Objective

Coupling loss of TF insert after cycle test 1 at 3T, 4.5K.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

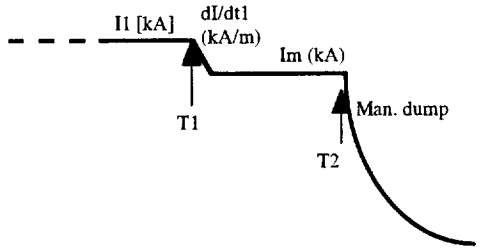
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Manual dump discharge



CSMC I_m = 10.6 kA I_1 = 46 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

TFI I_m = 0 kA I_1 = kA

dI/dt_1 = kA/m / kA/s

dI/dt_2 = kA/m / kA/s

Cyclic Test 668 cycles

Time T_1 14:53 T_2 15:55 T_3

Heater W T_d = s

Results

Vi=151V, Vo=180V, Vins=2.0V, Taumc=19.3s, OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.9 Time 9:30 p. 104

Run No. 61 - 1

Procedure No. 4.0

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	~ 0.7 MPa		

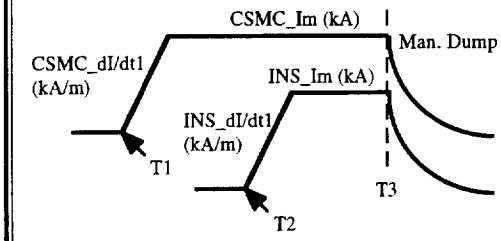
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m / kA/s

dI/dt_2 = kA/m / kA/s

Cyclic Test cycles

Time T_1 9:46 T_2 10:17 T_3 10:27

Heater W T_d = s

Results

Vi=128V, Vo=162V, Vins=6.8V, Taumc=19.1s, Tauins=0.039s/18.4s, OK.

Remarks

Mass flow rate of bus bars for TF insert is 13 g/s.
Amp gain is changed as follows since this shot.
ITF_VC_01:x1-->x10, ITF_VC_02:x1-->x10
Amp gain & low pass filters are changed as follows since this shot.
ITF_VD_ALL1:x200, 100Hz -->x1000, 0.2Hz
ITF_VD_0102:x10, 100Hz-->x100, 10Hz
ITF_VD_0203:x500, 100Hz-->10000, 10Hz
ITF_VD_0304:x500, 100Hz-->10000 ,10Hz
ITF_VD_0405:x500, 100Hz-->10000 ,10Hz
ITF_VD_0506:x1000, 100Hz-->10000 ,10Hz
ITF_VD_0708:x1000, 100Hz-->10000, 0.2Hz
ITF_VD_0809:x1000, 100Hz-->10000 ,10Hz
ITF_VD_0910:x1000, 100Hz-->10000, 0.2Hz
ITF_VD_1011:x50, 100Hz-->x1000 ,10Hz

CSMC-TF insert Experiment Log

Date 2001.10.9 Time 13:30 p. 105

Run No. 62 - 1

Procedure No. 5.5

Operation Mode DC

Objective

Hysteresis loss measurement of TF insert at 3T

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

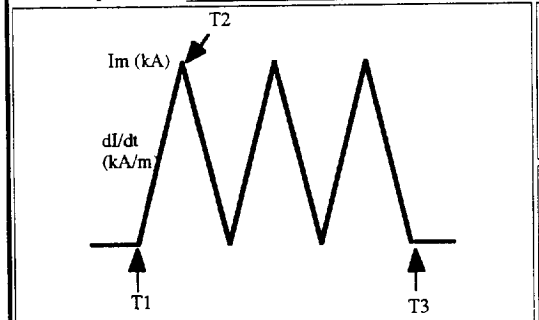
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	25 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Triple 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

TFI 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 13:41 T_2 13:52 T_3 15:11

Heater W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.9 Time 15:53 p. 106

Run No. 63 - 1

Procedure No. 5.6

Operation Mode DC

Objective

Tcs measurement of TF insert at 11.4T, 17.4kA

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

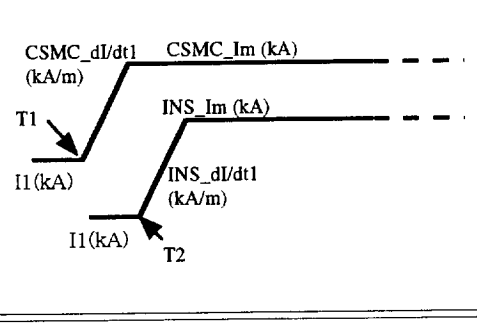
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Double charge up



CSMC I_m = 40.7 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

TFI I_m = 17.4 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 16:11 T_2 17:14 T_3

Heater W T_d = s

Results

Remarks

Valve for mandrel of TF insert is closed at 15:30. Mass flow rate of busbars for TF insert is 8g/s.

CSMC-TF insert Experiment Log Date 2001.10.9 Time 15:53 p. 107

Run No. 63 – 2
Procedure No. 5.6
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 17.4kA

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

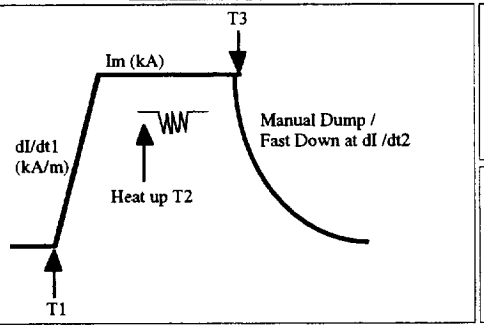
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 40.7 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

TFI I_m = 17.6 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 17:14 T_2 17:32 T_3 19:35

Heater 230 W T_d = s

Results
ITF_TC_IN=10.5K, ITF_TC_OUT=8.7K,
Tcs=9.6K(Preliminary, 500microV/cmat VD_0203)
OK.

Remarks
Charge up of CSMC and TF insert is defined by the previous shot(#63-1).

CSMC-TF insert Experiment Log Date 2001.10.9 Time 15:53 p. 108

Run No. 63 – 3
Procedure No. 5.6
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 17.4kA

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

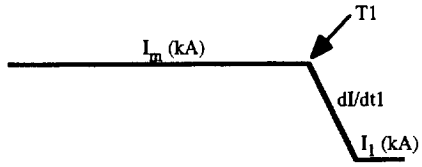
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Discharge



CSMC I_m = 40.7 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

TFI I_m = 17.6 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 19:47 T_2 ____ T_3 ____

Heater 230 W T_d = s

Results

Remarks
Heater off at 20:58.

CSMC-TF insert Experiment Log

Date 2001.10.10 Time 9:30 p. 109

Run No. 64 - 1

Procedure No. 5.0

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	~ 0.7 MPa		

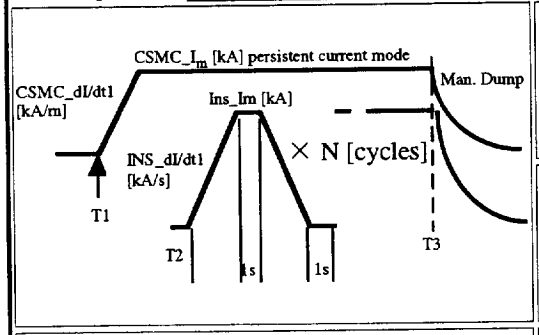
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Cyclic daily check



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

TFI I_m = 14 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 9:54 T_2 10:34 T_3 10:35

Heater W T_d = s

Results

Vi=129V, Vo=159V, Vins=11.2V, Taumc=19.1s, Tauins=0.073s/18.3s, OK.

Remarks

Amp gain & low pass filters are changed as follows since this shot.
ITF_VD_ALL1:x1000, 0.2Hz-->x50, 100Hz
ITF_VD_0102:x100, 10Hz-->x10, 100Hz
ITF_VD_0203:10000, 10Hz-->x200, 100Hz
ITF_VD_0304:10000 ,10Hz-->x200, 100Hz
ITF_VD_0405:10000 ,10Hz-->x200, 100Hz
ITF_VD_0506:x10000 ,10Hz-->x500, 100Hz
ITF_VD_0708:x10000, 0.2Hz-->x500, 100Hz
ITF_VD_0809:x10000 ,10Hz-->x500, 100Hz
ITF_VD_0910:x10000, 0.2Hz-->x500, 100Hz
ITF_VD_1011:x1000 ,10Hz-->x50, 100Hz
Amp gain is changed as follows since this shot.
ITF_VC_01:x10-->x1, ITF_VC_02:x10-->x1.

CSMC-TF insert Experiment Log

Date 2001.10.10 Time 11:04 p. 110

Run No. 65 - 1

Procedure No. 6.1

Operation Mode DC

Objective: Cycle test 2(0-36kA, 1000 cycles), 1st-400th cycle.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

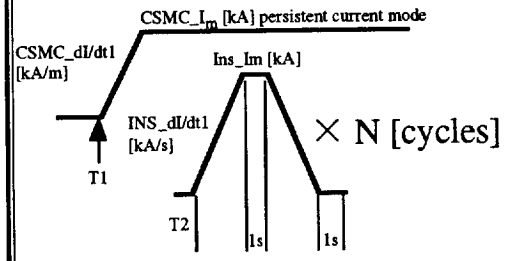
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Cyclic



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

TFI I_m = 36 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 11:04 T_2 11:56 T_3

Heater W T_d = s

Results

OK.

Remarks

201st cycle is stated on 13:04.

CSMC-TF insert Experiment Log

Date 2001.10.10 Time 11:04 p. 111

Run No. 65 - 2

Procedure No. 6.1

Operation Mode DC

Objective

Cycle test 2(0-36kA, 1000 cycles), 401st-800th cycle.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.7 MPa		

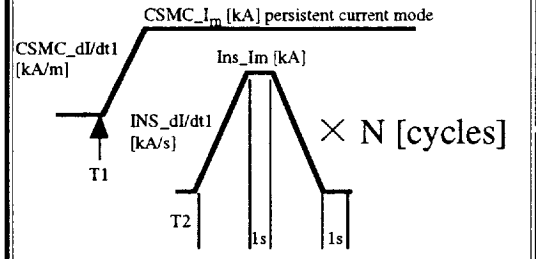
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Cyclic



CSMC I_m = 46 kA I_t = kA

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

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

TFI I_m = 36 kA I_t = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 400 cycles

Time T_1 11:04 T_2 14:11 T_3

Heater W T_d = s

Results

Remarks

Charge up of CSMC is defined by the previous shot(#65-1). 601st cycle is stated on 15:18.

CSMC-TF insert Experiment Log

Date 2001.10.10 Time 11:04 p. 112

Run No. 65 - 3

Procedure No. 6.1

Operation Mode DC

Objective

Cycle test 2(0-36kA, 1000 cycles), 801st-1000th cycle.

Coolant condition (before this run)

All

Temperature	~	4.5 K	~	K
Mass Flow Rate	~	10 g/s	~	g/s
Pressure	~	0.7 MPa		

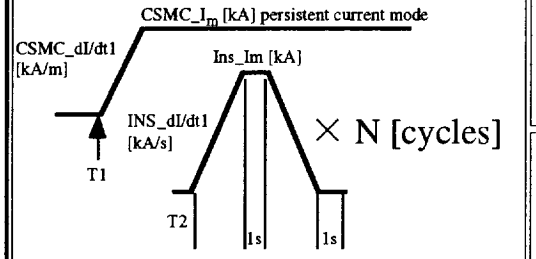
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Cyclic



CSMC I_m = 46 kA I_t = kA

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

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

TFI I_m = 36 kA I_t = kA

dI/dt_1 = 5 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test 200 cycles

Time T_1 11:04 T_2 16:25 T_3

Heater W T_d = s

Results

Remarks

Charge up of CSMC is defined by the previous shot(#65-1). Ramp down of CSMC to 10.6kA (1kA/m) is inclueded this shot.

CSMC-TF insert Experiment Log

Date 2001.10.10 Time 11:04 p. 113

Run No. 65 - 4
Procedure No. 6.1
Operation Mode DC

Objective
Coupling loss of TF insert at 3T after Cycle test 2.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

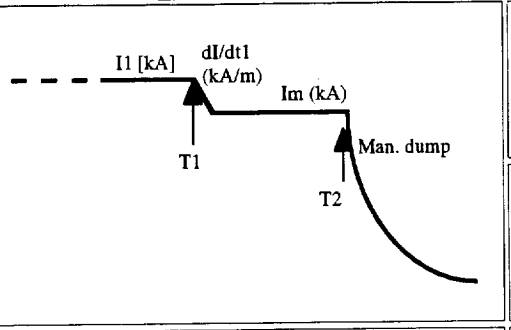
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Manual dump discharge



CSMC I_m = 10.6 kA I_1 = 46 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

TFI I_m = 36 kA I_1 = kA
dI/dt_1 = 5 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test 200 cycles

Time T_1 17:21 T_2 18:32 T_3

Heater W T_d = s

Results
Vi=151V, Vo=181V, Vins=2.09V, Taumc=19.5s, OK.

Remarks
Ramp down of CSMC to 10.6kA (1kA/m) is defined by the previous shot (#65-3).

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 9:30 p. 114

Run No. 66 - 1
Procedure No. 4.0
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	~ 0.7 MPa		

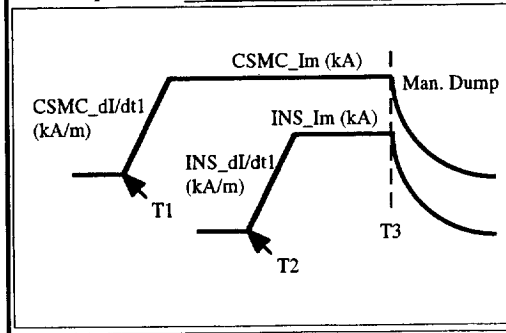
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test cycles

Time T_1 9:50 T_2 10:24 T_3 10:32

Heater W T_d = s

Results
Vi=128.6V, Vo=161.7V, Vins=6.7V, Taumc=19.3s, Tauins=0.038s/19.1s, OK.

Remarks
Mass flow rate of bus bars for TF insert is 13 g/s.
Amp gain is changed as follows since this shot.
ITF_VC_01:x1-->x10, ITF_VC_02:x1-->x10
Amp gain & low pass filters are changed as follows since this shot.
ITF_VD_ALL1:x50, 100Hz -->x1000, 0.2Hz
ITF_VD_0102:x10, 100Hz-->x100, 10Hz
ITF_VD_0203:x200, 100Hz-->x10000, 10Hz
ITF_VD_0304:x200, 100Hz-->x10000 ,10Hz
ITF_VD_0405:x200, 100Hz-->x10000 ,10Hz
ITF_VD_0506:x500, 100Hz-->x10000 ,10Hz
ITF_VD_0708:x500, 100Hz-->x10000, 0.2Hz
ITF_VD_0809:x500, 100Hz-->x10000 ,10Hz
ITF_VD_0910:x500, 100Hz-->x10000, 0.2Hz
ITF_VD_1011:x50, 100Hz-->x1000 ,10Hz

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 11:00 p. 115

Run No. 67 - 1

Procedure No. 6.4

Operation Mode DC

Objective

Hysteresis loss measurement of TF insert at 3T after Cycle test 2.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

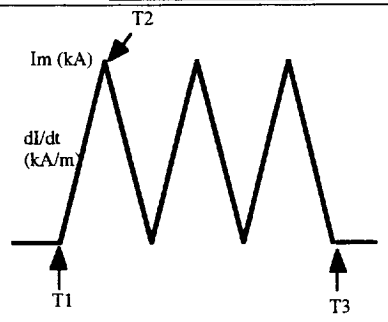
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	25 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Triple Triangular



CSMC I_m = 10.6 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

TFI 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 11:06 T_2 11:17 T_3 12:34

Heater W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 13:07 p. 116

Run No. 68 - 1

Procedure No. 6.4

Operation Mode DC

Objective

Tcs measurement of TF insert at 11.4T, 17.6kA after Cycle test 2.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

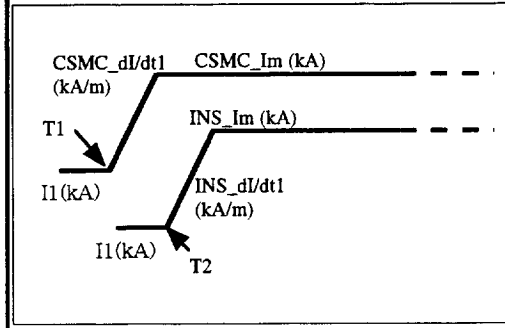
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Double charge up



CSMC I_m = 40.7 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

TFI I_m = 17.6 kA I_1 = kA

dI/dt_1 = 3 kA/m / kA/s

dI/dt_2 = kA/m / kA/s

Cyclic Test ____ cycles

Time T_1 13:11 T_2 14:02 T_3 ____

Heater W T_d = s

Results

Remarks

Valve for mandrel of TF insert is closed at 13:00. Mass flow rate of busbars for TF insert is 8g/s each.

CSMC-TF insert Experiment Log Date 2001.10.11 Time 13:07 p. 117

Run No. 68 - 2
Procedure No. 6.4
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 17.6kA after Cycle test 2.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

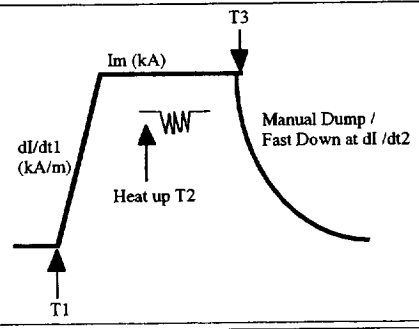
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 40.7 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

TFI I_m = 17.6 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:02 T_2 14:17 T_3 15:30

Heater W T_d = s

Results
ITF_TC_IN=10.7K, ITF_TC_OUT=8.7K, Tcs=9.6K(Preliminary, 500microV/cmat VD_0203) OK.

Remarks
Charge up of CSMC and TF insert is defined by the previous shot(#68-1).

CSMC-TF insert Experiment Log Date 2001.10.11 Time 15:30 p. 118

Run No. 68 - 3
Procedure No. 5.6
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 17.6kA

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

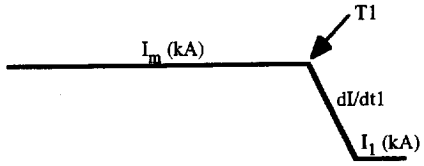
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Discharge



CSMC I_m = 40.7 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

TFI 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 15:33 T_2 ____ T_3 ____

Heater 230 W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 16:55 p. 119

Run No. 69 - 1
Procedure No.
Operation Mode DC

Objective: Check the inductive heater

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

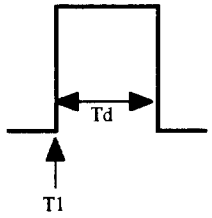
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	5 ms				0.02 ms
Pre-trigger	2 k				1 k

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

TFI 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 17:02 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 41.5V
Inductive heater current : 135.5A
I^2 integral : 138.9A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 16:55 p. 120

Run No. 69 - 2
Procedure No.
Operation Mode DC

Objective: Check the inductive heater

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

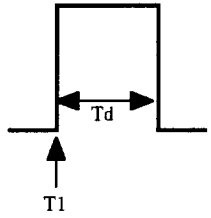
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	5 ms				0.02 ms
Pre-trigger	2 k				1 k

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

TFI 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 17:13 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 75V
Inductive heater current : 256.1A
I^2 integral : 486.8A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 16:55 p. 121

Run No. 69 - 3
Procedure No.
Operation Mode DC

Objective: Check the inductive heater

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

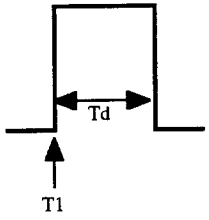
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling		5 ms			0.02 ms
Pre-trigger		2 k			1 k

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

TFI 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 17:18 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 117V
Inductive heater current : 400.8A
I^2 integral : 1221.7A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 16:55 p. 122

Run No. 69 - 4
Procedure No.
Operation Mode DC

Objective: Check the inductive heater

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

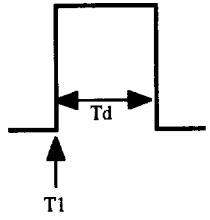
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling		5 ms			0.02 ms
Pre-trigger		2 k			1 k

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

TFI 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 17:23 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 175V
Inductive heater current : 604A
I^2 integral : 2706.7A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 16:55 p. 123

Run No. 69 – 5

Procedure No.

Operation Mode DC

Objective: Check the inductive heater

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

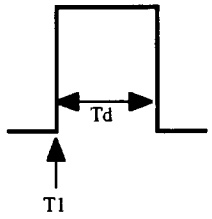
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	5 ms				0.02 ms
Pre-trigger	2 k				1 k

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

TFI 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 17:29 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 290V
Inductive heater current : 944.7A
I^2 integral : 2039A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 16:55 p. 124

Run No. 69 – 6

Procedure No.

Operation Mode DC

Objective: Check the inductive heater

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

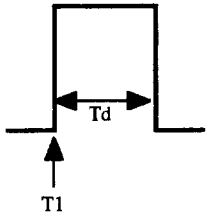
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	5 ms				0.02 ms
Pre-trigger	2 k				1 k

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

TFI 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 17:34 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 261.5V
Inductive heater current : 944.7A
I^2 integral : 4168.3A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 16:55 p. 125

Run No. 69 - 7
Procedure No.
Operation Mode DC

Objective: Check the inductive heater

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

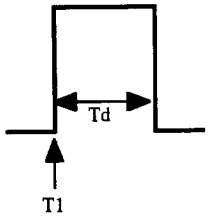
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	5 ms				0.02 ms
Pre-trigger	2 k				1 k

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

TFI 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 17:41 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 246.7V
Inductive heater current : 851A
I^2 integral : 5505.1A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.11 Time 16:55 p. 126

Run No. 69 - 8
Procedure No.
Operation Mode DC

Objective: Check the inductive heater

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

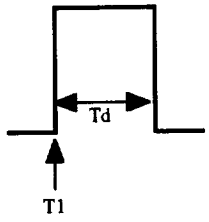
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	5 ms				0.02 ms
Pre-trigger	2 k				1 k

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

TFI 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 17:49 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 247V
Inductive heater current : 851.6A
I^2 integral : 8053.5A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 9:30 p. 127

Run No. 70 - 1

Procedure No. 4.0

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	~ 0.7 MPa		

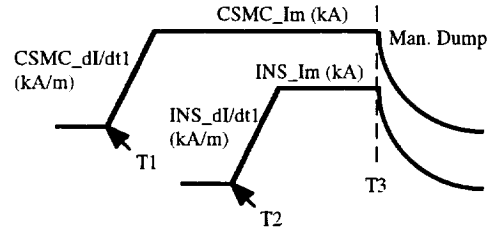
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

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

Current pattern: Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:50 T_2 10:28 T_3 10:37

Heater W T_d = s

Results

Vi=129V, Vo=163.9V, Vins=7.5V, Taumc=19.6s, Tauins=0.039s/19.8, OK.

Remarks

Amp gain & low pass filters are changed as follows since this shot.
ITF_VD_ALL1:x1000, 0.2Hz-->x1, 500Hz
ITF_VD_0102:x100, 100Hz-->x10, 500Hz
ITF_VD_0203:x10000, 100Hz-->x10, 500Hz
ITF_VD_0304:x10000, 100Hz-->x10, 500Hz
ITF_VD_0405:x10000, 100Hz-->x10, 500Hz
ITF_VD_0506:xx10000, 100Hz-->x10, 500Hz
ITF_VD_0607:xx10000, 100Hz-->x10, 500Hz
ITF_VD_0708:xx10000, 100Hz-->x10, 500Hz
ITF_VD_0809:x10000, 100Hz-->x10, 500Hz
ITF_VD_0910:x10000, 100Hz-->x10, 500Hz
ITF_VD_1011:x1000 ,10Hz-->x10, 500Hz
Amp gain is changed as follows since this shot.
ITF_VC_01:x10-->x1, ITF_VC_02:x10-->x1

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 11:13 p. 128

Run No. 71 - 1

Procedure No. 7.5

Operation Mode DC

Objective: Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

All

Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

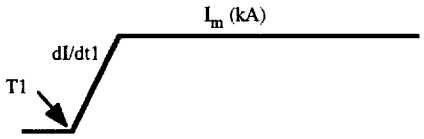
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	10 ms	0.02 ms
Pre-trigger	60	2 k	60	2 k	1 k

Current pattern: Charge up and hold



CSMC I_m = 41.5 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

TFI 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 11:18 T_2 ____ T_3 ____

Heater 110 W T_d = s

Results

Remarks

Heat TF insert up is started on 11:45.

CSMC-TF insert Experiment Log Date 2001.10.12 Time 11:13 p. 129

Run No. 71 - 2
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

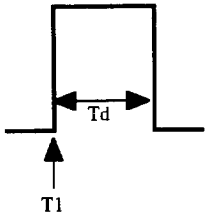
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI 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 13:05 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 46.9V
Inductive heater current : 111.4A
I^2 integral : 101.5A^2 s

Remarks

CSMC-TF insert Experiment Log Date 2001.10.12 Time 11:13 p. 130

Run No. 71 - 3
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

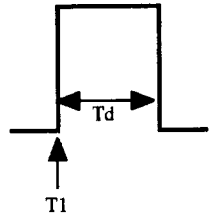
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI 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 13:10 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 88.5V
Inductive heater current : 210.8A
I^2 integral : 350.8A^2 s

Remarks

CSMC-TF insert Experiment Log Date 2001.10.12 Time 11:13 p. 131

Run No. 71 - 4
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

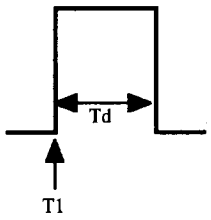
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI 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 = 0.02 s

Results
Inductive heater volatage : 172V
Inductive heater current : 413A
I^2 integral : 1338.9A^2 s

Remarks

CSMC-TF insert Experiment Log Date 2001.10.12 Time 11:13 p. 132

Run No. 71 - 5
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

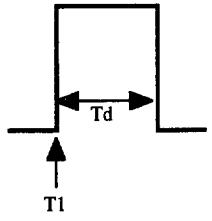
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI 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 13:21 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 249V
Inductive heater current : 600A
I^2 integral : 2810A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 11:13 p. 133

Run No. 71 - 6

Procedure No. 7.5

Operation Mode DC

Objective

Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

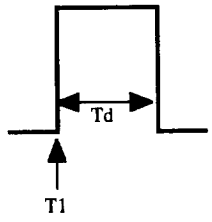
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI 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 13:27 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 355V
Inductive heater current : 854 A
I^2 integral : 5694A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 11:13 p. 134

Run No. 71 - 7

Procedure No. 7.5

Operation Mode DC

Objective

Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

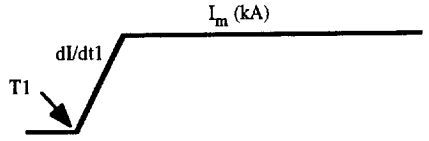
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 Charge up and hold



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:38 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 11:13 p. 135

Run No. 71 - 8

Procedure No. 7.5

Operation Mode DC

Objective

Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

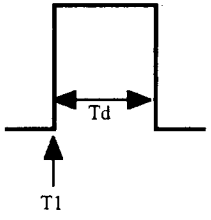
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test _____ cycles

Time T_1 14:02 T_2 _____ T_3 _____

Heater W T_d = 0.02 s

Results

Inductive heater volatage : 90V
Inductive heater current : 216A
I^2 integral : 377.5A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 11:13 p. 136

Run No. 71 - 9

Procedure No. 7.5

Operation Mode DC

Objective

Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

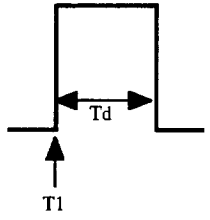
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI I_m = 46 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 = 0.02 s

Results

Inductive heater volatage : 106.7V
Inductive heater current : 258A
I^2 integral : 523.9A^2 s

Remarks

CSMC-TF insert Experiment Log Date 2001.10.12 Time 11:13 p. 137

Run No. 71 - 10
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

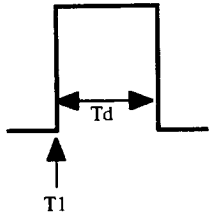
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:19 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 130.5V
Inductive heater current : 317A
I^2 integral : 794A^2 s

Remarks

CSMC-TF insert Experiment Log Date 2001.10.12 Time 11:13 p. 138

Run No. 71 - 11
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

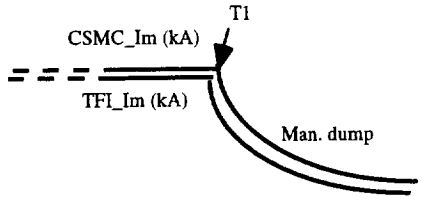
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 (synchronized)



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:34 T_2 ____ T_3 ____

Heater W T_d = s

Results
Vi=591V, Vo=716V, Vins=48.6V, Taumc=17.4s, Tauins=0.18s/19s, OK.

Remarks
Power supply for resistive heater of TF insert does not work.

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 15:04 p. 139

Run No. 72 - 1
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

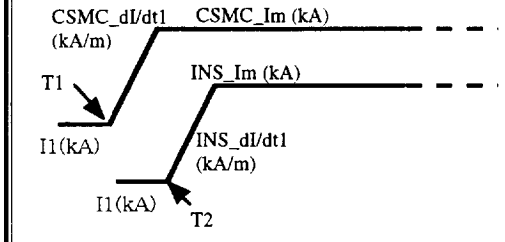
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 Double charge up



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:09 T_2 16:01 T_3 ____

Heater 110 W T_d = s

Results

Remarks
Heat TF insert up is started on 15:06.

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 15:04 p. 140

Run No. 72 - 2
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	6.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

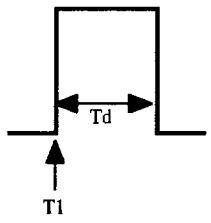
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI I_m = 46 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
Inductive heater volatage : 150V
Inductive heater current : 365A
I^2 integral : 1072A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 15:04 p. 141

Run No. 72 - 3

Procedure No. 7.5

Operation Mode DC

Objective

Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	6.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

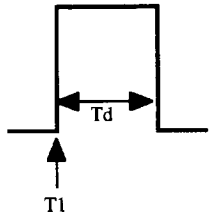
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI I_m = 46 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

Inductive heater volatage : 179V
Inductive heater current : 437A
I^2 integral : 1519A^2 s

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.12 Time 17:10 p. 142

Run No. 73 - 1

Procedure No. 7.5

Operation Mode DC

Objective

Stability and quench test at 12T, 46kA, 6.5K, 5s of delay time.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

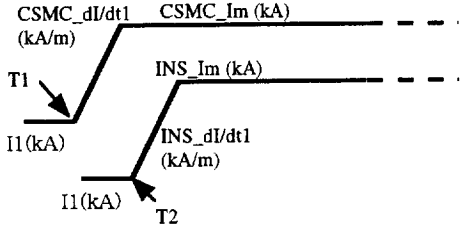
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 Double charge up



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 17:12 T_2 18:03 T_3 ____

Heater 110 W T_d = s

Results

Remarks

Heat TF insert up is started on 17:09.

CSMC-TF insert Experiment Log Date 2001.10.12 Time 17:10 p. 143

Run No. 73 - 2
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 5s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

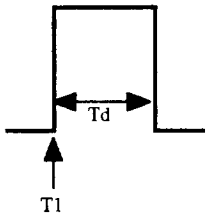
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:31 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 143V
Inductive heater current : 347A
I^2 integral : 973A^2 s

Remarks

CSMC-TF insert Experiment Log Date 2001.10.12 Time 17:10 p. 144

Run No. 73 - 3
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 5s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

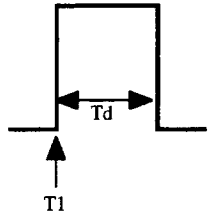
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:40 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 148V
Inductive heater current : 359A
I^2 integral : 1038A^2 s

Remarks

CSMC-TF insert Experiment Log Date 2001.10.12 Time 17:10 p. 145

Run No. 73 - 4
Procedure No. 7.5
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 5s of delay time.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	6.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

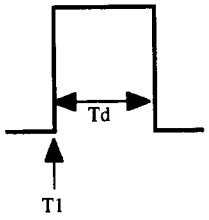
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	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 = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 18:48 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 157V
Inductive heater current : 382A
I^2 integral : 1172A^2 s

Remarks

CSMC-TF insert Experiment Log Date 2001.10.15 Time 9:30 p. 146

Run No. 74 - 1
Procedure No. 4.0
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	~ 0.7 MPa		

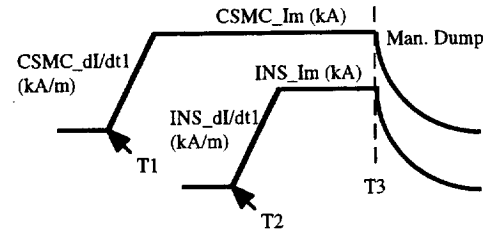
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:42 T_2 10:15 T_3 10:23

Heater W T_d = s

Results
Vi=128 V, Vo=161V, Vins=6.7V, Taumc=19.7s, Tauins=0.04s/19.7s, OK.

Remarks
Mass flow rate of bus bars for TF insert is 13 g/s.
Amp gain is changed as follows since this shot.
ITF_VC_01:x1-->x10, ITF_VC_02:x1-->x10
Amp gain & low pass filters are changed as follows since this shot.
ITF_VD_ALL1:x50, 500Hz -->x1000, 0.2Hz
ITF_VD_0102:x1, 500Hz-->x100, 100Hz
ITF_VD_0203:x10, 500Hz-->x10000, 100Hz
ITF_VD_0304:x10, 500Hz-->x10000 ,100Hz
ITF_VD_0405:x10, 500Hz-->x10000 ,100Hz
ITF_VD_0506:x10, 500Hz-->x10000 ,100Hz
ITF_VD_0607:x10, 500Hz-->x10000 ,100Hz
ITF_VD_0708:x10, 500Hz-->x10000, 100Hz
ITF_VD_0809:x10 500Hz-->x10000 ,100Hz
ITF_VD_0910:x10 500Hz-->x10000, 100Hz

CSMC-TF insert Experiment Log

Date 2001.10.15 Time 11:00 p. 147

Run No. 75 - 1

Procedure No. 8.1

Operation Mode DC

Objective

Hysteresis loss measurement of TF insert at 3T after quech test.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

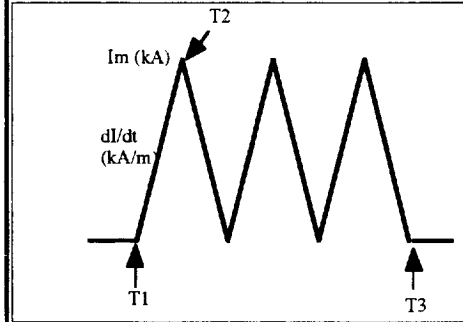
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	25 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Triple Triangular



CSMC I_m = 10.6 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

TFI 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 11:02 T_2 11:14 T_3 12:34

Heater W T_d = s

Results

Remarks

Mass flow rate of mandrel for TF insert is 5 g/s.

CSMC-TF insert Experiment Log

Date 2001.10.15 Time 13:07 p. 148

Run No. 76 - 1

Procedure No. 8.4

Operation Mode DC

Objective

Tcs measurement of TF insert at 11.4T, 17.6kA after quench test.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

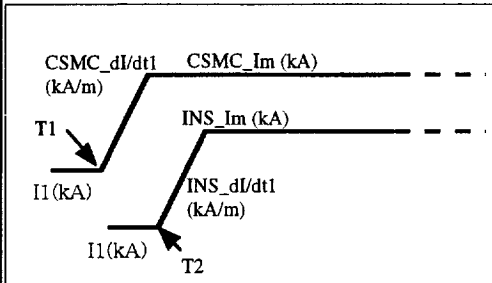
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Double charge up



CSMC I_m = 40.7 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

TFI I_m = 17.6 kA I_1 = kA

dI/dt_1 = 3 kA/m / kA/s

dI/dt_2 = kA/m / kA/s

Cyclic Test _____ cycles

Time T_1 13:17 T_2 14:24 T_3 _____

Heater W T_d = s

Results

Remarks

Valve for mandrel of TF insert is closed at 13:00. Mass flow rate of busbars for TF insert is 8g/s each.

CSMC-TF insert Experiment Log Date 2001.10.15 Time 13:07 p. 149

Run No. 76 - 2
Procedure No. 8.4
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 17.6kA after quench test.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

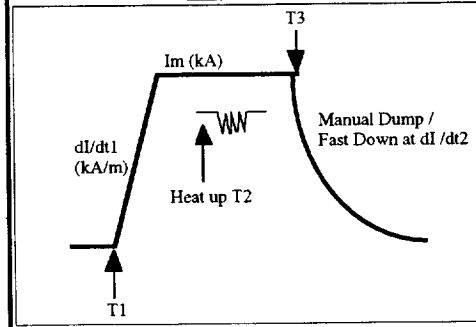
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 40.7 kA I_t = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

TFI I_m = 17.6 kA I_t = 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 14:38 T_3 ____

Heater 231 W T_d = s

Results
ITF_TC_IN=10.66K, ITF_TC_OUT=8.67K,
Tcs=9.67K(Preliminary, 500microV/cmat VD_0203)
OK.

Remarks
Charge up of CSMC and TF insert is defined by the previous shot(#76-1).

CSMC-TF insert Experiment Log Date 2001.10.15 Time 13:07 p. 150

Run No. 76 - 3
Procedure No. 8.4
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 17.6kA after quench test.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	10 K
Mass Flow Rate	~ 10 g/s	~	5 g/s
Pressure	~ 0.7 MPa		

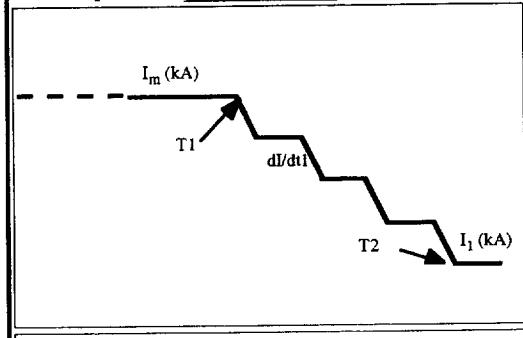
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Discharge with steps



CSMC I_m = 40.7 kA I_t = 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

TFI I_m = 0 kA I_t = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:44 T_2 18:12 T_3 ____

Heater 243 W T_d = s

Results
OK.

Remarks
Current of CSMC is held at 30kA, 20kA, 10kA.
Heater off at 18:12.

CSMC-TF insert Experiment Log Date 2001.10.16 Time 9:30 p. 151

Run No. 77 - 1
Procedure No. 4.0
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	~ 0.7 MPa		

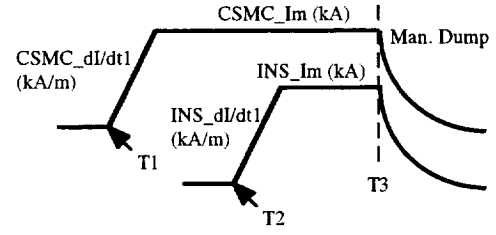
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test _____ cycles

Time T_1 9:33 T_2 10:07 T_3 10:14

Heater W T_d = s

Results:
Vi=128 V, Vo=161V, Vins=6.8V, Taumc=19.1s, Tauins=0.038s/18.4s, OK.

Remarks:
Mass flow rate of bus bars for TF insert is 10 g/s.
Amp gain is changed as follows since this shot.
ITF_VC_01:x10-->x1, ITF_VC_02:x10-->x1

CSMC-TF insert Experiment Log Date 2001.10.16 Time 10:45 p. 152

Run No. 78 - 1
Procedure No. 8.3
Operation Mode DC

Objective: Coupling loss of TF insert at 3T after quench test.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

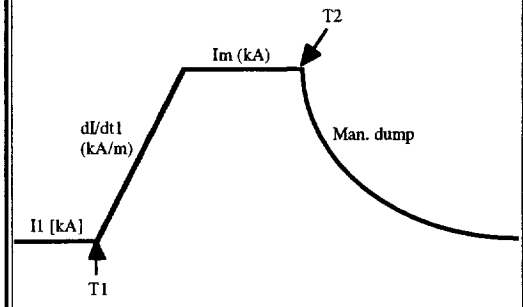
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.73 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern: Manual dump



CSMC I_m = 10.6 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

TFI 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 10:51 T_2 11:25 T_3 _____

Heater W T_d = s

Results:
Vi=151V, Vo=181V, Vins=2.09V, Taumc=19.5s, OK.

Remarks:

CSMC-TF insert Experiment Log

Date 2001.10.16 Time 13:07 p. 153

Run No. 79 - 1

Procedure No. 8.2

Operation Mode DC

Objective

Tcs measurement of TF insert at 12T, 46kA after quench test.

Coolant condition (before this run)

	Insert		All
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

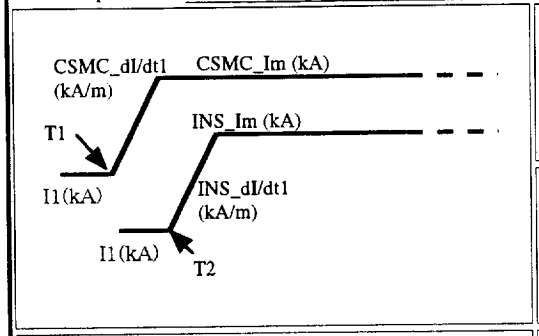
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Double charge up



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:10 T_2 14:05 T_3 ____

Heater W T_d = s

Results

OK.

Remarks

Valve for mandrel of TF insert is closed at 13:00. Mass flow rate of busbars for TF insert is 8g/s each. Heater on at 13:28.

CSMC-TF insert Experiment Log

Date 2001.10.16 Time 13:07 p. 154

Run No. 79 - 1

Procedure No. 8.4

Operation Mode DC

Objective

Tcs measurement of TF insert at 12T, 46kA after quench test.

Coolant condition (before this run)

	Insert		All
Temperature	~ 6 K	~	4.5 K
Mass Flow Rate	~ 6 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

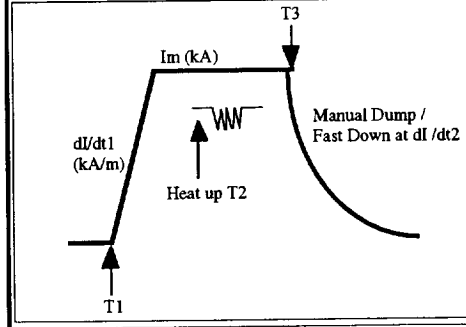
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 14:05 T_2 14:29 T_3 15:56

Heater 152 W T_d = s

Results

ITF_TC_IN=7.6K, ITF_TC_OUT=7.49K, Tcs=7.55K(Preliminary, 200microV at VD_0203) OK.

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.16 Time 13:07 p. 155

Run No. 79 - 2

Procedure No. 8.4

Operation Mode DC

Objective

Tcs measurement of TF insert at 12T, 46kA after quench test.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	10 K
Mass Flow Rate	~ 10 g/s	~	5 g/s
Pressure	~ 0.7 MPa		

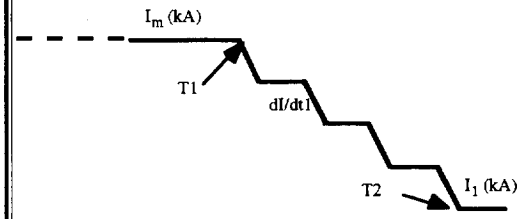
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Discharge with steps



CSMC I_m = 41.5 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

TFI 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 17:06 T_2 18:30 T_3 ____

Heater W T_d = s

Results

OK.

Remarks

Heater power is increased at 16:05.
Current of CSMC is held at 30kA, 20kA, 10kA.

CSMC-TF insert Experiment Log

Date 2001.10.17 Time 9:30 p. 156

Run No. 80 - 1

Procedure No. 4.0

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	~ 0.7 MPa		

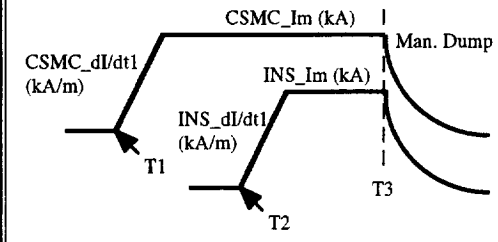
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:52 T_2 10:02 T_3 10:11

Heater W T_d = s

Results

Vi=128 V, Vo=161V, Vins=6.8V, Taumc=19.1s, Tauins=0.038s/18.4s, OK.

Remarks

Mass flow rate of bus bars for TF insert is 12 g/s each.
Amp gain & low pass filters are changed as follows since this shot.
ITF_VD_ALL1:x1000, 0.2Hz-->x1, 500Hz
ITF_VD_0102:x100, 100Hz-->x10, 500Hz
ITF_VD_0203:x10000, 100Hz-->x10, 500Hz
ITF_VD_0304:x10000, 100Hz-->x10, 500Hz
ITF_VD_0405:x10000, 100Hz-->x10, 500Hz
ITF_VD_0506:x10000, 100Hz-->x2, 500Hz
ITF_VD_0607:x10000, 100Hz-->x2, 500Hz
ITF_VD_0708:xx10000, 100Hz-->x10, 500Hz
ITF_VD_0809:x10000, 100Hz-->x10, 500Hz
ITF_VD_0910:x10000, 100Hz-->x10, 500Hz
ITF_VD_1011:x1000 ,10Hz-->x10, 500Hz

CSMC-TF insert Experiment Log

Date 2001.10.17 Time 10:23 p. 157

Run No. 81 - 1
Procedure No. 7.7
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

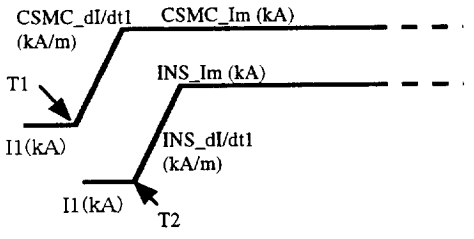
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Double charge up



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 10:38 T_2 11:23 T_3 ____

Heater 116 W T_d = s

Results

Remarks
Heat TF insert up is started on 10:20.

CSMC-TF insert Experiment Log

Date 2001.10.17 Time 10:23 p. 158

Run No. 81 - 2
Procedure No. 7.7
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	6.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

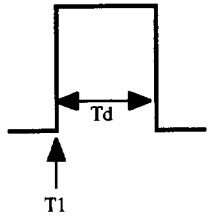
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 11:55 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 142V
Inductive heater current : 344A
I^2 integral : 959A^2 s
No quench.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.17 Time 10:23 p. 159

Run No. 81 - 3
Procedure No. 7.7
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	6.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

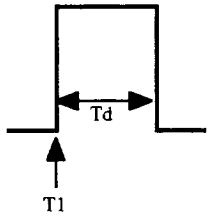
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 12:03 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 156V
Inductive heater current : 379A
I^2 integral : 1162A^2 s
No quench.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.17 Time 10:23 p. 160

Run No. 81 - 4
Procedure No. 7.7
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	6.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

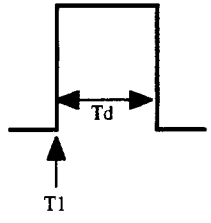
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 12:14 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage :162 V
Inductive heater current :393A
I^2 integral : 1236A^2 s
Quench.

Remarks
1s delay by QD action.

CSMC-TF insert Experiment Log Date 2001.10.17 Time 13:08 p. 161

Run No. 82 - 1
Procedure No. 7.7
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

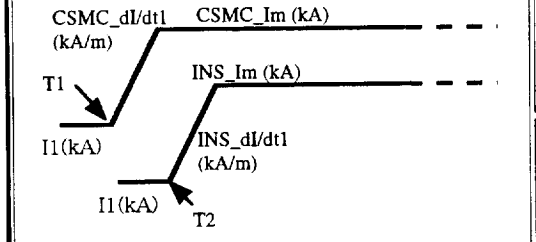
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Double charge up



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:15 T_2 14:01 T_3 ____

Heater W T_d = s

Results

Remarks
Heat TF insert up is started on 13:26.

CSMC-TF insert Experiment Log Date 2001.10.17 Time 13:08 p. 162

Run No. 82 - 2
Procedure No. 7.7
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	6.5 K
Mass Flow Rate	~ 10 g/s	~	10 g/s
Pressure	~ 0.7 MPa		

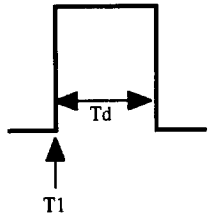
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 41.5 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

TFI I_m = 46 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 = 0.02 s

Results
Inductive heater volatage : 143V
Inductive heater current : 346.5A
I^2 integral : 967A^2 s
No quench.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.17 Time 13:08 p. 163

Run No. 82 - 3
Procedure No. 7.7
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

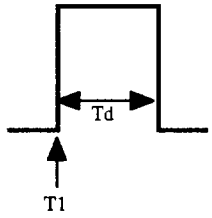
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 41.5 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 14:37 T_2 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 157V
Inductive heater current : 381A
I^2 integral : 1134A^2 s
No quench.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.17 Time 13:08 p. 164

Run No. 82 - 4
Procedure No. 7.7
Operation Mode DC

Objective
Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

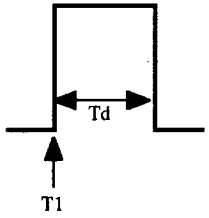
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Heater pulse



CSMC I_m = 41.5 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

TFI I_m = 46 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 ____ T_3 ____

Heater W T_d = 0.02 s

Results
Inductive heater volatage : 161V
Inductive heater current : 392A
I^2 integral : 1199A^2 s
Quench.

Remarks

CSMC-TF insert Experiment Log Date 2001.10.17 Time 15:48 p. 165

Run No. 83 - 1
Procedure No. 8.4
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 17.6kA after quench test 2.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

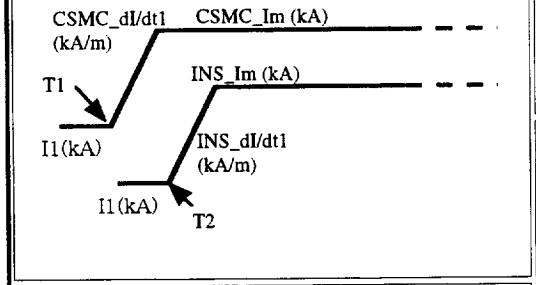
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	0.02 ms
Pre-trigger	100	2 k	100	2 k	1 k

Current pattern Double charge up



CSMC I_m = 40.7 kA I_1 = kA
dI/dt_1 = 1.2 kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

TFI I_m = 17.6 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 15:55 T_2 16:33 T_3 ____

Heater W T_d = s

Results

Remarks
Heat TF insert up is started on 15:58.
Amp gain is changed as follows since this shot.
ITF_VC_01:x1-->x10, ITF_VC_02:x1-->x10
Amp gain & low pass filters are changed as follows since this shot.
ITF_VD_ALL1:x1, 500Hz-->x1000, 0.2Hz
ITF_VD_0102:x10, 500Hz-->x100, 100Hz
ITF_VD_0203:x10, 500Hz-->x10000, 100Hz
ITF_VD_0304:x10, 500Hz-->x10000, 100Hz
ITF_VD_0405:x10, 500Hz-->x10000, 100Hz
ITF_VD_0506:x2, 500Hz-->x10000, 100Hz
ITF_VD_0607:x2, 500Hz-->x10000, 100Hz
ITF_VD_0708:x10, 500Hz-->x10000, 100Hz
ITF_VD_0809:x10, 500Hz-->x10000, 100Hz
ITF_VD_0910:x10, 500Hz-->x10000, 100Hz

CSMC-TF insert Experiment Log Date 2001.10.17 Time 15:48 p. 166

Run No. 83 - 2
Procedure No. 8.4
Operation Mode DC

Objective
Tcs measurement of TF insert at 11.4T, 17.6kA after quench test 2.

Coolant condition (before this run)

	Insert		All	
Temperature	~ 6 K	~	4.5 K	
Mass Flow Rate	~ 6 g/s	~	10 g/s	
Pressure	~ 0.7 MPa			

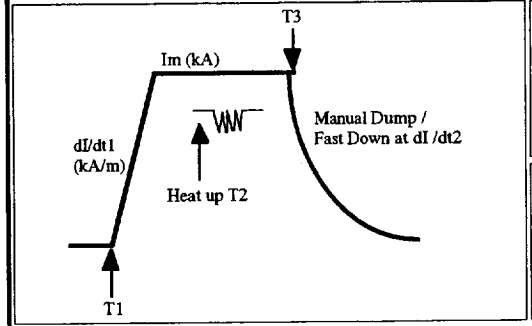
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern curr



CSMC I_m = 40.7 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

TFI I_m = 17.6 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 16:33 T_2 16:48 T_3 17:54

Heater 159 W T_d = s

Results
ITF_TC_IN=10.75K, ITF_TC_OUT=8.6K,
Tcs=9.68K(Preliminary, 500microV at VD_0405) OK.

Remarks
Charge up of CSMC and TF insert is defined by the previous shot(#83-1).

CSMC-TF insert Experiment Log

Date 2001.10.17 Time 15:48 p. 167

Run No. 83 - 3

Procedure No. 8.4

Operation Mode DC

Objective

Tcs measurement of TF insert at 11.4T, 17.6kA after quench test 2.

Coolant condition (before this run)

	Insert	All
Temperature	~ 6 K	~ 4.5 K
Mass Flow Rate	~ 6 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	

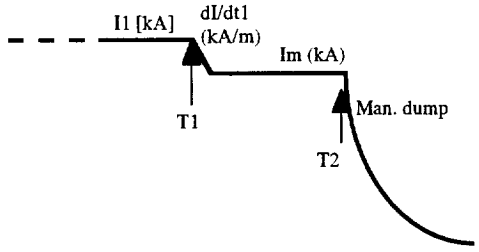
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Manual dump discharge



CSMC I_m = 40.7 kA I_1 = 40.7 kA

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

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

TFI 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 18:01 T_2 ____ T_3 ____

Heater W T_d = s

Results

Vi=567V, Vo=707V, Vins=7.6V, Taumc=17.1s, OK.

Remarks

Heater off at 18:00.

CSMC-TF insert Experiment Log

Date 2001.10.18 Time 9:30 p. 168

Run No. 84 - 1

Procedure No. 4.0

Operation Mode DC

Objective

Daily check.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 8 g/s
Pressure	~ 0.7 MPa	

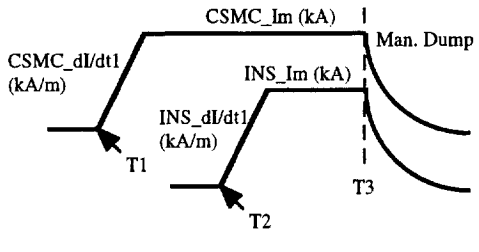
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 9:39 T_2 10:11 T_3 10:19

Heater W T_d = s

Results

Vi=128 V, Vo=161V, Vins=6.8V, Taumc=19.4s, Tauins=0.04s/19.4s, OK.

Remarks

Mass flow rate of bus bars for TF insert is 8 g/s each.

CSMC-TF insert Experiment Log

Date 2001.10.18 Time 11:00 p. 169

Run No. 85 - 1

Procedure No. 4.18

Operation Mode DC

Objective

Tcs measurement of TF insert at 5T, 46kA after quench test 2.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 8 g/s
Pressure	~ 0.7 MPa	

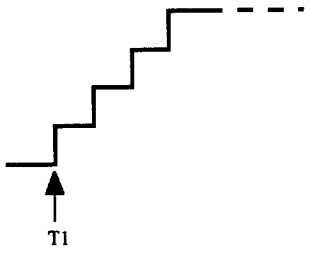
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Heater energize



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

TFI 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 11:01 T_2 ____ T_3 ____

Heater 231 W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.18 Time 11:00 p. 170

Run No. 85 - 2

Procedure No. 4.18

Operation Mode DC

Objective

Tcs measurement of TF insert at 5T, 46kA after quench test 2.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 8 g/s
Pressure	~ 0.7 MPa	

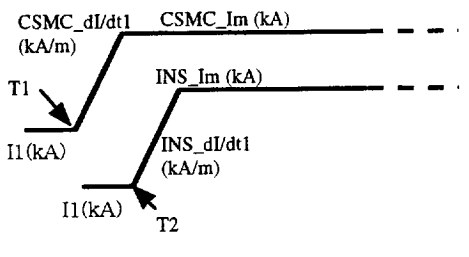
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	25 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Double charge up



CSMC I_m = 16 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

TFI I_m = 46 kA I_1 = kA

dI/dt_1 = 3 kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:10 T_2 13:36 T_3 ____

Heater 231 W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log Date 2001.10.18 Time 11:00 p. 171

Run No. 85 – 3
Procedure No. 4.18
Operation Mode DC

Objective
Tcs measurement of TF insert at 5T, 46kA after quench test 2.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 6 g/s
Pressure	~ 0.7 MPa	

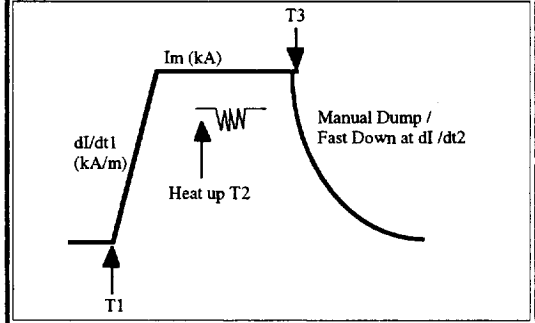
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 16 kA I_1 = kA
dI/dt_1 = kA/m kA/s dB/dt_1 = T/s
dI/dt_2 = kA/m kA/s dB/dt_2 = T/s

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 13:36 T_2 14:05 T_3 15:34

Heater W T_d = s

Results
ITF_TC_IN=13.7K, ITF_TC_OUT=9.45K, Tcs=11.8K(Preliminary, 200microV at VD_0203), OK.

Remarks
Charge up of CSMC and TF insert is defined by the previous shot(#85-2).Mass flow rate of bus bars for TF insert is 7 g/s each. Dump at 15:34 by QD. Heater off at 15:35.

CSMC-TF insert Experiment Log Date 2001.10.18 Time 15:35 p. 172

Run No. 86 – 1
Procedure No. 4.9
Operation Mode DC

Objective
Tcs measurement of TF insert at 0T, 0.6kA after quench test 2.

Coolant condition (before this run)

	All	Insert
Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 3 g/s
Pressure	~ 0.7 MPa	

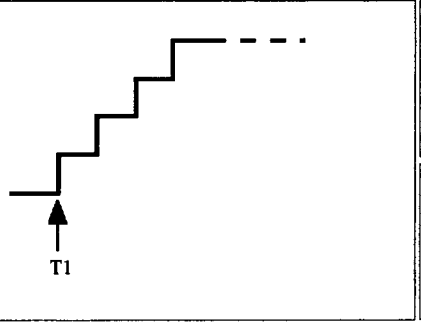
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Heater energize



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

TFI 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 15:41 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

Date 2001.10.18 Time 11:00 p. 173

Run No. 86 - 2
Procedure No. 4.9
Operation Mode DC

Objective
Tcs measurement of TF insert at 0T, 0.6kA after quench test 2.

Coolant condition (before this run)

	All		Insert
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	3 g/s
Pressure	~ 0.7 MPa		

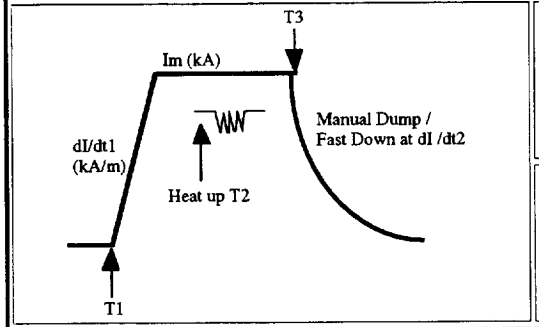
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



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

TFI I_m = 0.6 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 17:11 T_3 18:34

Heater W T_d = s

Results

Remarks
Mass flow rate of bus bars for TF insert is 3 g/s each.

CSMC-TF insert Experiment Log

Date 2001.10.19 Time 9:30 p. 174

Run No. 87 - 1
Procedure No. 4.0
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	~ 0.7 MPa		

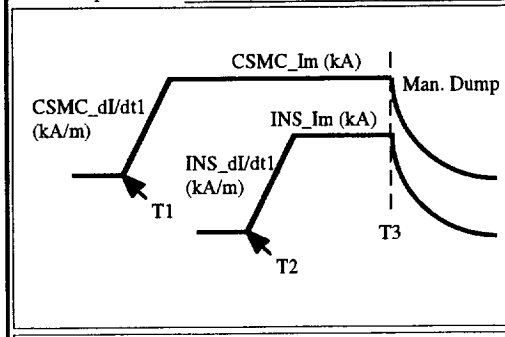
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	10 ms	1 s	10 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Simultaneous daily check



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

TFI I_m = 5 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 9:40 T_2 9:55 T_3 10:02

Heater W T_d = s

Results
Vi=128V, Vo=161V, Vins=6.8V, Taumc=19.1s, Tauins=0.04s/18.5s, OK.

Remarks
Check the electric pefromance only.

CSMC-TF insert Experiment Log Date 2001.10.19 Time 10:23 p. 175

Run No. 88 - 1
Procedure No. 8.15
Operation Mode DC

Objective
TF insert 100% charge (13T-46kA), confirm the performance. Calibration of TWO temperature sensors under low magnetic field at 4.5K.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

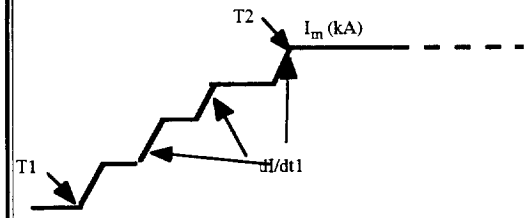
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Ramp up with steps



CSMC I_m = 45.2 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

TFI 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 10:30 T_2 12:03 T_3 ____

Heater W T_d = s

Results

Remarks
CSMC is charged 41.5kA up with hold at 2.5kA, 5.0kA, 7.5kA, 10.6kA.

CSMC-TF insert Experiment Log Date 2001.10.19 Time 10:23 p. 176

Run No. 88 - 2
Procedure No. 8.15
Operation Mode DC

Objective
TF insert 100% charge (13T-46kA), confirm the performance.

Coolant condition (before this run)

All			
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

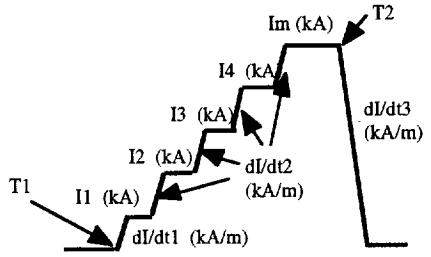
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Trapezoidal with four steps



CSMC I_m = 45.2 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

TFI I_m = 46 kA I_1 = kA
dI/dt_1 = 3 kA/m kA/s
dI/dt_2 = kA/m kA/s
Cyclic Test ____ cycles

Time T_1 12:10 T_2 13:11 T_3 13:11

Heater W T_d = s

Results

Remarks
TF insert is charged 46kA up with hold at 10kA, 20kA, 30kA, 40kA.

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Run No. 89 - 1

Procedure No. 1.12

Operation Mode DC

Objective

Tcs measurement for 1st layer of CSMC.

Coolant condition (before this run)

	All		
Temperature	~ 4.5 K	~	K
Mass Flow Rate	~ 10 g/s	~	g/s
Pressure	~ 0.7 MPa		

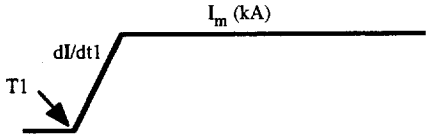
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Charge up and hold



CSMC I_m = 46 kA I_t = 45.2 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

TFI I_m = 0 kA I_t = kA

dI/dt_1 = kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:38 T_2 ____ T_3 ____

Heater W T_d = s

Results

Remarks

CSMC-TF insert Experiment Log

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Run No. 89 - 2

Procedure No. 1.12

Operation Mode DC

Objective

Tcs measurement for 1st layer of CSMC.

Coolant condition (before this run)

	All		1A&B
Temperature	~ 4.5 K	~	4.5 K
Mass Flow Rate	~ 10 g/s	~	4 g/s
Pressure	~ 0.7 MPa		

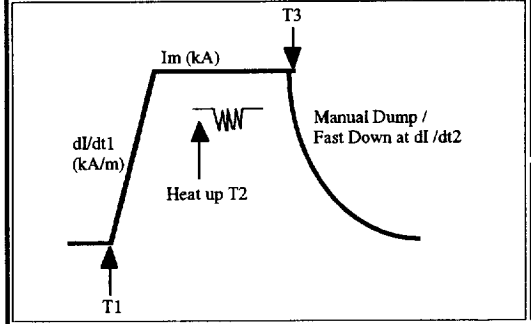
Facility condition

	Power Supply	Resistor
CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm

Data Acquisition System (DAS) CSMC+TFI DC1

	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H
Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	100	2 k	100	2 k	

Current pattern Tcs



CSMC I_m = 46 kA I_t = 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

TFI I_m = 0 kA I_t = kA

dI/dt_1 = FD kA/m kA/s

dI/dt_2 = kA/m kA/s

Cyclic Test ____ cycles

Time T_1 13:38 T_2 14:14 T_3 16:06

Heater W T_d = s

Results

Remarks

Charge up of CSMC is defined by the previous shot(#89-1). Heater off at 16:06

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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 eV = 1.60218 × 10^{-19} J

1 u = 1.66054 × 10^{-27} 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·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 Å = 0.1 nm = 10^{-10} m

1 b = 100 fm^2 = 10^{-28} m^2

1 bar = 0.1 MPa = 10^5 Pa

1 Gal = 1 cm/s^2 = 10^{-2} m/s^2

1 Ci = 3.7 × 10^{10} Bq

1 R = 2.58 × 10^{-4} C/kg

1 rad = 1 cGy = 10^{-2} Gy

1 rem = 1 cSv = 10^{-2} 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(=10^5 dyn)	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 = 10^4 St(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(=10^7 erg)	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）

TF INSERT EXPERIMENT LOG BOOK –2ND EXPERIMENT OF CS MODEL COIL–