

JAERI-Tech
2001-085

JP0250013



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

December 2001

Makoto SUGIMOTO, Takaaki ISONO, Kunihiro MATSUI
Yoshihiko NUNOYA, Fumiaki TSUTSUMI*, Tadatoshi TAMIYA*
Masayuki OSHIKIRI, Hiroshi WAKABAYASHI*, Kiyoshi OKUNO
and Hiroshi TSUJI

日本原子力研究所
Japan Atomic Energy Research Institute

本レポートは、日本原子力研究所が不定期に公刊している研究報告書です。
入手の問合せは、日本原子力研究所研究情報部研究情報課（〒319-1195 茨城県那珂郡東海村）あて、お申し越しください。なお、このほかに財団法人原子力弘済会資料センター（〒319-1195 茨城県那珂郡東海村日本原子力研究所内）で複写による実費頒布をおこなっております。

This report is issued irregularly.

Inquiries about availability of the reports should be addressed to Research Information Division, Department of Intellectual Resources, Japan Atomic Energy Research Institute, Tokai-mura, Naka-gun, Ibaraki-ken 〒319-1195, Japan.

©Japan Atomic Energy Research Institute, 2001

編集兼発行 日本原子力研究所

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

Makoto SUGIMOTO, Takaaki ISONO, Kunihiro MATSUI,
Yoshihiko NUNOYA, Fumiaki TSUTSUMI^{*1}, Tadatoshi TAMIYA^{*2},
Masayuki OSHIKIRI, Hiroshi WAKABAYASHI^{*3}, Kiyoshi OKUNO
and Hiroshi TSUJI

Department of Fusion Engineering Research
Naka Fusion Research Establishment
Japan Atomic Energy Research Institute
Naka-machi, Naka-gun, Ibaraki-ken

(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

*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・磯野 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。

那珂研究所：〒311-0193 茨城県那珂郡那珂町向山 801-1

*1 株式会社原子力資料サービス

*2 株式会社ケーシーエス

*3 原子力エンジニアリング株式会社

Contents

1. TF Insert Experiment Log List	1
2. TF Insert Experiment Log Sheets	13
Acknowledgement	104

目次

1. TF インサート・コイル実験ログ一覧	1
2. TF インサート・コイル実験ログシート	13
謝辞	104

This is a blank page.

1 TF Insert Experiment Log List

This is a blank page.

Test Procedure of TF Insert

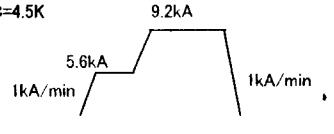
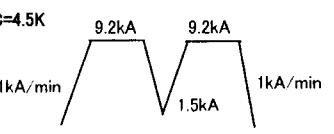
<u>Revision</u>
Y.Takahashi (2001.3.1)
S.Egorov (2001.3.12)
Draft #3 S.Egorov (2001.3.26)
Draft #4 T.Isono (2001.4.5)
Draft #5.1 T.Isono (2001.8.29)
Draft #5.2 T.Isono (2001.10.3)

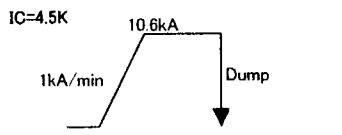
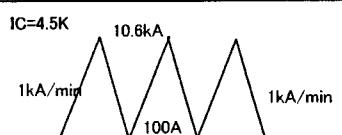
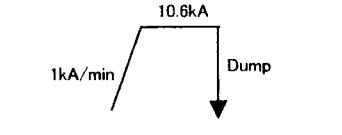
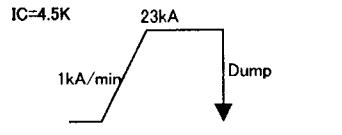
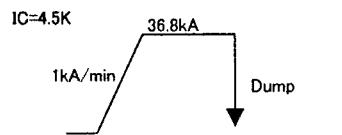
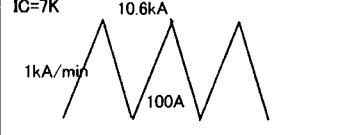
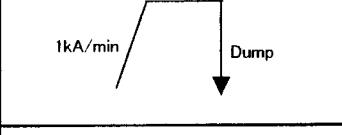
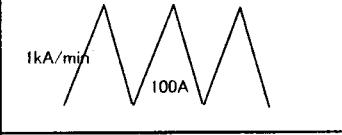
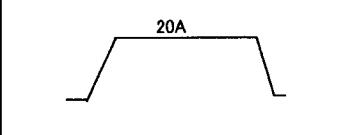
week	day	Run No.	No.	Test Item	Red : Current of TFIC Blue : Current of CSMC

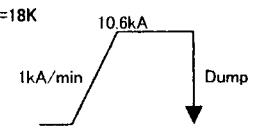
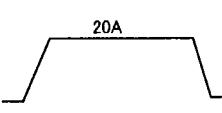
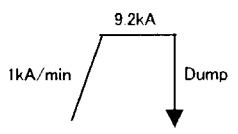
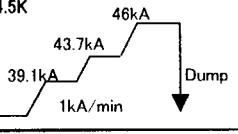
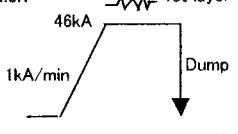
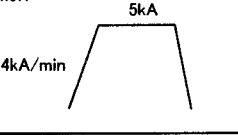
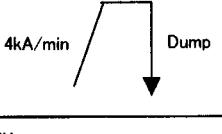
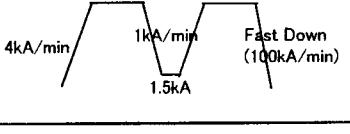
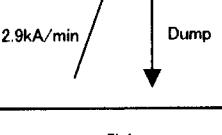
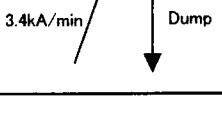
0 Cooldown and hydraulic tests

	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	0.3	Heaters calibration for AC loss. Energize inlet heaters(MCI_HR_IN, MCO_HR1_IN1,2, ITF_HR_IN).	IC=4.5K -VV- R.H.
	14,Sep	0.4	Heaters calibration for Tcs. Energize inlet heater(ITF_HR_IN) up to 18K	IC=4.5K -VV- R.H.

**TF insert virgin state AC loss test before
charge (TFCI: open; CSMC: $t_d=20$ s)**

1 st week	1 st day (17,Sep)	3-1	1.1	Check of Protection System	
		4-1	1.1	Check of Protection System	

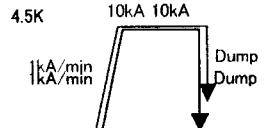
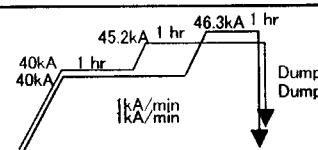
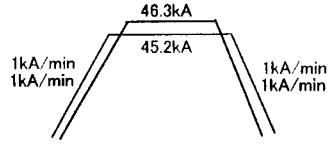
	5-1	1.3	CSMC 23% ramp up with 1 kA/min & M. Dump. TFCI 3T coupling loss measurement	
	6-1	1.2	CSMC 23% triangular ramp up/down with 1 kA/min three times. TFCI 3T hysteresis loss measurement at 4.5K	
2nd day (18,Sep)	7-1	1.0	daily check	
	8-1	1.4	CSMC 50% ramp up with 1 kA/min & M. Dump.	
	9-1	1.5	CSMC 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	IC=18K 
	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	IC=4.5K 
	20-1,2	1.12 Charge CSMC up to 100%, energize resistive heater at inlet of 1st layer, and measure Tcs.	IC=4.5K 
2 TFCI self field test (TFCI: td=0.2 s)			
5th day (21,Sep)	21-1	2.1 Check of Protection System	IC=4.5K 
	22-1	2.1 Check of Protection System	
	23-1	2.1 Check of Protection System	IC=4.5K 
	24-1	2.1 Check of Protection System	
	25-1	2.1 Check of Protection System	

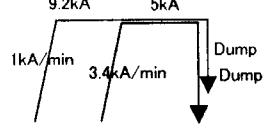
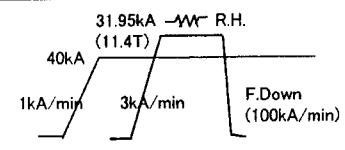
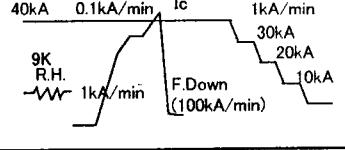
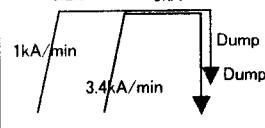
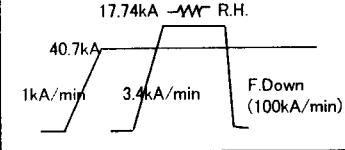
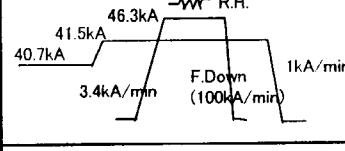
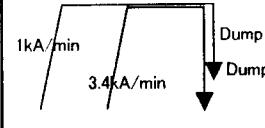
2 nd week 6th day (24,Sep) the Autumnal Equinox	26-1	2.2	TFCI 46kA ramp up at 3kA/min rate with steps at 10, 20, 30, 40 kA and down. Each step and flat top keep 1 hour.	IC=4.5K Flat top keep 1 hour 3.4kA/min 40kA 46.3kA 10kA 20kA 30kA 46.3kA 3.4kA/min
	27-1	2.5	TFCI 46kA up and fast down. keep flat top 1 hour to measure loop current.	IC=4.5K Flat top keep 1 hour 3.4kA/min 46.3kA Fast Down (100kA/min)
	28-1	2.0	daily check	IC=4.5K 5kA 3.4kA/min Dump
	29-1	2.3	20 kA at 3 kA/min ramp up rate with 1 hour flat top and M. Dump at 20 kA.	IC=4.5K Flat top keep 1 hour 20kA 20kA 3.4kA/min Dump
	30-1	2.4	46 kA at 3 kA/min ramp up rate with 1 hour flat top and M. Dump at 46 kA.	IC=4.5K Flat top keep 1 hour 46.3kA 46.3kA 3.4kA/min Dump

3 TFCI nominal current test (CSMC $t_d=20$ s)

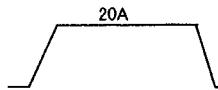
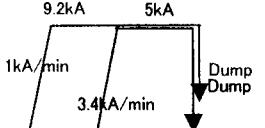
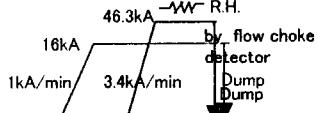
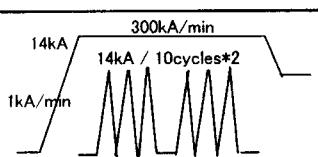
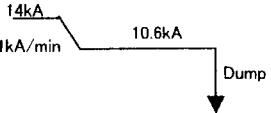
7th day (25,Sep)	31-1	3.1	Check of Protection System	4.5K 10kA 10kA 1kA/min 1kA/min 1kA/min 1kA/min
	32-1	3.1	Check of Protection System	4.5K 10kA 10kA 1kA/min 1kA/min Dump Dump
	33-1	3.0	daily check	4.5K 10kA 10kA 1kA/min 1kA/min Dump Dump
	34-1	3.2	Charge the CSMC and TFCI simultaneously step by step 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.	4.5K Flat top keep 1 hour 20kA 20kA 10kA 10kA 1kA/min 1kA/min Dump Dump
	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.	4.5K Flat top keep 1 hour 40kA 40.2kA 30kA 30kA 1kA/min 1kA/min Dump Dump

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.	

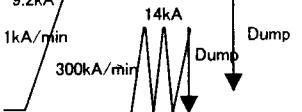
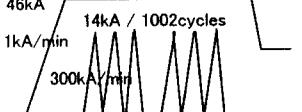
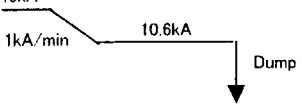
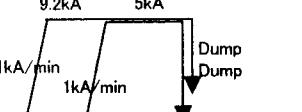
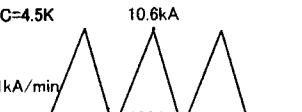
4 I_c & T_{CS} measurements

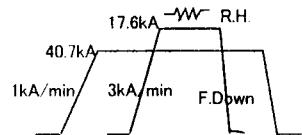
9th day (27,Sep)	39-1	4.0	daily check	
	40-1 40-2 40-3	4.13	Charge CSMC up to (11)T, charge TFCI up to 31.8kA, energize inlet heater of TFCI, and measure Tcs of TFCI Ref. Strand data: 11.4T, 27.6A, 9K	
	41-1 41-2	4.19	Charge CSMC upto (11)T, energize inlet heater of TFCI up to Tcs result of 4.13, and 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	
3 rd week	46-1	4.0	daily check	

		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	

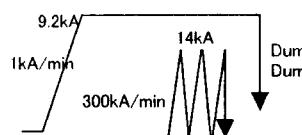
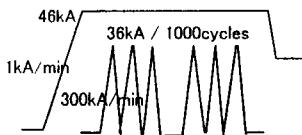
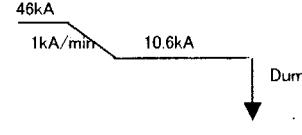
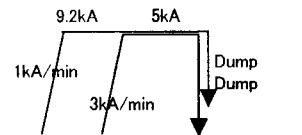
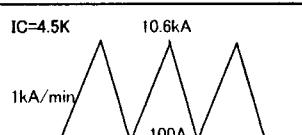
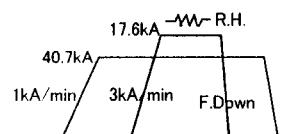
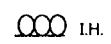
	55-1 55-2 55-3		20A current was run in the coil in order to confirm the normal conduction.	
15th day (5,Oct)	56-1	4.0	daily check	
	57-1 57-2 57-3	4.18	Charge CSMC up to (4.5)T, charge TFCI up to 46kA, energize inlet heater of TFCI, and measure Tcs of TFCI Strand data: Series at 5T	
	58-1	5.1	Check of 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%

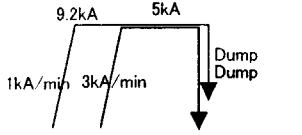
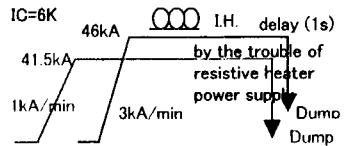
4 th week	59-1	5.0	Check of Protection System	
16th day (8,Oct) Health Sports Day	60-1 60-2	5.2	CSMC 12 T; 1002 cycles 0 – 14 kA – 0.	
	60-3	5.3	CSMC 23% ramp up with 1 kA/min & M. Dump. TFCI 3T coupling loss measurement	
17th day (9,Oct)	61-1	4.0	daily check	
	62-1	5.5	CSMC 23% triangular ramp up/down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

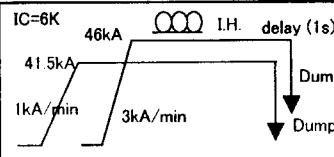
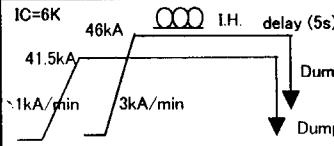
	63-1 63-2 63-3	5.6	Charge CSMC up to (11)T, charge TFCI up to 17.6kA, energize inlet heater of TFCI, and measure Tcs of TFCI Strand data:	
--	----------------------	------------	---	---

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	

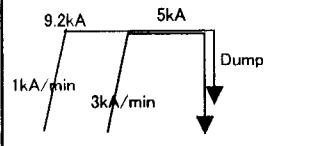
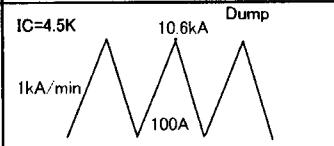
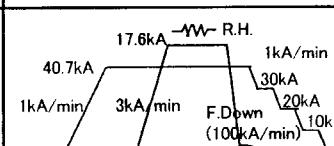
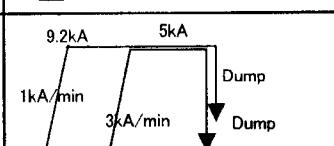
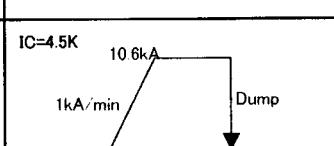
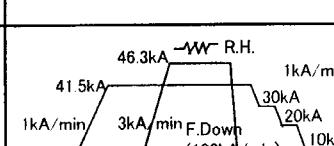
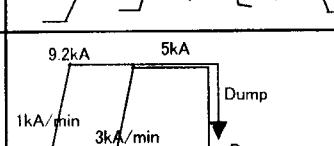
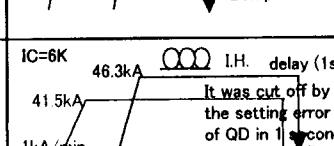
7 Stability and Quench test

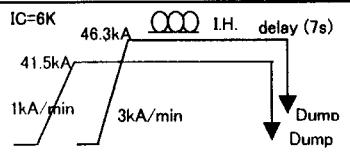
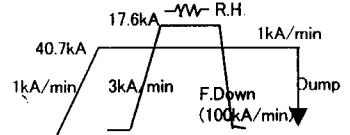
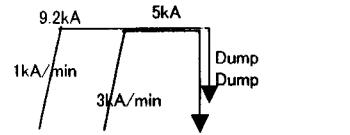
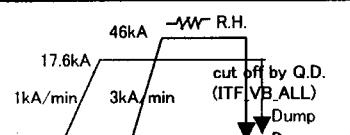
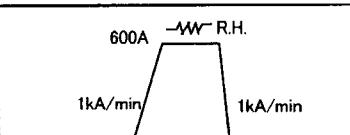
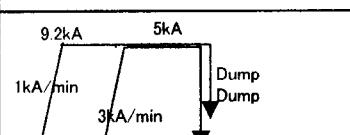
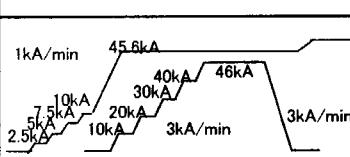
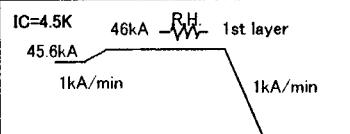
20th day (12,Oct)	70-1	4.0	daily check	
	71-1,2,3,4, 5,6,7,8,9, 10,11	7.5	Charge CSMC up to (12)T, charge TFCI up to 46kA, energize inductive heater until quench. Detection delay is 1s.	

	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.	

**AC loss and I_c & T_{cs} measurements after the
quench tests**

8

5 th 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 T_{cs} of TFCI Strand data: calibration of TWO sensor	
	77-1	4.0	daily check	
22th day (16,Oct)	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 T_{cs} 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	
	87-1	4.0	daily check	
25th day (19,Oct)	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

This is a blank page.

CSMC-TF insert Experiment Log		Date 2001.9.14	Time 10:00	P. 1
Run No. <u>2</u> - <u>1</u>		Objective		
Procedure No. <u>0.4</u>		Check temperature profile for Tcs measurement of TF insert.		
Operation Mode <u>No Current</u>				
Coolant condition (before this run)				
Insert	All	Facility condition		
Temperature	~ 4.5 K	Power Supply	Resistor	
Mass Flow Rate	~ 10 g/s	CSMC		
Pressure	~ 0.6 MPa	TFI		
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	Data Acquisition System (DAS)		
Sampling	1 s	ADC384L	ADC384H	ADC64L ADC64H ADC32H
Pre-trigger	100			
Current pattern Heater energize				
CSMC	$I_m = kA$	$I_1 = kA$		
$dI/dt_1 =$	kA/m	$dB/dt_1 =$	T/s	
$dI/dt_2 =$	kA/m	$dB/dt_2 =$	T/s	
TFI	$I_m = kA$	$I_1 = kA$		
$dI/dt_1 =$	kA/m	$dB/dt_1 =$	T/s	
$dI/dt_2 =$	kA/m	$dB/dt_2 =$	T/s	
Cyclic Test	cycles	Cyclic Test cycles		
Time	T_1 10:22	T_2 11:55	T_3	Heater 517 W $T_d =$ s
Remarks				
Heat up by I _{TF} , HR, IN				
Max. Heater power = 517 W Heater off = 11:55 OK.				
Results				

CSMC-TF insert Experiment Log		Date 2001.9.14	Time 10:00	P. 1
Run No. <u>2</u> - <u>2</u>		Objective		
Procedure No. <u>0.4</u>		Check temperature profile for Tcs measurement of TF insert. Temperature is up to 18K.		
Operation Mode <u>No Current</u>				
Coolant condition (before this run)				
Insert	All	Facility condition		
Temperature	~ 4.5 K	Power Supply	Resistor	
Mass Flow Rate	~ 10 g/s	CSMC		
Pressure	~ 0.6 MPa	TFI		
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	Data Acquisition System (DAS)		
Sampling	1 s	ADC384L	ADC384H	ADC64L ADC64H ADC32H
Pre-trigger	100			
Current pattern Heater energize				
CSMC	$I_m = kA$	$I_1 = kA$		
$dI/dt_1 =$	kA/m	$dB/dt_1 =$	T/s	
$dI/dt_2 =$	kA/m	$dB/dt_2 =$	T/s	
TFI	$I_m = kA$	$I_1 = kA$		
$dI/dt_1 =$	kA/m	$dB/dt_1 =$	T/s	
$dI/dt_2 =$	kA/m	$dB/dt_2 =$	T/s	
Cyclic Test	cycles	Cyclic Test cycles		
Time	T_1 10:22	T_2 11:55	T_3	Heater 517 W $T_d =$ s
Remarks				
Heat up by I _{TF} , HR, IN				
Max. Heater power = 517 W Heater off = 11:55 OK.				
Results				

CSMC-TF insert Experiment Log		Date 2001.9.17	Time 11:00	P. 3									
Objective													
Run No.	3 - 1	Run No.	4 - 1										
Procedure No.	1.1	Procedure No.	1.1										
Operation Mode	DC	Operation Mode	DC										
Coolant condition (before this run)													
Facility condition													
Temperature	~ 4.5 K	Power Supply	Resistor	Resistor									
Mass Flow Rate	~ 10 g/s	CSMC	50 kA	31.4mohm									
Pressure	~ 0.6 MPa	TFI											
Data Acquisition System (DAS)	CSMC+TFI DC1												
Data Acquisition System (DAS)													
ADC384L ADC384H ADC64L ADC64H ADC32H													
Sampling	1 s	10 ms	1 s	10 ms									
Pre-trigger	300	300	300	300									
Coolant condition (before this run)													
Facility condition													
Temperature	~ 4.5 K	Power Supply	Resistor	Resistor									
Mass Flow Rate	~ 10 g/s	CSMC	50 kA	31.4mohm									
Pressure	~ 0.6 MPa	TFI											
Data Acquisition System (DAS)	CSMC+TFI DC1												
Data Acquisition System (DAS)													
ADC384L ADC384H ADC64L ADC64H ADC32H													
Sampling	1 s	10 ms	1 s	10 ms									
Pre-trigger	300	300	300	300									
Current pattern Trapezoidal													
<table border="1"> <tr> <td>CSMC</td> <td>$I_m = 9.2 \text{ kA}$</td> <td>$I_1 = \text{kA}$</td> </tr> <tr> <td></td> <td>$dI/dt_1 = 1 \text{ kA/m}$</td> <td>$dB/dt_1 = \text{T/s}$</td> </tr> <tr> <td></td> <td>$dI/dt_2 = 1 \text{ kA/m}$</td> <td>$dB/dt_2 = \text{T/s}$</td> </tr> </table>					CSMC	$I_m = 9.2 \text{ kA}$	$I_1 = \text{kA}$		$dI/dt_1 = 1 \text{ kA/m}$	$dB/dt_1 = \text{T/s}$		$dI/dt_2 = 1 \text{ kA/m}$	$dB/dt_2 = \text{T/s}$
CSMC	$I_m = 9.2 \text{ kA}$	$I_1 = \text{kA}$											
	$dI/dt_1 = 1 \text{ kA/m}$	$dB/dt_1 = \text{T/s}$											
	$dI/dt_2 = 1 \text{ kA/m}$	$dB/dt_2 = \text{T/s}$											
<table border="1"> <tr> <td>TFI</td> <td>$I_m = 9.2 \text{ kA}$</td> <td>$I_1 = \text{kA}$</td> </tr> <tr> <td></td> <td>$dI/dt_1 = \text{kA/m}$</td> <td>$dB/dt_1 = \text{T/s}$</td> </tr> <tr> <td></td> <td>$dI/dt_2 = \text{kA/m}$</td> <td>$dB/dt_2 = \text{T/s}$</td> </tr> </table>					TFI	$I_m = 9.2 \text{ kA}$	$I_1 = \text{kA}$		$dI/dt_1 = \text{kA/m}$	$dB/dt_1 = \text{T/s}$		$dI/dt_2 = \text{kA/m}$	$dB/dt_2 = \text{T/s}$
TFI	$I_m = 9.2 \text{ kA}$	$I_1 = \text{kA}$											
	$dI/dt_1 = \text{kA/m}$	$dB/dt_1 = \text{T/s}$											
	$dI/dt_2 = \text{kA/m}$	$dB/dt_2 = \text{T/s}$											
<p>Cyclic Test _____ cycles</p>													
<table border="1"> <tr> <td>Heater</td> <td>$W = \text{s}$</td> </tr> <tr> <td>Time</td> <td>$T_1 = 11:15$</td> <td>$T_2 = 11:41$</td> <td>$T_3 =$</td> <td></td> </tr> </table>					Heater	$W = \text{s}$	Time	$T_1 = 11:15$	$T_2 = 11:41$	$T_3 =$			
Heater	$W = \text{s}$												
Time	$T_1 = 11:15$	$T_2 = 11:41$	$T_3 =$										
Remarks													
Results													
OK.													
Remarks													
Since this shot, amplifier gain is changed as follows ITF_VD_ALL:x10000 -> x1000 ITF_VD_0102:x1000 -> x100													
Results													
OK.													

CSMC-TF insert Experiment Log		Date 2001.9.17	Time 11:00	P. 3									
Objective													
Run No.	3 - 1	Run No.	4 - 1										
Procedure No.	1.1	Procedure No.	1.1										
Operation Mode	DC	Operation Mode	DC										
Coolant condition (before this run)													
Facility condition													
Temperature	~ 4.5 K	Power Supply	Resistor	Resistor									
Mass Flow Rate	~ 10 g/s	CSMC	50 kA	31.4mohm									
Pressure	~ 0.6 MPa	TFI											
Data Acquisition System (DAS)	CSMC+TFI DC1												
Data Acquisition System (DAS)													
ADC384L ADC384H ADC64L ADC64H ADC32H													
Sampling	1 s	10 ms	1 s	10 ms									
Pre-trigger	300	300	300	300									
Coolant condition (before this run)													
Facility condition													
Temperature	~ 4.5 K	Power Supply	Resistor	Resistor									
Mass Flow Rate	~ 10 g/s	CSMC	50 kA	31.4mohm									
Pressure	~ 0.6 MPa	TFI											
Data Acquisition System (DAS)	CSMC+TFI DC1												
Data Acquisition System (DAS)													
ADC384L ADC384H ADC64L ADC64H ADC32H													
Sampling	1 s	10 ms	1 s	10 ms									
Pre-trigger	300	300	300	300									
Current pattern Trapezoidal													
<table border="1"> <tr> <td>CSMC</td> <td>$I_m = 9.2 \text{ kA}$</td> <td>$I_1 = \text{kA}$</td> </tr> <tr> <td></td> <td>$dI/dt_1 = 1 \text{ kA/m}$</td> <td>$dB/dt_1 = \text{T/s}$</td> </tr> <tr> <td></td> <td>$dI/dt_2 = 1 \text{ kA/m}$</td> <td>$dB/dt_2 = \text{T/s}$</td> </tr> </table>					CSMC	$I_m = 9.2 \text{ kA}$	$I_1 = \text{kA}$		$dI/dt_1 = 1 \text{ kA/m}$	$dB/dt_1 = \text{T/s}$		$dI/dt_2 = 1 \text{ kA/m}$	$dB/dt_2 = \text{T/s}$
CSMC	$I_m = 9.2 \text{ kA}$	$I_1 = \text{kA}$											
	$dI/dt_1 = 1 \text{ kA/m}$	$dB/dt_1 = \text{T/s}$											
	$dI/dt_2 = 1 \text{ kA/m}$	$dB/dt_2 = \text{T/s}$											
<table border="1"> <tr> <td>TFI</td> <td>$I_m = 9.2 \text{ kA}$</td> <td>$I_1 = \text{kA}$</td> </tr> <tr> <td></td> <td>$dI/dt_1 = \text{kA/m}$</td> <td>$dB/dt_1 = \text{T/s}$</td> </tr> <tr> <td></td> <td>$dI/dt_2 = \text{kA/m}$</td> <td>$dB/dt_2 = \text{T/s}$</td> </tr> </table>					TFI	$I_m = 9.2 \text{ kA}$	$I_1 = \text{kA}$		$dI/dt_1 = \text{kA/m}$	$dB/dt_1 = \text{T/s}$		$dI/dt_2 = \text{kA/m}$	$dB/dt_2 = \text{T/s}$
TFI	$I_m = 9.2 \text{ kA}$	$I_1 = \text{kA}$											
	$dI/dt_1 = \text{kA/m}$	$dB/dt_1 = \text{T/s}$											
	$dI/dt_2 = \text{kA/m}$	$dB/dt_2 = \text{T/s}$											
<p>Cyclic Test _____ cycles</p>													
<table border="1"> <tr> <td>Heater</td> <td>$W = \text{s}$</td> </tr> <tr> <td>Time</td> <td>$T_1 = 13:22$</td> <td>$T_2 =$</td> <td>$T_3 =$</td> <td></td> </tr> </table>					Heater	$W = \text{s}$	Time	$T_1 = 13:22$	$T_2 =$	$T_3 =$			
Heater	$W = \text{s}$												
Time	$T_1 = 13:22$	$T_2 =$	$T_3 =$										
Remarks													
Results													
OK.													
Remarks													
Results													
OK.													

CSMC-TF insert Experiment Log			Date 2001.9.17	Time 14:38	P. 5																								
Run No. 5	-	1	Objective Measure coupling loss of TFCI at 3T.																										
Procedure No. 1.3																													
Operation Mode DC																													
Coolant condition (before this run)																													
<table border="1"> <thead> <tr> <th colspan="3">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>CSMC 50 kA</td> <td>31.4mohm</td> </tr> <tr> <td>Temperature</td> <td>~ g/s</td> <td>~</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ K</td> </tr> <tr> <td>Pressure</td> <td>~ 0.6 MPa</td> <td>~ g/s</td> </tr> </tbody> </table>						Facility condition				Power Supply	Resistor	All	CSMC 50 kA	31.4mohm	Temperature	~ g/s	~	Mass Flow Rate	~ 10 g/s	~ K	Pressure	~ 0.6 MPa	~ g/s						
Facility condition																													
	Power Supply	Resistor																											
All	CSMC 50 kA	31.4mohm																											
Temperature	~ g/s	~																											
Mass Flow Rate	~ 10 g/s	~ K																											
Pressure	~ 0.6 MPa	~ g/s																											
<table border="1"> <thead> <tr> <th colspan="3">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>CSMC 50 kA</td> <td>31.4mohm</td> </tr> <tr> <td>Temperature</td> <td>~ 4.5 K</td> <td>~</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~</td> </tr> <tr> <td>Pressure</td> <td>~ 0.6 MPa</td> <td>~ g/s</td> </tr> </tbody> </table>						Facility condition				Power Supply	Resistor	All	CSMC 50 kA	31.4mohm	Temperature	~ 4.5 K	~	Mass Flow Rate	~ 10 g/s	~	Pressure	~ 0.6 MPa	~ g/s						
Facility condition																													
	Power Supply	Resistor																											
All	CSMC 50 kA	31.4mohm																											
Temperature	~ 4.5 K	~																											
Mass Flow Rate	~ 10 g/s	~																											
Pressure	~ 0.6 MPa	~ g/s																											
Data Acquisition System (DAS) CSMC+TFI DC1																													
<table border="1"> <thead> <tr> <th colspan="3">Data Acquisition System (DAS) CSMC+TFI DC1</th> </tr> <tr> <th></th> <th>ADC384L ADC384H ADC64L ADC64H ADC32H</th> <th></th> </tr> </thead> <tbody> <tr> <td>Sampling</td> <td>1 s</td> <td>10 ms</td> </tr> <tr> <td>Pre-trigger</td> <td>300</td> <td>300</td> </tr> </tbody> </table>						Data Acquisition System (DAS) CSMC+TFI DC1				ADC384L ADC384H ADC64L ADC64H ADC32H		Sampling	1 s	10 ms	Pre-trigger	300	300												
Data Acquisition System (DAS) CSMC+TFI DC1																													
	ADC384L ADC384H ADC64L ADC64H ADC32H																												
Sampling	1 s	10 ms																											
Pre-trigger	300	300																											
Data Acquisition System (DAS) CSMC+TFI DC1																													
<table border="1"> <thead> <tr> <th colspan="3">Data Acquisition System (DAS) CSMC+TFI DC1</th> </tr> <tr> <th></th> <th>ADC384L ADC384H ADC64L ADC64H ADC32H</th> <th></th> </tr> </thead> <tbody> <tr> <td>Sampling</td> <td>1 s</td> <td>10 ms</td> </tr> <tr> <td>Pre-trigger</td> <td>300</td> <td>300</td> </tr> </tbody> </table>						Data Acquisition System (DAS) CSMC+TFI DC1				ADC384L ADC384H ADC64L ADC64H ADC32H		Sampling	1 s	10 ms	Pre-trigger	300	300												
Data Acquisition System (DAS) CSMC+TFI DC1																													
	ADC384L ADC384H ADC64L ADC64H ADC32H																												
Sampling	1 s	10 ms																											
Pre-trigger	300	300																											
Current pattern Triple Triangular																													
<table border="1"> <thead> <tr> <th colspan="3">CSMC</th> </tr> <tr> <td>$I_m =$</td> <td>10.6</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>1</td> <td>$kA/m dB/dt_1 =$</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>1</td> <td>$kA/m dB/dt_2 =$</td> </tr> </thead> <tbody> <tr> <td>TFI</td> <td>$I_m =$</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/m</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/s</td> <td>kA/m</td> </tr> <tr> <td>Cyclic Test</td> <td>kA/s</td> <td>cycles</td> </tr> </tbody> </table>						CSMC			$I_m =$	10.6	kA	$dI/dt_1 =$	1	$kA/m dB/dt_1 =$	$dI/dt_2 =$	1	$kA/m dB/dt_2 =$	TFI	$I_m =$	kA	$dI/dt_1 =$	kA/m	kA/m	$dI/dt_2 =$	kA/s	kA/m	Cyclic Test	kA/s	cycles
CSMC																													
$I_m =$	10.6	kA																											
$dI/dt_1 =$	1	$kA/m dB/dt_1 =$																											
$dI/dt_2 =$	1	$kA/m dB/dt_2 =$																											
TFI	$I_m =$	kA																											
$dI/dt_1 =$	kA/m	kA/m																											
$dI/dt_2 =$	kA/s	kA/m																											
Cyclic Test	kA/s	cycles																											
<table border="1"> <thead> <tr> <th colspan="3">CSMC</th> </tr> <tr> <td>$I_m =$</td> <td>10.6</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>1</td> <td>$kA/m dB/dt_1 =$</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>1</td> <td>$kA/m dB/dt_2 =$</td> </tr> </thead> <tbody> <tr> <td>TFI</td> <td>$I_m =$</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/m</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/s</td> <td>kA/m</td> </tr> <tr> <td>Cyclic Test</td> <td>kA/s</td> <td>cycles</td> </tr> </tbody> </table>						CSMC			$I_m =$	10.6	kA	$dI/dt_1 =$	1	$kA/m dB/dt_1 =$	$dI/dt_2 =$	1	$kA/m dB/dt_2 =$	TFI	$I_m =$	kA	$dI/dt_1 =$	kA/m	kA/m	$dI/dt_2 =$	kA/s	kA/m	Cyclic Test	kA/s	cycles
CSMC																													
$I_m =$	10.6	kA																											
$dI/dt_1 =$	1	$kA/m dB/dt_1 =$																											
$dI/dt_2 =$	1	$kA/m dB/dt_2 =$																											
TFI	$I_m =$	kA																											
$dI/dt_1 =$	kA/m	kA/m																											
$dI/dt_2 =$	kA/s	kA/m																											
Cyclic Test	kA/s	cycles																											
<table border="1"> <thead> <tr> <th colspan="3">Heater</th> </tr> <tr> <td>W</td> <td>$T_d =$</td> <td>s</td> </tr> </thead> <tbody> <tr> <td>Time</td> <td>T_1 13:38</td> <td>T_2 15:24</td> </tr> <tr> <td></td> <td>T_3 _____</td> <td></td> </tr> </tbody> </table>						Heater			W	$T_d =$	s	Time	T_1 13:38	T_2 15:24		T_3 _____													
Heater																													
W	$T_d =$	s																											
Time	T_1 13:38	T_2 15:24																											
	T_3 _____																												
Remarks																													
Results OK.																													

CSMC-TF insert Experiment Log			Date 2001.9.17	Time 14:38	P. 5																								
Run No. 5	-	1	Objective Measure coupling loss of TFCI at 3T.																										
Procedure No. 1.3																													
Operation Mode DC																													
Coolant condition (before this run)																													
<table border="1"> <thead> <tr> <th colspan="3">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>CSMC 50 kA</td> <td>31.4mohm</td> </tr> <tr> <td>Temperature</td> <td>~ g/s</td> <td>~</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ K</td> </tr> <tr> <td>Pressure</td> <td>~ 0.6 MPa</td> <td>~ g/s</td> </tr> </tbody> </table>						Facility condition				Power Supply	Resistor	All	CSMC 50 kA	31.4mohm	Temperature	~ g/s	~	Mass Flow Rate	~ 10 g/s	~ K	Pressure	~ 0.6 MPa	~ g/s						
Facility condition																													
	Power Supply	Resistor																											
All	CSMC 50 kA	31.4mohm																											
Temperature	~ g/s	~																											
Mass Flow Rate	~ 10 g/s	~ K																											
Pressure	~ 0.6 MPa	~ g/s																											
<table border="1"> <thead> <tr> <th colspan="3">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>CSMC 50 kA</td> <td>31.4mohm</td> </tr> <tr> <td>Temperature</td> <td>~ 4.5 K</td> <td>~</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~</td> </tr> <tr> <td>Pressure</td> <td>~ 0.6 MPa</td> <td>~ g/s</td> </tr> </tbody> </table>						Facility condition				Power Supply	Resistor	All	CSMC 50 kA	31.4mohm	Temperature	~ 4.5 K	~	Mass Flow Rate	~ 10 g/s	~	Pressure	~ 0.6 MPa	~ g/s						
Facility condition																													
	Power Supply	Resistor																											
All	CSMC 50 kA	31.4mohm																											
Temperature	~ 4.5 K	~																											
Mass Flow Rate	~ 10 g/s	~																											
Pressure	~ 0.6 MPa	~ g/s																											
Data Acquisition System (DAS) CSMC+TFI DC1																													
<table border="1"> <thead> <tr> <th colspan="3">Data Acquisition System (DAS) CSMC+TFI DC1</th> </tr> <tr> <th></th> <th>ADC384L ADC384H ADC64L ADC64H ADC32H</th> <th></th> </tr> </thead> <tbody> <tr> <td>Sampling</td> <td>1 s</td> <td>10 ms</td> </tr> <tr> <td>Pre-trigger</td> <td>300</td> <td>300</td> </tr> </tbody> </table>						Data Acquisition System (DAS) CSMC+TFI DC1				ADC384L ADC384H ADC64L ADC64H ADC32H		Sampling	1 s	10 ms	Pre-trigger	300	300												
Data Acquisition System (DAS) CSMC+TFI DC1																													
	ADC384L ADC384H ADC64L ADC64H ADC32H																												
Sampling	1 s	10 ms																											
Pre-trigger	300	300																											
Data Acquisition System (DAS) CSMC+TFI DC1																													
<table border="1"> <thead> <tr> <th colspan="3">Data Acquisition System (DAS) CSMC+TFI DC1</th> </tr> <tr> <th></th> <th>ADC384L ADC384H ADC64L ADC64H ADC32H</th> <th></th> </tr> </thead> <tbody> <tr> <td>Sampling</td> <td>1 s</td> <td>10 ms</td> </tr> <tr> <td>Pre-trigger</td> <td>300</td> <td>300</td> </tr> </tbody> </table>						Data Acquisition System (DAS) CSMC+TFI DC1				ADC384L ADC384H ADC64L ADC64H ADC32H		Sampling	1 s	10 ms	Pre-trigger	300	300												
Data Acquisition System (DAS) CSMC+TFI DC1																													
	ADC384L ADC384H ADC64L ADC64H ADC32H																												
Sampling	1 s	10 ms																											
Pre-trigger	300	300																											
Current pattern Manual dump																													
<table border="1"> <thead> <tr> <th colspan="3">CSMC</th> </tr> <tr> <td>$I_m =$</td> <td>10.6</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>1</td> <td>$kA/m dB/dt_1 =$</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>1</td> <td>$kA/m dB/dt_2 =$</td> </tr> </thead> <tbody> <tr> <td>TFI</td> <td>$I_m =$</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/m</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/s</td> <td>kA/m</td> </tr> <tr> <td>Cyclic Test</td> <td>kA/s</td> <td>cycles</td> </tr> </tbody> </table>						CSMC			$I_m =$	10.6	kA	$dI/dt_1 =$	1	$kA/m dB/dt_1 =$	$dI/dt_2 =$	1	$kA/m dB/dt_2 =$	TFI	$I_m =$	kA	$dI/dt_1 =$	kA/m	kA/m	$dI/dt_2 =$	kA/s	kA/m	Cyclic Test	kA/s	cycles
CSMC																													
$I_m =$	10.6	kA																											
$dI/dt_1 =$	1	$kA/m dB/dt_1 =$																											
$dI/dt_2 =$	1	$kA/m dB/dt_2 =$																											
TFI	$I_m =$	kA																											
$dI/dt_1 =$	kA/m	kA/m																											
$dI/dt_2 =$	kA/s	kA/m																											
Cyclic Test	kA/s	cycles																											
<table border="1"> <thead> <tr> <th colspan="3">CSMC</th> </tr> <tr> <td>$I_m =$</td> <td>10.6</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>1</td> <td>$kA/m dB/dt_1 =$</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>1</td> <td>$kA/m dB/dt_2 =$</td> </tr> </thead> <tbody> <tr> <td>TFI</td> <td>$I_m =$</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/m</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/s</td> <td>kA/m</td> </tr> <tr> <td>Cyclic Test</td> <td>kA/s</td> <td>cycles</td> </tr> </tbody> </table>						CSMC			$I_m =$	10.6	kA	$dI/dt_1 =$	1	$kA/m dB/dt_1 =$	$dI/dt_2 =$	1	$kA/m dB/dt_2 =$	TFI	$I_m =$	kA	$dI/dt_1 =$	kA/m	kA/m	$dI/dt_2 =$	kA/s	kA/m	Cyclic Test	kA/s	cycles
CSMC																													
$I_m =$	10.6	kA																											
$dI/dt_1 =$	1	$kA/m dB/dt_1 =$																											
$dI/dt_2 =$	1	$kA/m dB/dt_2 =$																											
TFI	$I_m =$	kA																											
$dI/dt_1 =$	kA/m	kA/m																											
$dI/dt_2 =$	kA/s	kA/m																											
Cyclic Test	kA/s	cycles																											
<table border="1"> <thead> <tr> <th colspan="3">Heater</th> </tr> <tr> <td>W</td> <td>$T_d =$</td> <td>s</td> </tr> </thead> <tbody> <tr> <td>Time</td> <td>T_1 13:38</td> <td>T_2 15:24</td> </tr> <tr> <td></td> <td>T_3 _____</td> <td></td> </tr> </tbody> </table>						Heater			W	$T_d =$	s	Time	T_1 13:38	T_2 15:24		T_3 _____													
Heater																													
W	$T_d =$	s																											
Time	T_1 13:38	T_2 15:24																											
	T_3 _____																												
Remarks																													
Results V _i =147V, V _o =176V, V _{ins} =2.1V, T _a unt=19s, OK.																													

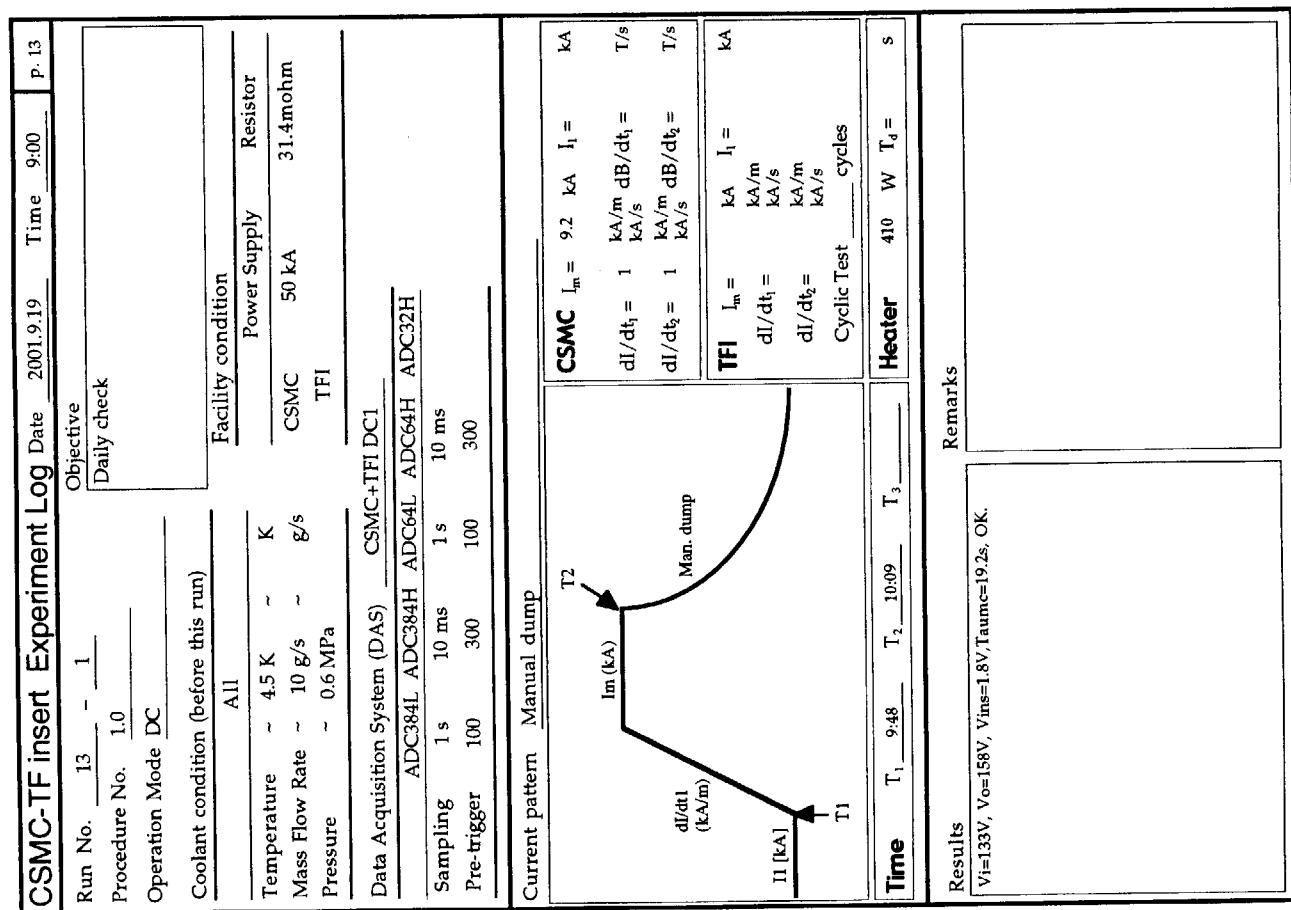
CSMC-TF insert Experiment Log				Date	2001.9.18	Time	9:50	P. 8
Run No.	7	-	1	Procedure No.	8	-	1	Objective
Operation Mode	DC			Procedure No.	1.4			Measure AC losses of CSMC and TFCI.
Coolant condition (before this run)	All			Operation Mode	DC			
Temperature	~ 4.5 K	~	K	Facility condition	All			Coolant condition (before this run)
Mass Flow Rate	~ 10 g/s	~	g/s	Power Supply	Temperature	~ 4.5 K	~	Resistor
Pressure	~ 0.6 MPa			CSMC	Mass Flow Rate	~ 10 g/s	~	31.4 mohm
Data Acquisition System (DAS)	ADC384L ADC384H			TFI	Pressure	~ 0.6 MPa		
Sampling	1 s	10 ms	1 s	Data Acquisition System (DAS)	ADC384L ADC384H			CSMC+TFI DC1
Pre-trigger	300	300	300	Sampling	1 s	10 ms	1 s	ADC64L ADC64H ADC32H
				Pre-trigger	300	300	300	
Current pattern	Manual dump			Current pattern	Manual dump			
CSMC	$I_m = 23$	kA	$I_1 = kA$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
$dI/dt_1 = 1$	kA/m	s	$dI/dt_1 = 1$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
$dI/dt_2 = 1$	kA/m	s	$dI/dt_2 = 1$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
TFI	$I_m =$		$dI/dt_1 =$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
$dI/dt_1 =$	kA/m		$dI/dt_1 =$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
$dI/dt_2 =$	kA/m		$dI/dt_2 =$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
Cyclic Test	cycles		Cyclic Test	CSMC	$I_m = 23$	kA	$I_1 = kA$	
Heater	W	$T_d =$	Heater	CSMC	$I_m = 23$	kA	$I_1 = kA$	
Time	$T_1 = 9:54$	$T_2 = 10:25$	$T_3 =$	Time	$T_1 = 11:05$	$T_2 = 11:58$	$T_3 =$	Heater
Results	V _i =153V, V _o =132V, V _{ins} =2.1V, T _{aumc} =19.1s, OK.	Remarks	Results	V _i =330V, V _o =392V, V _{ins} =4.5V, T _{aumc} =18.5s, OK.	Remarks	Results	V _i =330V, V _o =392V, V _{ins} =4.5V, T _{aumc} =18.5s, OK.	Remarks

CSMC-TF insert Experiment Log				Date	2001.9.18	Time	9:50	P. 7
Run No.	7	-	1	Procedure No.	1.3			Objective
Operation Mode	DC			Coolant condition (before this run)	All			Measure coupling loss of TFCI at 3T, 4.5K.
Temperature	~ 4.5 K	~	K	Facility condition	All			
Mass Flow Rate	~ 10 g/s	~	g/s	Power Supply	Temperature	~ 4.5 K	~	
Pressure	~ 0.6 MPa			CSMC	Mass Flow Rate	~ 10 g/s	~	
Data Acquisition System (DAS)	ADC384L ADC384H			TFI	Pressure	~ 0.6 MPa		
Sampling	1 s	10 ms	1 s	Data Acquisition System (DAS)	ADC384L ADC384H			CSMC+TFI DC1
Pre-trigger	300	300	300	Sampling	1 s	10 ms	1 s	ADC64L ADC64H ADC32H
				Pre-trigger	300	300	300	
Current pattern	Manual dump			Current pattern	Manual dump			
CSMC	$I_m = 10.6$	kA	$I_1 = kA$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
$dI/dt_1 = 1$	kA/m	s	$dI/dt_1 = 1$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
$dI/dt_2 = 1$	kA/m	s	$dI/dt_2 = 1$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
TFI	$I_m =$		$dI/dt_1 =$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
$dI/dt_1 =$	kA/m		$dI/dt_1 =$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
$dI/dt_2 =$	kA/m		$dI/dt_2 =$	CSMC	$I_m = 23$	kA	$I_1 = kA$	
Cyclic Test	cycles		Cyclic Test	CSMC	$I_m = 23$	kA	$I_1 = kA$	
Heater	W	$T_d =$	Heater	CSMC	$I_m = 23$	kA	$I_1 = kA$	
Time	$T_1 = 9:54$	$T_2 = 10:25$	$T_3 =$	Time	$T_1 = 11:05$	$T_2 = 11:58$	$T_3 =$	Heater
Results	V _i =153V, V _o =132V, V _{ins} =2.1V, T _{aumc} =19.1s, OK.	Remarks	Results	V _i =330V, V _o =392V, V _{ins} =4.5V, T _{aumc} =18.5s, OK.	Remarks	Results	V _i =330V, V _o =392V, V _{ins} =4.5V, T _{aumc} =18.5s, OK.	Remarks

CSMC-TF insert Experiment Log			Date 2001.9.18	Time 13:15	p. 9
Run No. 9 - 1 Objective Measure AC losses of CSMC and TFCI.			Procedure No. 1.5	- 1	
Operation Mode DC			Procedure No.		
Coolant condition (before this run)			Operation Mode DC		
Facility condition			Coolant condition (before this run)		
All	All		All		
Temperature ~ 4.5 K	~ K		Temperature ~ 4.5 K	~ K	
Mass Flow Rate ~ 10 g/s	~ g/s		Mass Flow Rate ~ 10 g/s	~ g/s	
Pressure ~ 0.6 MPa			Pressure ~ 0.6 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L	ADC384H		ADC384L	ADC384H	
ADC64L	ADC64H		ADC64L	ADC64H	
ADC32H			ADC32H		
Sampling 1 s	10 ms		Sampling 1 s	10 ms	
Pre-trigger 300	300		Pre-trigger 300	300	
Current pattern Manual dump			Current pattern Heater energize		
T2	Im (kA)		---		
Man. dump					
dI/dt_1 (kA/m)					
T1	I1 [kA]		T1		
CSMC $I_m = 36.8$ kA $I_1 =$ kA			CSMC $I_m =$	kA	$I_1 =$ kA
$dI/dt_1 = 1$ kA/m	$dB/dt_1 =$ T/s		$dI/dt_1 =$	kA/m	$dB/dt_1 =$ T/s
$dI/dt_2 = 1$ kA/m	$dB/dt_2 =$ T/s		$dI/dt_2 =$	kA/m	$dB/dt_2 =$ T/s
$dI/dt_1 =$	$dB/dt_1 =$		$dI/dt_1 =$	kA/m	$dB/dt_1 =$ T/s
$dI/dt_2 =$	$dB/dt_2 =$		$dI/dt_2 =$	kA/m	$dB/dt_2 =$ T/s
Cyclic Test cycles			Cyclic Test cycles		
Time T_1 13:26	T_2 14:26	T_3	Heater	213	W $T_d =$ s
Remarks			Remarks		
Results			Results		
V1=528V, V0=628V, Vins=17.2V, Taumc=17.5s, OK.			ITF_TC_01 achieved to 7.2K. OK.		
VI=528V, V0=628V, Vins=17.2V, Taumc=17.5s, OK.			ITF_TC_01 achieved to 7.2K. OK.		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results			Results		
Remarks			Remarks		
Results					

CSMC-TF insert Experiment Log		Date 2001.9.19	Time 8:00	P. 12
Objective		Heat TFCI up 18K.		
Run No. 11 - 1	Run No. 12 - 1			
Procedure No. 1.6	Procedure No. _____			
Operation Mode DC	Operation Mode DC			
Coolant condition (before this run)		Facility condition (before this run)		
All	All	Facility condition		
Temperature ~ 4.5 K	~ K	Temperature ~ 4.5 K	~ K	Resistor
Mass Flow Rate ~ 10 g/s	~ g/s	Mass Flow Rate ~ 10 g/s	~ g/s	Power Supply
Pressure ~ 0.6 MPa		Pressure ~ 0.6 MPa		Resistor
Data Acquisition System (DAS) CSMC+TFI DCL		Data Acquisition System (DAS) CSMC+TFI DCL		Power Supply
ADC384L ADC384H ADC64L ADC64H ADC32H		ADC384L ADC384H ADC64L ADC64H ADC32H		Resistor
Sampling 1 s	Sampling 1 s	Sampling 1 s	Sampling 1 s	Power Supply
Pre-trigger 300	Pre-trigger 300	Pre-trigger 300	Pre-trigger 300	Resistor
Current pattern		Heater energize		
		CSMC	I _m = kA	I _i = kA
		I _m = 10.6 kA	I _i = kA	
		dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	
		dI/dt ₂ = 1 kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s	
		TFI I _m = 10.6 kA	I _i = kA	
		dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	
		dI/dt ₂ = 1 kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s	
		CSMC	I _m = kA	I _i = kA
		I _m = 10.6 kA	I _i = kA	
		dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	
		dI/dt ₂ = 1 kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s	
		TFI I _m = 10.6 kA	I _i = kA	
		dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	
		dI/dt ₂ = 1 kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s	
		Cyclic Test cycles	Cyclic Test cycles	
		T ₂	T ₁	
		Im (kA)	Im (kA)	
		dI/dt (kA/m)	dI/dt (kA/m)	
		T ₃	T ₁	
		T ₂	T ₁	
		T ₃	T ₂	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	
		T ₃	T ₁	
		T ₂	T ₃	
		T ₁	T ₂	

CSMC-TF insert Experiment Log				Date	2001.9.19	Time	9:00	p. 13
Run No.				Run No.	13	-	2	Objective
Procedure No.				Procedure No.				Heat TFCI up 18K
Operation Mode				Operation Mode	DC			
Coolant condition (before this run)				Coolant condition (before this run)				
All				All				
Temperature	~ 4.5 K	~	K	Temperature	~ 4.5 K	~	K	Resistor
Mass Flow Rate	~ 10 g/s	~	g/s	Mass Flow Rate	~ 10 g/s	~	g/s	Power Supply
Pressure	~ 0.6 MPa			Pressure	~ 0.6 MPa			CSMC
Data Acquisition System (DAS)	ADC384L	ADC384H	ADC64L	Data Acquisition System (DAS)	ADC384L	ADC384H	ADC64H	TFI
Sampling	1 s			Sampling	1 s			CFI
Pre-trigger	100			Pre-trigger	100			
Facility condition				Facility condition				
All	Power Supply	Resistor		All	Power Supply	Resistor		
CSMC	50 kA	31.4 mohm		CSMC	50 kA	31.4 mohm		
TFI				TFI				
Data Acquisition System (DAS)				Data Acquisition System (DAS)				
ADC384L	ADC384H	ADC64L	ADC64H	ADC32H	ADC384L	ADC384H	ADC64H	ADC32H
Sampling	1 s			Sampling	1 s			
Pre-trigger	100			Pre-trigger	100			
Current pattern Heater energize				Current pattern Heater energize				
CSMC	$I_m =$	kA	$I_i =$	CSMC	$I_m =$	kA	$I_i =$	kA
TFI	$dI/dt_1 =$	kA/m	$dB/dt_1 =$	TFI	$dI/dt_1 =$	kA/m	$dB/dt_1 =$	T/s
	$dI/dt_2 =$	kA/m	$dB/dt_2 =$		$dI/dt_2 =$	kA/m	$dB/dt_2 =$	T/s
TFI	$I_m =$	kA	$I_i =$	TFI	$I_m =$	kA	$I_i =$	kA
	$dI/dt_1 =$	kA/m	$dB/dt_1 =$		$dI/dt_1 =$	kA/m	$dB/dt_1 =$	T/s
	$dI/dt_2 =$	kA/m	$dB/dt_2 =$		$dI/dt_2 =$	kA/m	$dB/dt_2 =$	T/s
Cyclic Test	cycles			Cyclic Test	cycles			
Time	T_1	T_2	T_3	Time	T_1	T_2	T_3	Heater
	9:48	10:09			10:17			410 W
								$T_d =$ s
Results				Remarks				
V _i =133V, V _o =158V, V _{ins} =1.8V, T _{autmc} =19.2s, OK.				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	Objective TFCI hysteresis loss at 3T, 18K		
Procedure No. 1.7			Coolant condition (before this run)		
Operation Mode DC			Facility condition		
Coolant condition (before this run)			Insert	All	
			Power Supply	Resistor	
Temperature ~ 4.5 K	~	K	CSMC	CSMC	
Mass Flow Rate ~ 10 g/s	~	g/s	50 kA	4.5 K	
Pressure ~ 0.6 MPa			TFI	10 g/s	
			Temperature ~ 18 K	~ 4.5 K	
			Mass Flow Rate ~ 0.6 MPa	~ 0.6 MPa	
			Data Acquisition System (DAS)	CSMC+TFI DC1	
			ADC384L ADC384H ADC32H	ADC64L ADC64H ADC32H	
Sampling 1 s	1 s		Sampling 1 s	1 s	
Pre-trigger 100	100		Pre-trigger 100	100	
Current pattern Triple Triangular			Current pattern Trapezoidal		
CSMC $I_m = 10.6$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s			CSMC $I_m =$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s		
TFI $I_m =$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ kA/m $dI/dt_2 =$ kA/m $dB/dt_2 =$ kA/m			TFI $I_m = 0.02$ kA $I_1 =$ kA $dI/dt_1 = 0.01$ kA/m $dB/dt_1 =$ kA/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ kA/s		
Cyclic Test cycles			Cyclic Test cycles		
Time T ₁ 11:16	T ₂ 11:28	T ₃ 12:48	Heater	W T _d = s	Heater 410 W T _d = s
Results OK.			Remarks		
Temporary power supply (20A-DC) is applied. 19.9A supplied.					

CSMC-TF insert Experiment Log			Date 2001.9.19	Time 11:10	p. 15
Run No. 14	-	1	Objective TFCI hysteresis loss at 3T, 18K		
Procedure No. 1.7			Coolant condition (before this run)		
Operation Mode DC			Facility condition		
Coolant condition (before this run)			Insert	All	
			Power Supply	Resistor	
Temperature ~ 4.5 K	~	K	CSMC	CSMC	
Mass Flow Rate ~ 10 g/s	~	g/s	50 kA	4.5 K	
Pressure ~ 0.6 MPa			TFI	10 g/s	
			Temperature ~ 18 K	~ 4.5 K	
			Mass Flow Rate ~ 0.6 MPa	~ 0.6 MPa	
			Data Acquisition System (DAS)	CSMC+TFI DC1	
			ADC384L ADC384H ADC32H	ADC64L ADC64H ADC32H	
Sampling 1 s	1 s		Sampling 1 s	1 s	
Pre-trigger 100	100		Pre-trigger 100	100	
Current pattern Triple Triangular			Current pattern Trapezoidal		
CSMC $I_m = 10.6$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s			CSMC $I_m =$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s		
TFI $I_m =$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ kA/m $dI/dt_2 =$ kA/m $dB/dt_2 =$ kA/m			TFI $I_m = 0.02$ kA $I_1 =$ kA $dI/dt_1 = 0.01$ kA/m $dB/dt_1 =$ kA/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ kA/s		
Cyclic Test cycles			Cyclic Test cycles		
Time T ₁ 13:01	T ₂ 13:13	T ₃ 13:13	Heater	W T _d = s	Heater 410 W T _d = s
Results OK.			Remarks		

CSMC-TF insert Experiment Log		Date	2001.9.19	Time	14:05	P-18		
Run No.	16 - 1	Objective		TFCI coupling loss at 3T, 18K				
Procedure No.	1.8							
Operation Mode	DC							
Coolant condition (before this run)		Facility condition						
Insert	All	Power Supply		Resistor				
Temperature	~ 18 K	~ 4.5 K	CSMC		50 kA	31.4 mohm		
Mass Flow Rate	~ 2 g/s	~ 10 g/s	TFI					
Pressure	~ 0.6 MPa							
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 $I_m = 10.6 \text{ kA}$ $I_1 = \text{kA}$ $dI/dt_1 = 1 \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$ $dB/dt_1 = \frac{\text{T}/\text{s}}{\text{kA}/\text{s}}$ $dI/dt_2 = 1 \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$ $dB/dt_2 = \frac{\text{T}/\text{s}}{\text{kA}/\text{s}}$						
TFI $I_m = \text{kA}$ $dI/dt_1 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$ $dI/dt_2 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$ Cyclic Test cycles								
Time	T ₁ 14:12	T ₂ 14:36	T ₃					
Heater		410 W	T _d =	s				
Results				Remarks				
V _i =153V, V _o =182V, V _{ins} =2.1V, T _{alarm} =19.2s, OK		Low pass filter on (100Hz) : ITF_VD_0809,		ITF_VD_0910				

CSMC-TF insert Experiment Log		Date	2001.9.19	Time	13:20	P. 17
Run No.	15 - 2	Objective				
Procedure No.						
Operation Mode	DC					
Coolant condition (before this run)		Facility condition				
Insert	All	Power Supply	Resistor			
Temperature	~ 18 K	~ 4.5 K				
Mass Flow Rate	~ 2 g/s	~ 10 g/s	CSMC	50 kA		
Pressure	~ 0.6 MPa		TFI		31.4 mohm	
Data Acquisition System (DAS)		CSMC+TFI DC1				
ADC384L	ADC384H	ADC64L	ADC64H	ADC32H		
Sampling	1 s					
Pre-trigger	100	100				
Current pattern	No current					
CSMC	$I_m =$	kA	$I_t =$	kA		
	$dI/dt_t =$	kA/m	$dB/dt_t =$	T/s		
	$dI/dt_b =$	kA/m	$dB/dt_b =$	T/s		
TFI	$I_m =$	kA	$I_t =$	kA		
	$dI/dt_t =$	kA/m				
	$dI/dt_b =$	kA/m				
	Cyclic Test	kA/s	cycles			
Time	T_1	T_2	T_3	W	$T_d =$	s
Results		Remarks				

CSMC-TF insert Experiment Log			Date 2001.9.19	Time 14:50	P. 19
Run No. 17 - 1			Objective Check the superconductivity transition		
Procedure No.			Procedure No.		
Operation Mode DC			Operation Mode DC		
Coolant condition (before this run)			Coolant condition (before this run)		
Insert			Insert		
Facility condition			Facility condition		
Power Supply			Power Supply		
Resistor			Resistor		
Temperature ~ 18 K ~ 4.5 K			Temperature ~ 18 K ~ 4.5 K		
Mass Flow Rate ~ 2 g/s ~ 10 g/s			Mass Flow Rate ~ 2 g/s ~ 10 g/s		
Pressure ~ 0.6 MPa			Pressure ~ 0.6 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling 1 s 1 s			Sampling 1 s 1 s		
Pre-trigger 100 100			Pre-trigger 100 100		
Current pattern Heater energize			Current pattern Heater energize		
CSMC $I_m = kA$ $I_1 = kA$			CSMC $I_m = kA$ $I_1 = kA$		
$dI/dt_1 = kA/m dB/dt_1 = T/s$			$dI/dt_1 = kA/m dB/dt_1 = T/s$		
$dI/dt_2 = kA/m dB/dt_2 = T/s$			$dI/dt_2 = kA/m dB/dt_2 = T/s$		
TFI $I_m = 0.02 kA$ $I_1 = kA$			TFI $I_m = 0.02 kA$ $I_1 = kA$		
$dI/dt_1 = 0.01 kA/m$			$dI/dt_1 = 0.01 kA/m$		
$dI/dt_2 = 0.01 kA/m$			$dI/dt_2 = 0.01 kA/m$		
Cyclic Test cycles			Cyclic Test cycles		
Time T_1 14:51 T_2 T_3			Time T_1 15:27 T_2 T_3		
Heater 410 W $T_d = s$			Heater 0 W $T_d = s$		
Remarks			Remarks		
Results			Results		
Temporary power supply (20A-DC) is applied. 20.01A supplied.			Inlet temperature is reduced step by step.		
Heter off at 15:27					

CSMC-TF insert Experiment Log			Date 2001.9.19	Time 14:51	P. 19
Run No. 17 - 1			Objective Check the superconductivity transition		
Procedure No.			Procedure No.		
Operation Mode DC			Operation Mode DC		
Coolant condition (before this run)			Coolant condition (before this run)		
Insert			Insert		
Facility condition			Facility condition		
Power Supply			Power Supply		
Resistor			Resistor		
Temperature ~ 18 K ~ 4.5 K			Temperature ~ 18 K ~ 4.5 K		
Mass Flow Rate ~ 2 g/s ~ 10 g/s			Mass Flow Rate ~ 2 g/s ~ 10 g/s		
Pressure ~ 0.6 MPa			Pressure ~ 0.6 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling 1 s 1 s			Sampling 1 s 1 s		
Pre-trigger 100 100			Pre-trigger 100 100		
Current pattern Heater energize			Current pattern Heater energize		
CSMC $I_m = kA$ $I_1 = kA$			CSMC $I_m = kA$ $I_1 = kA$		
$dI/dt_1 = kA/m dB/dt_1 = T/s$			$dI/dt_1 = kA/m dB/dt_1 = T/s$		
$dI/dt_2 = kA/m dB/dt_2 = T/s$			$dI/dt_2 = kA/m dB/dt_2 = T/s$		
TFI $I_m = 0.02 kA$ $I_1 = kA$			TFI $I_m = 0.02 kA$ $I_1 = kA$		
$dI/dt_1 = 0.01 kA/m$			$dI/dt_1 = 0.01 kA/m$		
$dI/dt_2 = 0.01 kA/m$			$dI/dt_2 = 0.01 kA/m$		
Cyclic Test cycles			Cyclic Test cycles		
Time T_1 14:51 T_2 T_3			Time T_1 15:27 T_2 T_3		
Heater 410 W $T_d = s$			Heater 0 W $T_d = s$		
Remarks			Remarks		
Results			Results		
Temporary power supply (20A-DC) is applied. 20.01A supplied.			Inlet temperature is reduced step by step.		
Heter off at 15:27					

CSMC-TF insert Experiment Log			Date 2001.9.20	Time 9:00	P. 21
Objective Daily check					
Run No. 18	-	1	Run No. 19	-	1
Procedure No. 1.0			Procedure No. 1.11		
Operation Mode DC			Operation Mode DC		
Coolant condition (before this run)					
Facility condition					
All		All		All	
Temperature	~ 4.5 K	~ K	Temperature	~ 4.5 K	~ K
Mass Flow Rate	~ 10 g/s	~ g/s	Mass Flow Rate	~ 10 g/s	~ g/s
Pressure	~ 0.6 MPa		Pressure	~ 0.6 MPa	
Data Acquisition System (DAS) CSMC+TFI DC1					
ADC384L ADC384H ADC64L ADC64H ADC32H					
Sampling	1 s	10 ms	Sampling	1 s	10 ms
Pre-trigger	100	2 k	Pre-trigger	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 dB/dt _{t1} = T/s $dI/dt_2 = 1$ kA/m dB/dt _{t2} = T/s					
TFI $I_m =$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dI/dt_2 =$ kA/m $dI/dt_2 =$ kA/m $dI/dt_1 =$ kA/m Cyclic Test cycles					
CSMC $I_m = 46$ kA $I_1 = 39.1$ kA $dI/dt_1 = 1$ kA/m dB/dt _{t1} = T/s $dI/dt_2 = 1$ kA/m dB/dt _{t2} = T/s					
TFI $I_m =$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dI/dt_2 =$ kA/m $dI/dt_2 =$ kA/m $dI/dt_1 =$ kA/m Cyclic Test cycles					
Remarks					
Current steps are 39.1kA(1) and 43.7kA (12).					
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 9:00	P. 22
Objective Daily check					
Run No. 1.0	-	1	Run No. 1.11	-	1
Procedure No.			Procedure No.		
Operation Mode DC			Operation Mode DC		
Coolant condition (before this run)					
Facility condition					
All		Power Supply		Resistor	
Temperature	CSMC	50 kA	31.4 mohm	CSMC	50 kA
Mass Flow Rate	TFI			TFI	
Pressure					
Data Acquisition System (DAS) CSMC+TFI DC1					
ADC384L ADC384H ADC64L ADC64H ADC32H					
Sampling	1 s	10 ms	Sampling	1 s	10 ms
Pre-trigger	100	2 k	Pre-trigger	100	2 k
Current pattern Manual dump					
CSMC $I_m = 9.2$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m dB/dt _{t1} = T/s $dI/dt_2 = 1$ kA/m dB/dt _{t2} = T/s					
TFI $I_m =$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dI/dt_2 =$ kA/m $dI/dt_2 =$ kA/m $dI/dt_1 =$ kA/m Cyclic Test cycles					
CSMC $I_m = 9.2$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m dB/dt _{t1} = T/s $dI/dt_2 = 1$ kA/m dB/dt _{t2} = T/s					
TFI $I_m =$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dI/dt_2 =$ kA/m $dI/dt_2 =$ kA/m $dI/dt_1 =$ kA/m Cyclic Test cycles					
Remarks					
Results					
$V_i=133V$, $V_o=155V$, $V_{ins}=1.8V$, $T_{aum}=19.2s$, OK.					

CSMC-TF insert Experiment Log			Date 2001.9.20	Time 14:00	p. 23
Run No.	19	-	2		Objective
Procedure No.	1.11				Manual dump at 46kA.
Operation Mode	DC				
Coolant condition (before this run)					
All			Facility condition		
Temperature	~ 4.5 K	~	Power Supply	Resistor	
Mass Flow Rate	~ 10 g/s	~	CSMC	50 kA	31.4 mohm
Pressure	~ 0.6 MPa		TFI	0.6 MPa	
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC32H		Facility condition (before this run)		
Sampling	1 s		Temperature	~ 4.5 K	~ 4.5 K
Pre-trigger	100		Mass Flow Rate	~ 4 g/s	~ 10 g/s
			Pressure	~ 0.6 MPa	CSMC 50 kA TFI
Data Acquisition System (DAS)			CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC32H			ADC384L ADC384H ADC64L ADC32H		
Sampling	1 s	10 ms	Sampling	1 s	10 ms
Pre-trigger	100	2 k	Pre-trigger	100	2 k
Current pattern Charge up and hold					
Man. dump discharge			CSMC $I_m = 46$ kA $I_i = 43.7$ kA		
I_m [kA]	dI/dt_1 (kA/m)	I_m (kA)	$dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s
T_1			$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s
Man. dump			TFI $I_m = 46$ kA $I_i = 43.7$ kA		
T_1			$dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s
T_2			$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s
Cyclic Test cycles			Cyclic Test cycles		
Time $T_1 = 13:42$	$T_2 = 14:10$	$T_3 =$ s	Time $T_1 = 15:35$	$T_2 =$ s	$T_3 =$ s
Heater W $T_d =$ s			Heater W $T_d =$ s		
Remarks					
This shot is continued from shot#19.1.					

CSMC-TF insert Experiment Log			Date 2001.9.20	Time 14:00	p. 23
Run No.	19	-	2		Objective
Procedure No.	1.11				Manual dump at 46kA.
Operation Mode	DC				
Coolant condition (before this run)					
All			Facility condition		
Temperature	~ 4.5 K	~	Power Supply	Resistor	
Mass Flow Rate	~ 10 g/s	~	CSMC	50 kA	31.4 mohm
Pressure	~ 0.6 MPa		TFI	0.6 MPa	
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC32H		Facility condition (before this run)		
Sampling	1 s	10 ms	Temperature	~ 4.5 K	~ 4.5 K
Pre-trigger	100	2 k	Mass Flow Rate	~ 4 g/s	~ 10 g/s
			Pressure	~ 0.6 MPa	CSMC 50 kA TFI
Current pattern Charge up and hold					
Man. dump discharge			CSMC $I_m = 46$ kA $I_i = 43.7$ kA		
I_m [kA]	dI/dt_1 (kA/m)	I_m (kA)	$dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s
T_1			$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s
Man. dump			TFI $I_m = 46$ kA $I_i = 43.7$ kA		
T_1			$dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s
T_2			$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	$dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s
Cyclic Test cycles			Cyclic Test cycles		
Time $T_1 = 13:42$	$T_2 = 14:10$	$T_3 =$ s	Time $T_1 = 15:35$	$T_2 =$ s	$T_3 =$ s
Heater W $T_d =$ s			Heater W $T_d =$ s		
Remarks					
Vi=658V, Vo=792V, Vin=9.0V, Taume=17.3sOK.					

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			Coolant condition (before this run)		
1A&B All			Facility condition	All	
Temperature ~ 4.5 K	~ 4.5 K	Power Supply CSMC	Temperature ~ 4.5 K	~ K	Resistor
Mass Flow Rate ~ 4 g/s	~ 10 g/s	50 kA	Mass Flow Rate ~ 10 g/s	~ g/s	CSMC
Pressure ~ 0.6 MPa		TFI	Pressure ~ 0.6 MPa		TFI
Data Acquisition System (DAS) CSMC+TFI DC1			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	1 k	100	1 k
Current pattern Trapezoidal			CSMC	$I_m = kA$	
			$dI/dt_1 = kA/m$	$dB/dt_1 = kA/m$	
			$dI/dt_2 = kA/s$	$dB/dt_2 = kA/s$	T/s
			TFI	$I_m = 5 kA$	
			$dI/dt_1 = 3 kA/m$	$dI/dt_2 = 3 kA/s$	
			Cyclic Test cycles	Cyclic Test cycles	
Time T ₁ 9:50	T ₂ 10:03	T ₃ 10:03	Heater	W	T _d = s
Remarks	Since this shot, amplifier gain is changed as follows IF_VC_01: x0.5->x100 IF_VC_02:x0.5->x100				
Results	OK.				

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			Coolant condition (before this run)		
1A&B All			Facility condition	All	
Temperature ~ 4.5 K	~ 4.5 K	Power Supply CSMC	Temperature ~ 4.5 K	~ K	Resistor
Mass Flow Rate ~ 4 g/s	~ 10 g/s	50 kA	Mass Flow Rate ~ 10 g/s	~ g/s	CSMC
Pressure ~ 0.6 MPa		TFI	Pressure ~ 0.6 MPa		TFI
Data Acquisition System (DAS) CSMC+TFI DC1			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	100	1 k
Current pattern Trapezoidal			CSMC	$I_m = kA$	
			$dI/dt_1 = kA/m$	$dB/dt_1 = kA/m$	
			$dI/dt_2 = kA/s$	$dB/dt_2 = kA/s$	T/s
			TFI	$I_m = 5 kA$	
			$dI/dt_1 = 3 kA/m$	$dI/dt_2 = 3 kA/s$	
			Cyclic Test cycles	Cyclic Test cycles	
Time T ₁ 16:41	T ₂ 16:41	T ₃ 18:41	Heater	W	T _d = s
Remarks	Low pass filter on (0.2Hz); MCL_VD_01A, MCL_VD_01L. Charge up is defined by previous shot (#19-1).				
Results	OK.				

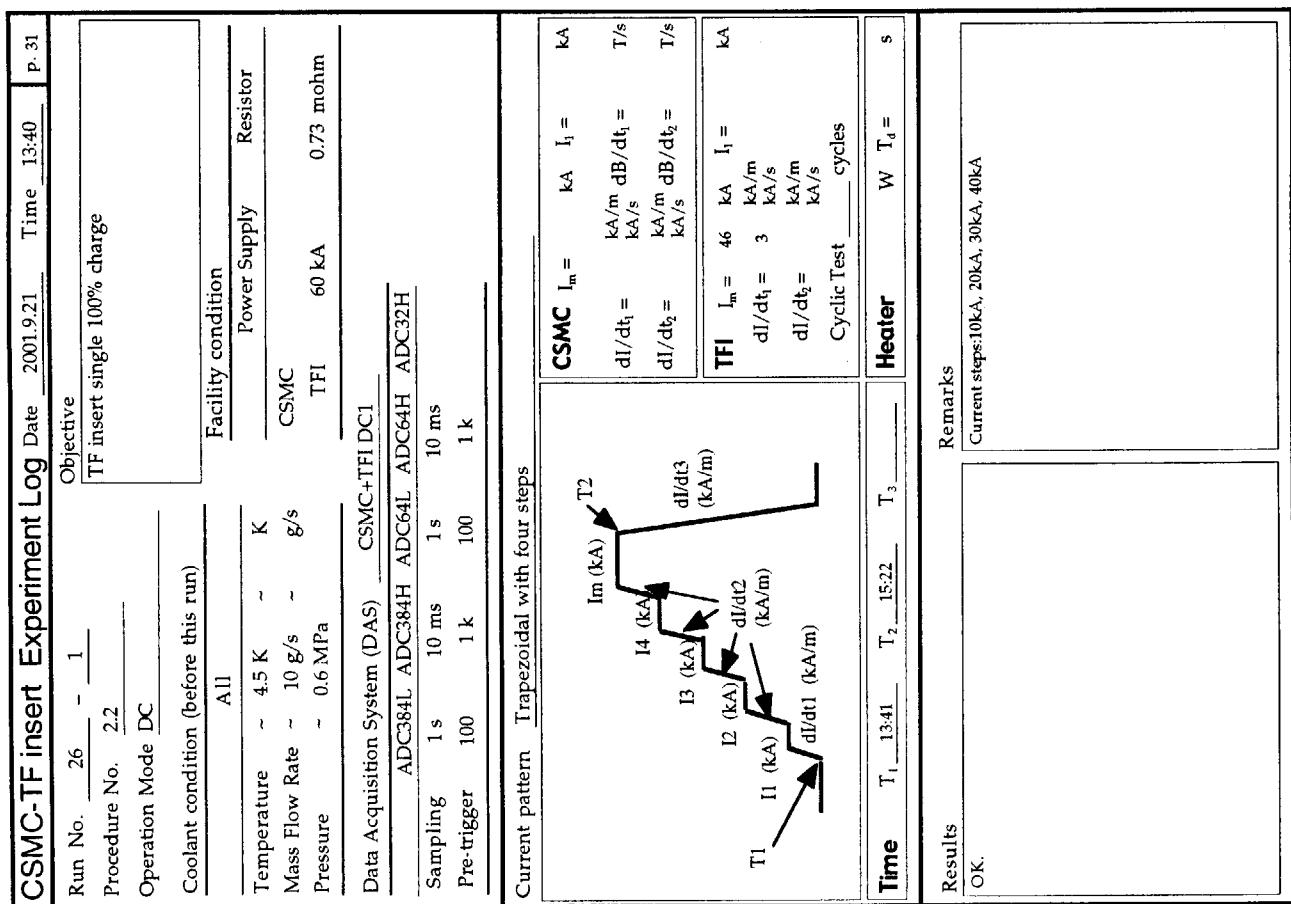
CSMC-TF insert Experiment Log			Date 2001.9.21	Time 10:10	P. 27
Run No.	22 - 1	Procedure No.	2.1	Objective	
Operation Mode	DC	Check protection system.			
Coolant condition (before this run)			Facility condition		
All	Power Supply	Resistor	All	Power Supply	Resistor
Temperature ~ 4.5 K	~ K	CSMC	Temperature ~ 4.5 K	~ K	CSMC
Mass Flow Rate ~ 10 g/s	~ g/s	TFI	Mass Flow Rate ~ 10 g/s	~ g/s	TFI
Pressure ~ 0.6 MPa		60 kA	Pressure ~ 0.6 MPa		60 kA
Data Acquisition System (DAS)	CSMC+TFI DC1		Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H	ADC64L ADC64H	ADC32H	ADC384L ADC384H	ADC64L ADC64H	ADC32H
Sampling 1 s	10 ms	1 s	Sampling 1 s	10 ms	10 ms
Pre-trigger 100	1 k	100	Pre-trigger 100	1 k	100
Data Acquisition System (DAS)			Facility condition		
Current pattern Trapezoidal			Current pattern Trapezoidal		
CSMC $I_m =$ kA $dI/dt_1 =$ kA/m $dI/dt_2 =$ kA/m			CSMC $I_m =$ kA $dI/dt_1 =$ kA/m $dI/dt_2 =$ kA/m		
TFI $I_m =$ 10 kA $I_1 =$ kA $dI/dt_1 =$ 3 kA/m $dI/dt_2 =$ 1 kA/m			TFI $I_m =$ 10 kA $I_1 =$ kA $dI/dt_1 =$ 3 kA/m $dI/dt_2 =$ 1 kA/m		
Cyclic Test cycles			Cyclic Test cycles		
Time	T_1 10:11	T_2 10:17	T_3	Heater	W $T_d =$ s
Remarks			Remarks		
Results			Results		
Vi=83.9V, Vo=28.4V, Vins=67V, OK.			TW_08, TW_09, TW_10: Current off 10:51-11:21		

CSMC-TF insert Experiment Log			Date 2001.9.21	Time 10:10	P. 27
Run No.	22 - 1	Procedure No.	2.1	Objective	
Operation Mode	DC	Check protection system.			
Coolant condition (before this run)			Facility condition		
All	Power Supply	Resistor	All	Power Supply	Resistor
Temperature ~ 4.5 K	~ K	CSMC	Temperature ~ 4.5 K	~ K	CSMC
Mass Flow Rate ~ 10 g/s	~ g/s	TFI	Mass Flow Rate ~ 10 g/s	~ g/s	TFI
Pressure ~ 0.6 MPa		60 kA	Pressure ~ 0.6 MPa		60 kA
Data Acquisition System (DAS)	CSMC+TFI DC1		Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H	ADC64L ADC64H	ADC32H	ADC384L ADC384H	ADC64L ADC64H	ADC32H
Sampling 1 s	10 ms	1 s	Sampling 1 s	10 ms	10 ms
Pre-trigger 100	1 k	100	Pre-trigger 100	1 k	100
Data Acquisition System (DAS)			Facility condition		
CSMC $I_m =$ kA $dI/dt_1 =$ kA/m $dI/dt_2 =$ kA/m			CSMC $I_m =$ kA $dI/dt_1 =$ kA/m $dI/dt_2 =$ kA/m		
TFI $I_m =$ 10 kA $I_1 =$ kA $dI/dt_1 =$ 3 kA/m $dI/dt_2 =$ 1 kA/m			TFI $I_m =$ 10 kA $I_1 =$ kA $dI/dt_1 =$ 3 kA/m $dI/dt_2 =$ 1 kA/m		
Cyclic Test cycles			Cyclic Test cycles		
Time	T_1 10:42	T_2 10:52	T_3	Heater	W $T_d =$ s
Remarks			Remarks		
Results			Results		
Vi=83.9V, Vo=28.4V, Vins=67V, OK.			TW_08, TW_09, TW_10: Current off 10:51-11:21		

CSMC-TF insert Experiment Log			Date 2001.9.21	Time 13:10	P. 30
Run No. <u>24</u> - <u>1</u>			Procedure No. <u>2.1</u>	Objective Check protection system.	
Operation Mode <u>DC</u>			Operation Mode <u>DC</u>		
Coolant condition (before this run)			Coolant condition (before this run)		
All			All		
Temperature	~ 4.5 K	~ K	Temperature	~ 4.5 K	~ K
Mass Flow Rate	~ 10 g/s	~ g/s	Mass Flow Rate	~ 10 g/s	~ g/s
Pressure	~ 0.6 MPa		Pressure	~ 0.6 MPa	
Data Acquisition System (DAS)	CSMC+TFI DC1		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	1 k
Facility condition			Facility condition		
Power Supply			Power Supply		
Resistor			Resistor		
CSMC			CSMC		
TFI			TFI		
60 kA			60 kA		
0.73 mohm			0.73 mohm		
Data Acquisition System (DAS)			Data Acquisition System (DAS)		
ADC384L			ADC384H		
ADC64L			ADC64H		
ADC32H					
Sampling			Sampling		
1 s			1 s		
10 ms			10 ms		
Pre-trigger			Pre-trigger		
100			100		
1 k			1 k		
Cyclic Test			Cyclic Test		
cycles			cycles		
Current pattern			Current pattern		
Manual dump			Manual dump		
T2			T2		
Im (kA)			Im (kA)		
dI/dt ₁ (kA/m)			dI/dt ₁ (kA/m)		
Man. dump			Man. dump		
T1			T1		
Cyclic Test			Cyclic Test		
cycles			cycles		
CSMC			CSMC		
I _m =			I _m =		
kA			kA		
dI/dt ₁ =			dI/dt ₁ =		
kA/m			kA/m		
dB/dt ₁ =			dB/dt ₁ =		
T/s			T/s		
dI/dt ₂ =			dI/dt ₂ =		
kA/m			kA/m		
dB/dt ₂ =			dB/dt ₂ =		
T/s			T/s		
TFI			TFI		
I _m =			I _m =		
5			5		
kA			kA		
dI/dt ₁ =			dI/dt ₁ =		
kA/m			kA/m		
dI/dt ₂ =			dI/dt ₂ =		
kA/m			kA/m		
Cyclic Test			Cyclic Test		
cycles			cycles		
Heater			Heater		
Time T ₁ 11:33			Time T ₁ 13:24		
T ₂ 11:41			T ₂ 13:29		
T ₃ _____			T ₃ _____		
W T ₄ = s			W T ₄ = s		
Remarks			Remarks		
TW_08, TW_09, TW_10: Current off 11:31-11:44			TW_08, TW_09, TW_10: Current off 11:31-11:44		
Results			Results		
Vi=82.3V, Vo=28.3V, Vins=6.7V, Tauns=0.064s, OK.			Vi=82.9V, Vo=28.3V, Vins=6.8V, Tauns=0.064s, OK.		
Remarks			Remarks		

CSMC-TF insert Experiment Log			Date 2001.9.21	Time 11:27	P. 29
Run No. <u>24</u> - <u>1</u>			Procedure No. <u>2.1</u>	Objective Check protection system.	
Operation Mode <u>DC</u>			Operation Mode <u>DC</u>		
Coolant condition (before this run)			Coolant condition (before this run)		
All			All		
Temperature	~ 4.5 K	~ K	Temperature	~ 4.5 K	~ K
Mass Flow Rate	~ 10 g/s	~ g/s	Mass Flow Rate	~ 10 g/s	~ g/s
Pressure	~ 0.6 MPa		Pressure	~ 0.6 MPa	
Data Acquisition System (DAS)	CSMC+TFI DC1		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	1 k
Facility condition			Facility condition		
Power Supply			Power Supply		
Resistor			Resistor		
CSMC			CSMC		
TFI			TFI		
60 kA			60 kA		
0.73 mohm			0.73 mohm		
Data Acquisition System (DAS)			Data Acquisition System (DAS)		
ADC384L			ADC384H		
ADC64L			ADC64H		
ADC32H					
Sampling			Sampling		
1 s			1 s		
10 ms			10 ms		
Pre-trigger			Pre-trigger		
100			100		
1 k			1 k		
Cyclic Test			Cyclic Test		
cycles			cycles		
Current pattern			Current pattern		
Manual dump			Manual dump		
T2			T2		
Im (kA)			Im (kA)		
dI/dt ₁ (kA/m)			dI/dt ₁ (kA/m)		
Man. dump			Man. dump		
T1			T1		
Cyclic Test			Cyclic Test		
cycles			cycles		
CSMC			CSMC		
I _m =			I _m =		
kA			kA		
dI/dt ₁ =			dI/dt ₁ =		
kA/m			kA/m		
dB/dt ₁ =			dB/dt ₁ =		
T/s			T/s		
dI/dt ₂ =			dI/dt ₂ =		
kA/m			kA/m		
dB/dt ₂ =			dB/dt ₂ =		
T/s			T/s		
TFI			TFI		
I _m =			I _m =		
5			5		
kA			kA		
dI/dt ₁ =			dI/dt ₁ =		
kA/m			kA/m		
dI/dt ₂ =			dI/dt ₂ =		
kA/m			kA/m		
Cyclic Test			Cyclic Test		
cycles			cycles		
Heater			Heater		
Time T ₁ 11:33			Time T ₁ 13:24		
T ₂ 11:41			T ₂ 13:29		
T ₃ _____			T ₃ _____		
W T ₄ = s			W T ₄ = s		
Remarks			Remarks		
TW_08, TW_09, TW_10: Current off 11:31-11:44			TW_08, TW_09, TW_10: Current off 11:31-11:44		
Results			Results		
Vi=82.3V, Vo=28.3V, Vins=6.7V, Tauns=0.064s, OK.			Vi=82.9V, Vo=28.3V, Vins=6.8V, Tauns=0.064s, OK.		
Remarks			Remarks		

CSMC-TF insert Experiment Log			Date 2001.9.21	Time 13:40	P. 31
Run No. 26 - 1			Procedure No. 2.2	TF insert single 100% charge	Objective
Operation Mode DC			2.4	2.4	Procedure No.
Coolant condition (before this run)			DC	DC	Operation Mode
Facility condition			All	All	Coolant condition (before this run)
Power Supply			CSMC	CSMC	Facility condition
Resistor			TFI	TFI	Power Supply
Temperature ~ 4.5 K			~ 4.5 K	~ 4.5 K	Resistor
Mass Flow Rate ~ 10 g/s			~ 10 g/s	~ 10 g/s	Temperature
Pressure ~ 0.6 MPa			~ 0.6 MPa	~ 0.6 MPa	Mass Flow Rate
Data Acquisition System (DAS) CSMC+TFI DC1			ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384L ADC384H ADC64L ADC64H ADC32H	Data Acquisition System (DAS)
Sampling 1 s			10 ms	1 s	Sampling
Pre-trigger 100			1 k	100	Pre-trigger
Current pattern Trapezoidal			T1	100	Current pattern
CSMC $I_m =$ kA			CSMC $I_m =$ kA	10 ms	T1
$dI/dt_1 =$ kA/m			$dI/dt_1 =$ kA/m	1 s	$dI/dt_1 =$ kA/m
$dI/dt_2 =$ kA/s			$dI/dt_2 =$ kA/s	100	$dI/dt_2 =$ kA/s
TFI $I_m =$ 46 kA			TFI $I_m =$ 46 kA	10 ms	TFI $I_m =$ 46 kA
$dI/dt_1 =$ 3 kA/m			$dI/dt_1 =$ 3 kA/m	1 s	$dI/dt_1 =$ 3 kA/m
$dI/dt_2 =$ 100 kA/s			$dI/dt_2 =$ 100 kA/s	100	$dI/dt_2 =$ 100 kA/s
Cyclic Test cycles			Cyclic Test cycles	100	Cyclic Test cycles
Time T ₁ 13:41			Heater	W T _d = s	Time T ₁ 15:51
Remarks			W T _d = s	Time T ₁ 15:51	Heater
Results			W T _d = s	Time T ₁ 15:51	Results
OK			W T _d = s	Time T ₁ 15:51	OK
Current steps: 10kA, 20kA, 30kA, 40kA			W T _d = s	Time T ₁ 15:51	Current steps: 10kA, 20kA, 30kA, 40kA
Since this shot, low pass filter changed as follows (Total 8 tags) FAC_VD_JIP500Hz --> 100 Hz SCB_VD_JIP500Hz --> 100 Hz ITF_VD_JIP500Hz --> 100 Hz ITF_VD_JBN500Hz --> 100 Hz FAC_VD_JBN500Hz --> 100 Hz MCL_VD_JB10ASC-B500Hz --> 100 Hz MCL_VD_JB08BU7A-500Hz --> 100 Hz MCL_VD_JT05A06A-500Hz --> 100 Hz			W T _d = s	Time T ₁ 15:51	Since this shot, low pass filter changed as follows (Total 8 tags) FAC_VD_JIP500Hz --> 100 Hz SCB_VD_JIP500Hz --> 100 Hz ITF_VD_JIP500Hz --> 100 Hz ITF_VD_JBN500Hz --> 100 Hz FAC_VD_JBN500Hz --> 100 Hz MCL_VD_JB10ASC-B500Hz --> 100 Hz MCL_VD_JB08BU7A-500Hz --> 100 Hz MCL_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	Objective Daily check	
Operation Mode DC.					
Coolant condition (before this run)					
Facility condition			All		
Power Supply			Resistor		
CSMC				Power Supply	
TFI				Resistor	
Temperature ~ 4.5 K	~ K		Temperature ~ 4.5 K	~ K	
Mass Flow Rate ~ 10 g/s	~ g/s		Mass Flow Rate ~ 10 g/s	~ g/s	
Pressure ~ 0.6 MPa			Pressure ~ 0.6 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1					
ADC384L ADC384H ADC64L ADC64H ADC32H					
Sampling 1 s	10 ms		Sampling 1 s	10 ms	
Pre-trigger 100	1 k		Pre-trigger 100	1 k	
Current pattern Manual dump					
CSMC			CSMC	I _m =	kA
dI/dt ₁ =			dI/dt ₁ =	kA/m	kA/s
dI/dt ₂ =			dI/dt ₂ =	kA/m	kA/s
TFI			TFI	I _m =	20 kA
dI/dt ₁ =			dI/dt ₁ =	3 kA/m	kA/s
dI/dt ₂ =			dI/dt ₂ =	3 kA/m	kA/s
Cyclic Test _____ cycles			Cyclic Test * _____ cycles		
Time T ₁ 9:51	T ₂ 10:01	T ₃	Time T ₁ 10:16	T ₂ 11:30	T ₃
			Heater	W	T _d = s
Remarks			Remarks		
Vi=184V, Vo=28.6V, Vins=6.8V, Tauns=0.063s, OK.			Vi=184V, Vo=63.8V, Vins=14.5V, Tauns=0.163s, OK.		
(Total 8 tags)			Keep 20kA flat top one hour.		
ITP_VD_0102:100Hz -> 10 Hz					
ITP_VD_0203:100Hz -> 10 Hz					
ITP_VD_0304:100Hz -> 10 Hz					
ITP_VD_0405:100Hz -> 10 Hz					
ITP_VD_0508:100Hz -> 10 Hz					
ITP_VD_0609:100Hz -> 10 Hz					
ITP_VD_0910:100Hz -> 10 Hz					
ITP_VD_1011:100Hz -> 10 Hz					

CSMC-TF insert Experiment Log			Date 2001.9.24	Time 9:40	P. 33
Run No. 28 - 1			Procedure No. 2.0	Objective Daily check	
Operation Mode DC.					
Coolant condition (before this run)					
Facility condition			All		
Power Supply			Resistor		
CSMC				Power Supply	
TFI				Resistor	
Temperature ~ 4.5 K	~ K		Temperature ~ 4.5 K	~ K	
Mass Flow Rate ~ 10 g/s	~ g/s		Mass Flow Rate ~ 10 g/s	~ g/s	
Pressure ~ 0.6 MPa			Pressure ~ 0.6 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1					
ADC384L ADC384H ADC64L ADC64H ADC32H					
Sampling 1 s	10 ms		Sampling 1 s	10 ms	
Pre-trigger 100	1 k		Pre-trigger 100	1 k	
Current pattern Manual dump					
CSMC			CSMC	I _m =	kA
dI/dt ₁ =			dI/dt ₁ =	kA/m	kA/s
dI/dt ₂ =			dI/dt ₂ =	kA/m	kA/s
TFI			TFI	I _m =	20 kA
dI/dt ₁ =			dI/dt ₁ =	3 kA/m	kA/s
dI/dt ₂ =			dI/dt ₂ =	3 kA/m	kA/s
Cyclic Test _____ cycles			Cyclic Test * _____ cycles		
Time T ₁ 9:51	T ₂ 10:01	T ₃	Time T ₁ 10:16	T ₂ 11:30	T ₃
			Heater	W	T _d = s
Remarks			Remarks		
Vi=184V, Vo=28.6V, Vins=6.8V, Tauns=0.063s, OK.			Vi=184V, Vo=63.8V, Vins=14.5V, Tauns=0.163s, OK.		
(Total 8 tags)			Keep 20kA flat top one hour.		
ITP_VD_0102:100Hz -> 10 Hz					
ITP_VD_0203:100Hz -> 10 Hz					
ITP_VD_0304:100Hz -> 10 Hz					
ITP_VD_0405:100Hz -> 10 Hz					
ITP_VD_0508:100Hz -> 10 Hz					
ITP_VD_0609:100Hz -> 10 Hz					
ITP_VD_0910:100Hz -> 10 Hz					
ITP_VD_1011:100Hz -> 10 Hz					

CSMC-TF insert		Experiment Log Date		2001.9.24	Time	12:00	P. 35
Run No.	30	Procedure No.		1			
Procedure No.		Operation Mode		2.0			
Operation Mode		DC					
Coolant condition (before this run)							
All		Facility condition		Power Supply		Resistor	
Temperature	~ 4.5 K	~	K	CSMC			
Mass Flow Rate	~ 10 g/s	~	g/s	TFI	60 kA	0.73 mohm	
Pressure	~ 0.6 MPa						
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		TFI	
				I_m =	kA	I_i =	kA
				dI/dt_i =	kA/m	dB/dt_i =	T/s
				dI/dt_2 =	kA/s	dB/dt_2 =	T/s
				TFI	I_m =	I_i =	kA
				dI/dt_i =	46	kA	
				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	s
Results		Heater		W	T _d =		
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 15:20	P. 37
Objective						
Check of the synchronized charge: CSMC+TFI 10kA up and Manual dump.						
Run No.	32	-	1			
Procedure No.	3.1					
Operation Mode	DC					
Coolant condition (before this run)						
All	Facility condition			All	Facility condition	
Temperature	~ 4.5 K	~	K	Temperature	~ 4.5 K	~
Mass Flow Rate	~ 10 g/s	~	g/s	Mass Flow Rate	~ 10 g/s	~
Pressure	~ 0.6 MPa			Pressure	~ 0.7 MPa	
Data Acquisition System (DAS)	CSMC+TFI DC1			Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H ADC364L ADC64H ADC32H				ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s		10 ms	Sampling	1 s	10 ms
Pre-trigger	100	1 k	100	Pre-trigger	100	1 k
Current pattern Manual dump with synchro. charge				Current pattern Manual dump with synchro. charge		
CSMC	$I_m = 10 \text{ kA}$	$I_l = \text{kA}$	$dI/dt_1 = 1 \text{ kA/m}$	CSMC	$I_m = 10 \text{ kA}$	$I_l = \text{kA}$
			$dB/dt_1 = 1 \text{ T/s}$			
			$dI/dt_2 = 1 \text{ kA/m}$	CSMC, dI/dt_1 (kA/m)	$dI/dt_1 = 1 \text{ kA/m}$	$dB/dt_1 = 1 \text{ T/s}$
			$dB/dt_2 = 1 \text{ T/s}$	T_2		
TFI	$I_m = 10 \text{ kA}$	$I_l = \text{kA}$	$dI/dt_1 = 1 \text{ kA/m}$	TFI	$I_m = 10 \text{ kA}$	$I_l = \text{kA}$
			$dI/dt_2 = 1 \text{ kA/m}$			
			$dI/dt_2 = 1 \text{ kA/m}$	T_1		
			$dI/dt_2 = 1 \text{ kA/m}$	T_1		
			Cyclic Test cycles			
Time	T_1	15:22	T_2	15:55	T_3	
Heater			W	$T_d =$	s	
Results	$V_i=141V, V_o=175V, V_{ins}=7.6V, T_{aumc}=19s,$ $T_{aums}=0.086s/17.8s, OK$					
Remarks						
Results	$V_i=141V, V_o=175V, V_{ins}=8V, T_{aumc}=19s,$ $T_{aums}=0.088s/17.8s, OK$					
Remarks						

CSMC-TF insert Experiment Log				Date 2001.9.24	Time 15:20	P. 37
Objective						
Check of the synchronized charge: CSMC+TFI 10kA up and Manual dump.						
Run No.	32	-	1			
Procedure No.	3.1					
Operation Mode	DC					
Coolant condition (before this run)						
All	Facility condition			All	Facility condition	
Temperature	~ 4.5 K	~	K	Temperature	~ 4.5 K	~
Mass Flow Rate	~ 10 g/s	~	g/s	Mass Flow Rate	~ 10 g/s	~
Pressure	~ 0.6 MPa			Pressure	~ 0.7 MPa	
Data Acquisition System (DAS)	CSMC+TFI DC1			Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H ADC364L ADC64H ADC32H				ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s	10 ms	1 s	Sampling	1 s	10 ms
Pre-trigger	100	1 k	100	Pre-trigger	100	1 k
Current pattern Manual dump with synchro. charge				Current pattern Manual dump with synchro. charge		
CSMC	$I_m = 10 \text{ kA}$	$I_l = \text{kA}$	$dI/dt_1 = 1 \text{ kA/m}$	CSMC	$I_m = 10 \text{ kA}$	$I_l = \text{kA}$
			$dB/dt_1 = 1 \text{ T/s}$			
			$dI/dt_2 = 1 \text{ kA/m}$	CSMC, dI/dt_1 (kA/m)	$dI/dt_1 = 1 \text{ kA/m}$	$dB/dt_1 = 1 \text{ T/s}$
			$dB/dt_2 = 1 \text{ T/s}$	T_2		
TFI	$I_m = 10 \text{ kA}$	$I_l = \text{kA}$	$dI/dt_1 = 1 \text{ kA/m}$	TFI	$I_m = 10 \text{ kA}$	$I_l = \text{kA}$
			$dI/dt_2 = 1 \text{ kA/m}$			
			$dI/dt_2 = 1 \text{ kA/m}$	T_1		
			$dI/dt_2 = 1 \text{ kA/m}$	T_1		
			Cyclic Test cycles			
Time	T_1	15:22	T_2	15:55	T_3	
Heater			W	$T_d =$	s	
Results	$V_i=141V, V_o=175V, V_{ins}=7.6V, T_{aumc}=19s,$ $T_{aums}=0.086s/17.8s, OK$					
Remarks						
Results	$V_i=141V, V_o=175V, V_{ins}=8V, T_{aumc}=19s,$ $T_{aums}=0.088s/17.8s, OK$					
Remarks						

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				
Coolant condition (before this run)						
All						
Temperature	~ 4.5 K	~	K			
Mass Flow Rate	~ 10 g/s	~	g/s			
Pressure	~ 0.7 MPa					
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 $I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m/s}$ $dI/dt_2 = 1 \text{ kA/m/s}$ $dI/dt_3 = 1 \text{ kA/m/s}$ TFI $I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m/s}$ $dI/dt_2 = 1 \text{ kA/m/s}$ $dI/dt_3 = 1 \text{ kA/m/s}$ Cyclic Test cycles						
Time	T ₁ 13:43	T ₂ 15:00	T ₃ 16:15	Heater	W	T _d = s
Results				Remarks		
$V_i=568V$, $V_o=691V$, $V_{ins}=24.3V$, $T_{aumc}=17.7s$, $T_{aums}=0.17s$, $T_{18s}=0.18s$, OK.				Keep 30kA and 40 kA flat top one hour. $B_{max}=11.5T$ at 40kA on the innermost of TFI.		

CSMC-TF insert Experiment Log Date 2001.9.26 Time 9:35				P. 41																		
Objective Daily check CSMC+TFI 10kA up and Manual dump.																						
Run No.	36	-	1	Run No. 37 - 1																		
Procedure No.	3.0	-		Procedure No. 3.4																		
Operation Mode	DC	-		Operation Mode DC																		
Coolant condition (before this run)																						
<table border="1"> <thead> <tr> <th colspan="3">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature ~ 4.5 K ~ K</td> <td>CSMC 50 kA</td> <td>31.4 mohm</td> </tr> <tr> <td>Mass Flow Rate ~ 10 g/s ~ g/s</td> <td>TFI 60 kA</td> <td>0.73 mohm</td> </tr> <tr> <td>Pressure ~ 0.7 MPa</td> <td></td> <td></td> </tr> </tbody> </table>					Facility condition			All	Power Supply	Resistor	Temperature ~ 4.5 K ~ K	CSMC 50 kA	31.4 mohm	Mass Flow Rate ~ 10 g/s ~ g/s	TFI 60 kA	0.73 mohm	Pressure ~ 0.7 MPa					
Facility condition																						
All	Power Supply	Resistor																				
Temperature ~ 4.5 K ~ K	CSMC 50 kA	31.4 mohm																				
Mass Flow Rate ~ 10 g/s ~ g/s	TFI 60 kA	0.73 mohm																				
Pressure ~ 0.7 MPa																						
<table border="1"> <thead> <tr> <th colspan="3">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature ~ 4.5 K ~ K</td> <td>CSMC 50 kA</td> <td>31.4 mohm</td> </tr> <tr> <td>Mass Flow Rate ~ 10 g/s ~ g/s</td> <td>TFI 60 kA</td> <td>0.73 mohm</td> </tr> <tr> <td>Pressure ~ 0.7 MPa</td> <td></td> <td></td> </tr> </tbody> </table>					Facility condition			All	Power Supply	Resistor	Temperature ~ 4.5 K ~ K	CSMC 50 kA	31.4 mohm	Mass Flow Rate ~ 10 g/s ~ g/s	TFI 60 kA	0.73 mohm	Pressure ~ 0.7 MPa					
Facility condition																						
All	Power Supply	Resistor																				
Temperature ~ 4.5 K ~ K	CSMC 50 kA	31.4 mohm																				
Mass Flow Rate ~ 10 g/s ~ g/s	TFI 60 kA	0.73 mohm																				
Pressure ~ 0.7 MPa																						
<table border="1"> <thead> <tr> <th colspan="3">Data Acquisition System (DAS)</th> </tr> <tr> <th>ADC384L ADC384H ADC64L ADC64H ADC32H</th> <th>ADC384H</th> <th>ADC64L ADC64H ADC32H</th> </tr> </thead> <tbody> <tr> <td>Sampling 1 s</td> <td>10 ms</td> <td>1 s 10 ms</td> </tr> <tr> <td>Pre-trigger 100</td> <td>1 k</td> <td>100 1 k</td> </tr> </tbody> </table>					Data Acquisition System (DAS)			ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384H	ADC64L ADC64H ADC32H	Sampling 1 s	10 ms	1 s 10 ms	Pre-trigger 100	1 k	100 1 k						
Data Acquisition System (DAS)																						
ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384H	ADC64L ADC64H ADC32H																				
Sampling 1 s	10 ms	1 s 10 ms																				
Pre-trigger 100	1 k	100 1 k																				
<table border="1"> <thead> <tr> <th colspan="3">Data Acquisition System (DAS)</th> </tr> <tr> <th>ADC384L ADC384H ADC64L ADC64H ADC32H</th> <th>ADC384H</th> <th>ADC64L ADC64H ADC32H</th> </tr> </thead> <tbody> <tr> <td>Sampling 1 s</td> <td>10 ms</td> <td>1 s 10 ms</td> </tr> <tr> <td>Pre-trigger 100</td> <td>1 k</td> <td>100 1 k</td> </tr> </tbody> </table>					Data Acquisition System (DAS)			ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384H	ADC64L ADC64H ADC32H	Sampling 1 s	10 ms	1 s 10 ms	Pre-trigger 100	1 k	100 1 k						
Data Acquisition System (DAS)																						
ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384H	ADC64L ADC64H ADC32H																				
Sampling 1 s	10 ms	1 s 10 ms																				
Pre-trigger 100	1 k	100 1 k																				
<table border="1"> <thead> <tr> <th colspan="3">Current pattern</th> </tr> <tr> <th>syncro. charge ramp up</th> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td></td> <td>$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> <td>$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> </tr> <tr> <td></td> <td>CSMC_Im (kA) (kA/m)</td> <td>TFI_Im (kA) (kA/m)</td> </tr> <tr> <td></td> <td>T1</td> <td>T1</td> </tr> <tr> <td></td> <td>TFI_dI/dt_1 (kA/m)</td> <td>TFI_dI/dt_1 (kA/m)</td> </tr> </tbody> </table>					Current pattern			syncro. charge ramp up	CSMC	TFI		$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$		CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)		T1	T1		TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)
Current pattern																						
syncro. charge ramp up	CSMC	TFI																				
	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$																				
	CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)																				
	T1	T1																				
	TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)																				
<table border="1"> <thead> <tr> <th colspan="3">Current pattern</th> </tr> <tr> <th>Manual dump with syncro. charge</th> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td></td> <td>$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> <td>$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> </tr> <tr> <td></td> <td>CSMC_Im (kA) (kA/m)</td> <td>TFI_Im (kA) (kA/m)</td> </tr> <tr> <td></td> <td>T2</td> <td>T2</td> </tr> <tr> <td></td> <td>TFI_dI/dt_1 (kA/m)</td> <td>TFI_dI/dt_1 (kA/m)</td> </tr> </tbody> </table>					Current pattern			Manual dump with syncro. charge	CSMC	TFI		$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$		CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)		T2	T2		TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)
Current pattern																						
Manual dump with syncro. charge	CSMC	TFI																				
	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$																				
	CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)																				
	T2	T2																				
	TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)																				
<table border="1"> <thead> <tr> <th colspan="3">Current pattern</th> </tr> <tr> <th>Man. dump</th> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td></td> <td>$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> <td>$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> </tr> <tr> <td></td> <td>CSMC_Im (kA) (kA/m)</td> <td>TFI_Im (kA) (kA/m)</td> </tr> <tr> <td></td> <td>T1</td> <td>T1</td> </tr> <tr> <td></td> <td>TFI_dI/dt_1 (kA/m)</td> <td>TFI_dI/dt_1 (kA/m)</td> </tr> </tbody> </table>					Current pattern			Man. dump	CSMC	TFI		$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$		CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)		T1	T1		TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)
Current pattern																						
Man. dump	CSMC	TFI																				
	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$																				
	CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)																				
	T1	T1																				
	TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)																				
<table border="1"> <thead> <tr> <th colspan="3">Current pattern</th> </tr> <tr> <th>Cyclic Test</th> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td></td> <td>$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> <td>$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> </tr> <tr> <td></td> <td>CSMC_Im (kA) (kA/m)</td> <td>TFI_Im (kA) (kA/m)</td> </tr> <tr> <td></td> <td>Cyclic Test cycles</td> <td>Cyclic Test cycles</td> </tr> </tbody> </table>					Current pattern			Cyclic Test	CSMC	TFI		$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$		CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)		Cyclic Test cycles	Cyclic Test cycles			
Current pattern																						
Cyclic Test	CSMC	TFI																				
	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$																				
	CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)																				
	Cyclic Test cycles	Cyclic Test cycles																				
<table border="1"> <thead> <tr> <th colspan="3">Time</th> </tr> <tr> <th>T_1</th> <th>T_2</th> <th>T_3</th> </tr> </thead> <tbody> <tr> <td>9:45</td> <td>10:18</td> <td></td> </tr> </tbody> </table>					Time			T_1	T_2	T_3	9:45	10:18										
Time																						
T_1	T_2	T_3																				
9:45	10:18																					
<table border="1"> <thead> <tr> <th colspan="3">Time</th> </tr> <tr> <th>T_1</th> <th>T_2</th> <th>T_3</th> </tr> </thead> <tbody> <tr> <td>10:50</td> <td></td> <td></td> </tr> </tbody> </table>					Time			T_1	T_2	T_3	10:50											
Time																						
T_1	T_2	T_3																				
10:50																						
<table border="1"> <thead> <tr> <th colspan="3">Heater</th> </tr> <tr> <th>W</th> <th>$T_d =$</th> <th>s</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Heater			W	$T_d =$	s												
Heater																						
W	$T_d =$	s																				
<table border="1"> <thead> <tr> <th colspan="3">Remarks</th> </tr> <tr> <td colspan="3">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.</td> </tr> </thead> <tbody> <tr> <td colspan="3"></td> </tr> </tbody> </table>					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.														
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.																						
<table border="1"> <thead> <tr> <th colspan="3">Results</th> </tr> <tr> <td colspan="3">V_i=141V, V_o=173V, V_{ins}=7.8V, T_{air}=19s, T_{airins}=0.089s/18.3s, OK.</td> </tr> </thead> <tbody> <tr> <td colspan="3">BH_01=10.4T, OK.</td> </tr> </tbody> </table>					Results			V _i =141V, V _o =173V, V _{ins} =7.8V, T _{air} =19s, T _{airins} =0.089s/18.3s, OK.			BH_01=10.4T, OK.											
Results																						
V _i =141V, V _o =173V, V _{ins} =7.8V, T _{air} =19s, T _{airins} =0.089s/18.3s, OK.																						
BH_01=10.4T, OK.																						
<table border="1"> <thead> <tr> <th colspan="3">Remarks</th> </tr> <tr> <td colspan="3">BH_01=10.4T, OK.</td> </tr> </thead> <tbody> <tr> <td colspan="3"></td> </tr> </tbody> </table>					Remarks			BH_01=10.4T, OK.														
Remarks																						
BH_01=10.4T, OK.																						

CSMC-TF insert Experiment Log Date 2001.9.26 Time 9:35				P. 41																		
Objective Daily check CSMC+TFI 10kA up and Manual dump.																						
Run No.	36	-	1	Run No. 37 - 1																		
Procedure No.	3.0	-		Procedure No. 3.4																		
Operation Mode	DC	-		Operation Mode DC																		
Coolant condition (before this run)																						
<table border="1"> <thead> <tr> <th colspan="3">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature ~ 4.5 K ~ K</td> <td>CSMC 50 kA</td> <td>31.4 mohm</td> </tr> <tr> <td>Mass Flow Rate ~ 10 g/s ~ g/s</td> <td>TFI 60 kA</td> <td>0.73 mohm</td> </tr> <tr> <td>Pressure ~ 0.7 MPa</td> <td></td> <td></td> </tr> </tbody> </table>					Facility condition			All	Power Supply	Resistor	Temperature ~ 4.5 K ~ K	CSMC 50 kA	31.4 mohm	Mass Flow Rate ~ 10 g/s ~ g/s	TFI 60 kA	0.73 mohm	Pressure ~ 0.7 MPa					
Facility condition																						
All	Power Supply	Resistor																				
Temperature ~ 4.5 K ~ K	CSMC 50 kA	31.4 mohm																				
Mass Flow Rate ~ 10 g/s ~ g/s	TFI 60 kA	0.73 mohm																				
Pressure ~ 0.7 MPa																						
<table border="1"> <thead> <tr> <th colspan="3">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature ~ 4.5 K ~ K</td> <td>CSMC 50 kA</td> <td>31.4 mohm</td> </tr> <tr> <td>Mass Flow Rate ~ 10 g/s ~ g/s</td> <td>TFI 60 kA</td> <td>0.73 mohm</td> </tr> <tr> <td>Pressure ~ 0.7 MPa</td> <td></td> <td></td> </tr> </tbody> </table>					Facility condition			All	Power Supply	Resistor	Temperature ~ 4.5 K ~ K	CSMC 50 kA	31.4 mohm	Mass Flow Rate ~ 10 g/s ~ g/s	TFI 60 kA	0.73 mohm	Pressure ~ 0.7 MPa					
Facility condition																						
All	Power Supply	Resistor																				
Temperature ~ 4.5 K ~ K	CSMC 50 kA	31.4 mohm																				
Mass Flow Rate ~ 10 g/s ~ g/s	TFI 60 kA	0.73 mohm																				
Pressure ~ 0.7 MPa																						
<table border="1"> <thead> <tr> <th colspan="3">Data Acquisition System (DAS)</th> </tr> <tr> <th>ADC384L ADC384H ADC64L ADC64H ADC32H</th> <th>ADC384H</th> <th>ADC64L ADC64H ADC32H</th> </tr> </thead> <tbody> <tr> <td>Sampling 1 s</td> <td>10 ms</td> <td>1 s 10 ms</td> </tr> <tr> <td>Pre-trigger 100</td> <td>1 k</td> <td>100 1 k</td> </tr> </tbody> </table>					Data Acquisition System (DAS)			ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384H	ADC64L ADC64H ADC32H	Sampling 1 s	10 ms	1 s 10 ms	Pre-trigger 100	1 k	100 1 k						
Data Acquisition System (DAS)																						
ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384H	ADC64L ADC64H ADC32H																				
Sampling 1 s	10 ms	1 s 10 ms																				
Pre-trigger 100	1 k	100 1 k																				
<table border="1"> <thead> <tr> <th colspan="3">Current pattern</th> </tr> <tr> <th>syncro. charge ramp up</th> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td></td> <td>$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> <td>$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> </tr> <tr> <td></td> <td>CSMC_Im (kA) (kA/m)</td> <td>TFI_Im (kA) (kA/m)</td> </tr> <tr> <td></td> <td>T1</td> <td>T1</td> </tr> <tr> <td></td> <td>TFI_dI/dt_1 (kA/m)</td> <td>TFI_dI/dt_1 (kA/m)</td> </tr> </tbody> </table>					Current pattern			syncro. charge ramp up	CSMC	TFI		$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$		CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)		T1	T1		TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)
Current pattern																						
syncro. charge ramp up	CSMC	TFI																				
	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$																				
	CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)																				
	T1	T1																				
	TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)																				
<table border="1"> <thead> <tr> <th colspan="3">Current pattern</th> </tr> <tr> <th>Manual dump with syncro. charge</th> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td></td> <td>$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> <td>$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> </tr> <tr> <td></td> <td>CSMC_Im (kA) (kA/m)</td> <td>TFI_Im (kA) (kA/m)</td> </tr> <tr> <td></td> <td>T2</td> <td>T2</td> </tr> <tr> <td></td> <td>TFI_dI/dt_1 (kA/m)</td> <td>TFI_dI/dt_1 (kA/m)</td> </tr> </tbody> </table>					Current pattern			Manual dump with syncro. charge	CSMC	TFI		$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$		CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)		T2	T2		TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)
Current pattern																						
Manual dump with syncro. charge	CSMC	TFI																				
	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$																				
	CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)																				
	T2	T2																				
	TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)																				
<table border="1"> <thead> <tr> <th colspan="3">Current pattern</th> </tr> <tr> <th>Man. dump</th> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td></td> <td>$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> <td>$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> </tr> <tr> <td></td> <td>CSMC_Im (kA) (kA/m)</td> <td>TFI_Im (kA) (kA/m)</td> </tr> <tr> <td></td> <td>T1</td> <td>T1</td> </tr> <tr> <td></td> <td>TFI_dI/dt_1 (kA/m)</td> <td>TFI_dI/dt_1 (kA/m)</td> </tr> </tbody> </table>					Current pattern			Man. dump	CSMC	TFI		$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$		CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)		T1	T1		TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)
Current pattern																						
Man. dump	CSMC	TFI																				
	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 10 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$																				
	CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)																				
	T1	T1																				
	TFI_dI/dt_1 (kA/m)	TFI_dI/dt_1 (kA/m)																				
<table border="1"> <thead> <tr> <th colspan="3">Current pattern</th> </tr> <tr> <th>Cyclic Test</th> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td></td> <td>$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> <td>$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$</td> </tr> <tr> <td></td> <td>CSMC_Im (kA) (kA/m)</td> <td>TFI_Im (kA) (kA/m)</td> </tr> <tr> <td></td> <td>Cyclic Test cycles</td> <td>Cyclic Test cycles</td> </tr> </tbody> </table>					Current pattern			Cyclic Test	CSMC	TFI		$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$		CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)		Cyclic Test cycles	Cyclic Test cycles			
Current pattern																						
Cyclic Test	CSMC	TFI																				
	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$	$I_m = 40 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \frac{\text{kA}}{\text{s}}$ $dI/dt_2 = \frac{\text{kA}}{\text{s}}$																				
	CSMC_Im (kA) (kA/m)	TFI_Im (kA) (kA/m)																				
	Cyclic Test cycles	Cyclic Test cycles																				
<table border="1"> <thead> <tr> <th colspan="3">Time</th> </tr> <tr> <th>T_1</th> <th>T_2</th> <th>T_3</th> </tr> </thead> <tbody> <tr> <td>9:45</td> <td>10:18</td> <td></td> </tr> </tbody> </table>					Time			T_1	T_2	T_3	9:45	10:18										
Time																						
T_1	T_2	T_3																				
9:45	10:18																					
<table border="1"> <thead> <tr> <th colspan="3">Time</th> </tr> <tr> <th>T_1</th> <th>T_2</th> <th>T_3</th> </tr> </thead> <tbody> <tr> <td>10:50</td> <td></td> <td></td> </tr> </tbody> </table>					Time			T_1	T_2	T_3	10:50											
Time																						
T_1	T_2	T_3																				
10:50																						
<table border="1"> <thead> <tr> <th colspan="3">Heater</th> </tr> <tr> <th>W</th> <th>$T_d =$</th> <th>s</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Heater			W	$T_d =$	s												
Heater																						
W	$T_d =$	s																				
<table border="1"> <thead> <tr> <th colspan="3">Remarks</th> </tr> <tr> <td colspan="3">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.</td> </tr> </thead> <tbody> <tr> <td colspan="3"></td> </tr> </tbody> </table>					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.														
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.																						
<table border="1"> <thead> <tr> <th colspan="3">Results</th> </tr> <tr> <td colspan="3">V_i=141V, V_o=173V, V_{ins}=7.8V, T_{air}=19s, T_{airins}=0.089s/18.3s, OK.</td> </tr> </thead> <tbody> <tr> <td colspan="3">BH_01=10.4T, OK.</td> </tr> </tbody> </table>					Results			V _i =141V, V _o =173V, V _{ins} =7.8V, T _{air} =19s, T _{airins} =0.089s/18.3s, OK.			BH_01=10.4T, OK.											
Results																						
V _i =141V, V _o =173V, V _{ins} =7.8V, T _{air} =19s, T _{airins} =0.089s/18.3s, OK.																						
BH_01=10.4T, OK.																						
<table border="1"> <thead> <tr> <th colspan="3">Remarks</th> </tr> <tr> <td colspan="3">BH_01=10.4T, OK.</td> </tr> </thead> <tbody> <tr> <td colspan="3"></td> </tr> </tbody> </table>					Remarks			BH_01=10.4T, OK.														
Remarks																						
BH_01=10.4T, OK.																						

CSMC-TF insert Experiment Log		Date	2001.9.26	Time	10:45	P. 44
Run No.	37 - 3	Objective				
Procedure No.	3.4	CSMC+TFI 100% charge and Manual dump.				
Operation Mode	DC					
Coolant condition (before this run)						
All		Facility condition				
Temperature	~ 4.5 K	~ K	Power Supply		Resistor	
Mass Flow Rate	~ 10 g/s	~ g/s	CSMC	50 kA	31.4 mohm	
Pressure	~ 0.7 MPa		TFI	60 kA	0.73 mohm	
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	CSMC+TFI DC1				
Sampling	1 s	10 ms	1 s	10 ms		
Pre-trigger	100	1 k	100	1 k		
Current pattern	Charge up and hold					
I _m (kA)		CSMC	I _m = 45.2 kA	I ₁ = kA		
dl/dt ₁			dl/dt ₁ = kA/m dB/dt ₁ = T/s			
T ₁			dl/dt ₂ = kA/m dB/dt ₂ = T/s			
		TFI	I _m = 46 kA	I ₁ = 45 kA		
			dl/dt ₁ = 1 kA/m			
			dl/dt ₂ = 1 kA/m			
			Cyclic Test cycles			
Time	T ₁ 13:03	T ₂	T ₃	Heater	W	T _d = s
Results	Remarks					
TF insert was achieved the target of 13T at 46kA on 13:10. We are very happy!! Congratulations! Ura!!	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. 43	
Run No.	<u>37</u>	-	<u>2</u>			
Procedure No.	<u>3.4</u>				Objective CSMC+TFI 100% charge and Manual dump.	
Operation Mode	DC					
Coolant condition (before this run)						
All						
Temperature	~ 4.5 K	~	K		Facility condition	
Mass Flow Rate	~ 10 g/s	~	g/s		Power Supply	
Pressure	~ 0.7 MPa			CSMC	Resistor	
				50 kA	31.4 mohm	
				TFI	60 kA	0.73 mohm
Data Acquisition System (DAS)	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					
I _m (kA)						
df/dt ₁						
T ₁						
CSMC	I _m = 45.2 kA	I _t = 40 kA				
	dI/dt _t = 1 kA/m	dB/dt _t = kA/s				
TFI	I _m = 40 kA	I _t = kA				
	df/dt _t = kA/m	dB/dt _t = kA/s				
	Cyclic Test	cycles				
Heater	W	T _d = s				
Time	T ₁ 11:40	T ₂	T ₃		Remarks	
Results	BH_01=12.3T, OK.				CSMC is ramped up 45.2kA from 40kA current keeps at 40kA.	

CSMC-TF insert Experiment Log				Date 2001.9.26	Time 10:45	P. 45																												
Objective				CSMC+TFI 100% charge and Manual dump.																														
Run No.	37	-	4	Run No.	38	-																												
Procedure No.	3.4			Procedure No.	3.4																													
Operation Mode	DC			Operation Mode	DC																													
Coolant condition (before this run)				Facility condition (before this run)																														
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> <td>~ K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> <td>0.73 mbar</td> </tr> </tbody> </table>				Facility condition		All	Power Supply	Resistor	Temperature	~ 4.5 K	~ K	Mass Flow Rate	~ 10 g/s	~ g/s	Pressure	~ 0.7 MPa	0.73 mbar	<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> <td>~ K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> <td>0.73 mbar</td> </tr> </tbody> </table>			Facility condition		All	Power Supply	Resistor	Temperature	~ 4.5 K	~ K	Mass Flow Rate	~ 10 g/s	~ g/s	Pressure	~ 0.7 MPa	0.73 mbar
Facility condition																																		
All	Power Supply	Resistor																																
Temperature	~ 4.5 K	~ K																																
Mass Flow Rate	~ 10 g/s	~ g/s																																
Pressure	~ 0.7 MPa	0.73 mbar																																
Facility condition																																		
All	Power Supply	Resistor																																
Temperature	~ 4.5 K	~ K																																
Mass Flow Rate	~ 10 g/s	~ g/s																																
Pressure	~ 0.7 MPa	0.73 mbar																																
Data Acquisition System (DAS)				Data Acquisition System (DAS)																														
ADC384L ADC384H ADC64L ADC64H ADC32H				CSMC+TFI DC1																														
Sampling	1 s	10 ms	1 s	10 ms	1 s	10 ms																												
Pre-trigger	100	1 k	100	1 k	100	1 k																												
Current pattern				Synchronized charge																														
				<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> <th colspan="2">TFI</th> </tr> <tr> <th>$I_m =$</th> <th>45.2 kA</th> <th>$I_m =$</th> <th>46 kA</th> </tr> </thead> <tbody> <tr> <td>$dI/dt_1 =$</td> <td>kA/m dB/dt_{t1}</td> <td>$dI/dt_1 =$</td> <td>1 kA/m dB/dt_{t1}</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/m dB/dt_{t2}</td> <td>$dI/dt_2 =$</td> <td>1 kA/m dB/dt_{t2}</td> </tr> </tbody> </table>			CSMC		TFI		$I_m =$	45.2 kA	$I_m =$	46 kA	$dI/dt_1 =$	kA/m dB/dt _{t1}	$dI/dt_1 =$	1 kA/m dB/dt _{t1}	$dI/dt_2 =$	kA/m dB/dt _{t2}	$dI/dt_2 =$	1 kA/m dB/dt _{t2}												
CSMC		TFI																																
$I_m =$	45.2 kA	$I_m =$	46 kA																															
$dI/dt_1 =$	kA/m dB/dt _{t1}	$dI/dt_1 =$	1 kA/m dB/dt _{t1}																															
$dI/dt_2 =$	kA/m dB/dt _{t2}	$dI/dt_2 =$	1 kA/m dB/dt _{t2}																															
Current pattern				Manual dump (synchronized)																														
				<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> <th colspan="2">TFI</th> </tr> <tr> <th>$I_m =$</th> <th>45.2 kA</th> <th>$I_m =$</th> <th>46 kA</th> </tr> </thead> <tbody> <tr> <td>$dI/dt_1 =$</td> <td>kA/m dB/dt_{t1}</td> <td>$dI/dt_1 =$</td> <td>1 kA/m dB/dt_{t1}</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/m dB/dt_{t2}</td> <td>$dI/dt_2 =$</td> <td>1 kA/m dB/dt_{t2}</td> </tr> </tbody> </table>			CSMC		TFI		$I_m =$	45.2 kA	$I_m =$	46 kA	$dI/dt_1 =$	kA/m dB/dt _{t1}	$dI/dt_1 =$	1 kA/m dB/dt _{t1}	$dI/dt_2 =$	kA/m dB/dt _{t2}	$dI/dt_2 =$	1 kA/m dB/dt _{t2}												
CSMC		TFI																																
$I_m =$	45.2 kA	$I_m =$	46 kA																															
$dI/dt_1 =$	kA/m dB/dt _{t1}	$dI/dt_1 =$	1 kA/m dB/dt _{t1}																															
$dI/dt_2 =$	kA/m dB/dt _{t2}	$dI/dt_2 =$	1 kA/m dB/dt _{t2}																															
Results				Remarks																														
V _i =64.2V, V _o =780V, V _{ins} =17.4V, T _{alpha} =17.4s, T _{alpha} =0.1633s/18.4s, OK.				BH_01=12.38T, OK.																														

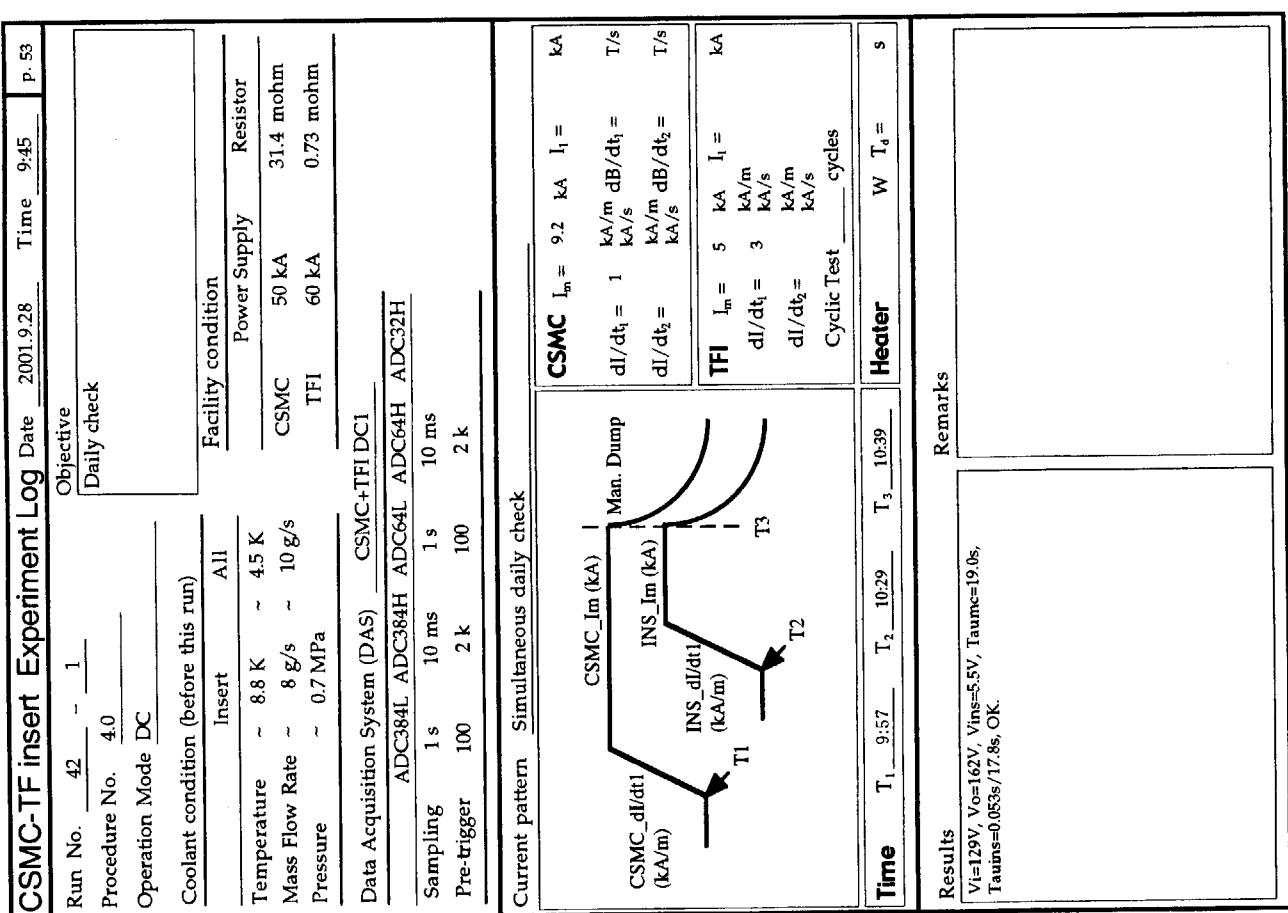
CSMC-TF insert Experiment Log				Date 2001.9.26	Time 10:45	P. 45																												
Objective				CSMC+TFI 100% up and down																														
Run No.	38	-	1	Run No.	3.4																													
Procedure No.	3.4			Procedure No.	3.4																													
Operation Mode	DC			Operation Mode	DC																													
Coolant condition (before this run)				Facility condition (before this run)																														
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> <td>~ K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> <td>0.73 mbar</td> </tr> </tbody> </table>				Facility condition		All	Power Supply	Resistor	Temperature	~ 4.5 K	~ K	Mass Flow Rate	~ 10 g/s	~ g/s	Pressure	~ 0.7 MPa	0.73 mbar	<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> <td>~ K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> <td>0.73 mbar</td> </tr> </tbody> </table>			Facility condition		All	Power Supply	Resistor	Temperature	~ 4.5 K	~ K	Mass Flow Rate	~ 10 g/s	~ g/s	Pressure	~ 0.7 MPa	0.73 mbar
Facility condition																																		
All	Power Supply	Resistor																																
Temperature	~ 4.5 K	~ K																																
Mass Flow Rate	~ 10 g/s	~ g/s																																
Pressure	~ 0.7 MPa	0.73 mbar																																
Facility condition																																		
All	Power Supply	Resistor																																
Temperature	~ 4.5 K	~ K																																
Mass Flow Rate	~ 10 g/s	~ g/s																																
Pressure	~ 0.7 MPa	0.73 mbar																																
Data Acquisition System (DAS)				Data Acquisition System (DAS)																														
ADC384L ADC384H ADC64L ADC64H ADC32H				CSMC+TFI DC1																														
Sampling	1 s	10 ms	1 s	10 ms	1 s	10 ms																												
Pre-trigger	100	1 k	100	1 k	100	1 k																												
Current pattern				Synchronized charge																														
				<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> <th colspan="2">TFI</th> </tr> <tr> <th>$I_m =$</th> <th>45.2 kA</th> <th>$I_m =$</th> <th>46 kA</th> </tr> </thead> <tbody> <tr> <td>$dI/dt_1 =$</td> <td>kA/m dB/dt_{t1}</td> <td>$dI/dt_1 =$</td> <td>1 kA/m dB/dt_{t1}</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/m dB/dt_{t2}</td> <td>$dI/dt_2 =$</td> <td>1 kA/m dB/dt_{t2}</td> </tr> </tbody> </table>			CSMC		TFI		$I_m =$	45.2 kA	$I_m =$	46 kA	$dI/dt_1 =$	kA/m dB/dt _{t1}	$dI/dt_1 =$	1 kA/m dB/dt _{t1}	$dI/dt_2 =$	kA/m dB/dt _{t2}	$dI/dt_2 =$	1 kA/m dB/dt _{t2}												
CSMC		TFI																																
$I_m =$	45.2 kA	$I_m =$	46 kA																															
$dI/dt_1 =$	kA/m dB/dt _{t1}	$dI/dt_1 =$	1 kA/m dB/dt _{t1}																															
$dI/dt_2 =$	kA/m dB/dt _{t2}	$dI/dt_2 =$	1 kA/m dB/dt _{t2}																															
Current pattern				Manual dump (synchronized)																														
				<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> <th colspan="2">TFI</th> </tr> <tr> <th>$I_m =$</th> <th>45.2 kA</th> <th>$I_m =$</th> <th>46 kA</th> </tr> </thead> <tbody> <tr> <td>$dI/dt_1 =$</td> <td>kA/m dB/dt_{t1}</td> <td>$dI/dt_1 =$</td> <td>1 kA/m dB/dt_{t1}</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/m dB/dt_{t2}</td> <td>$dI/dt_2 =$</td> <td>1 kA/m dB/dt_{t2}</td> </tr> </tbody> </table>			CSMC		TFI		$I_m =$	45.2 kA	$I_m =$	46 kA	$dI/dt_1 =$	kA/m dB/dt _{t1}	$dI/dt_1 =$	1 kA/m dB/dt _{t1}	$dI/dt_2 =$	kA/m dB/dt _{t2}	$dI/dt_2 =$	1 kA/m dB/dt _{t2}												
CSMC		TFI																																
$I_m =$	45.2 kA	$I_m =$	46 kA																															
$dI/dt_1 =$	kA/m dB/dt _{t1}	$dI/dt_1 =$	1 kA/m dB/dt _{t1}																															
$dI/dt_2 =$	kA/m dB/dt _{t2}	$dI/dt_2 =$	1 kA/m dB/dt _{t2}																															
Results				Remarks																														
V _i =64.2V, V _o =780V, V _{ins} =17.4V, T _{alpha} =17.4s, T _{alpha} =0.1633s/18.4s, OK.																																		

CSMC-TF insert Experiment Log					
Run No.	40	-	1	Time	11:20
Procedure No.	4.13			Objective	
Operation Mode	DC			Tcs measurement of TF insert at 11.4T, 31.8kA	
Coolant condition (before this run)					
Insert	All			Facility condition	
Temperature	~ 4.5 K	~	4.5 K	Power Supply	Resistor
Mass Flow Rate	~ 8 g/s	~	10 g/s	CSMC	50 kA
Pressure	~ 0.6 MPa			TFI	60 kA
Data Acquisition System (DAS)	ADC384L ADC394H	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				
L _m (kA)	 CSMC I _m = 40 kA I ₁ = kA dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s dI/dt ₂ = kA/m dB/dt ₂ = T/s				
T ₁	TFI I _m = kA I ₁ = kA dI/dt ₁ = kA/m dI/dt ₂ = kA/m Cyclic Test cycles				
Time	T ₁ , 11:28	T ₂	T ₃	Heater	W T _d = s
Remarks					
BH01=10.56T, OK					
Mass flow rate of bus bars for TFI is reduced to 8g/s.					

CSMC-TF insert Experiment Log				Date 2001.9.27	Time 15:00	P. 52
Run No.	41	-	1	Procedure No.	4.19	Objective Ic measurement of TF insert at 11.4T, 8.5K
Operation Mode	DC					Calibration of temperature sensors on TF insert conductor (TW_02 to 06) for magnetic field effects.
Coolant condition (before this run)				Coolant condition (before this run)		
Insert	All	Facility condition	AII	Insert	AII	Facility condition
Temperature	~ 8.8 K	~ 4.5 K		Temperature	~ 8.8 K	~ 4.5 K
Mass Flow Rate	~ 8 g/s	~ 10 g/s		Mass Flow Rate	~ 8 g/s	~ 10 g/s
Pressure	~ 0.7 MPa			Pressure	~ 0.7 MPa	
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	CSMC+TFI DC1	Power Supply	Resistor	Power Supply
	ADC384L ADC384H ADC64L ADC32H		ADC384L ADC384H ADC64L ADC64H ADC32H	CSMC	50 kA	CSMC
Sampling	1 s	10 ms	1 s	Sampling	1 s	10 ms
Pre-trigger	100	2 k	100	Pre-trigger	100	2 k
Current pattern	Ic	Discharge with steps		CSMC	I _m = 40 kA I ₁ = 0 kA	CSMC
				dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s	dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s	
				dI/dt ₂ = kA/m dB/dt ₂ = kA/s	dI/dt ₂ = kA/m dB/dt ₂ = kA/s	
				TFI	I _m = 31.7 kA I ₁ = kA	TFI
				dI/dt ₁ = 0.1 kA/m dB/dt ₁ = kA/s	dI/dt ₁ = 0.1 kA/m dB/dt ₁ = kA/s	
				dI/dt ₂ = 100 kA/m dB/dt ₂ = 100 kA/s	dI/dt ₂ = 100 kA/m dB/dt ₂ = 100 kA/s	
				Cyclic Test cycles	Cyclic Test cycles	
Time	T ₁ 15:18	T ₂ 16:53	T ₃ 14:58	Heater	223 W T _d = s	Heater
						Remarks
Results	IIF_TC_IN=7.94K, IIF_TC_OUT=7.54K at 40kA, IIF_TC_IN=7.89K, IIF_TC_OUT=7.49K at 30kA, IIF_TC_IN=7.77K, IIF_TC_OUT=7.39K at 10kA, IIF_TC_IN=7.74K, IIF_TC_OUT=7.37K at 0kA, OK.	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).	Mass flow of SC bus bars for TF insert is reduced to zero. CSMC 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.			
Results	IIF_TC_IN=9.14K, IIF_TC_OUT=8.24K, Ic=31.7kA (Preliminary, 200 microV at VD_0203), OK.					
Remarks						
Results						
Remarks						

CSMC-TF insert Experiment Log				Date 2001.9.27	Time 15:00	P. 51
Run No.	41	-	1	Procedure No.	4.19	Objective Ic measurement of TF insert at 11.4T, 8.5K
Operation Mode	DC					Calibration of temperature sensors on TF insert conductor (TW_02 to 06) for magnetic field effects.
Coolant condition (before this run)				Coolant condition (before this run)		
Insert	All	Facility condition	AII	Insert	AII	Facility condition
Temperature	~ 8.8 K	~ 4.5 K		Temperature	~ 8.8 K	~ 4.5 K
Mass Flow Rate	~ 8 g/s	~ 10 g/s		Mass Flow Rate	~ 8 g/s	~ 10 g/s
Pressure	~ 0.7 MPa			Pressure	~ 0.7 MPa	
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	CSMC+TFI DC1	Power Supply	Resistor	Power Supply
	ADC384L ADC384H ADC64L ADC32H		ADC384L ADC384H ADC64L ADC64H ADC32H	CSMC	50 kA	CSMC
Sampling	1 s	10 ms	10 ms	Sampling	1 s	10 ms
Pre-trigger	100	2 k	2 k	Pre-trigger	100	2 k
Current pattern	Ic	Discharge with steps		CSMC	I _m = 40 kA I ₁ = 0 kA	CSMC
				dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s	dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s	
				dI/dt ₂ = kA/m dB/dt ₂ = kA/s	dI/dt ₂ = kA/m dB/dt ₂ = kA/s	
				TFI	I _m = 31.7 kA I ₁ = kA	TFI
				dI/dt ₁ = 0.1 kA/m dB/dt ₁ = kA/s	dI/dt ₁ = 0.1 kA/m dB/dt ₁ = kA/s	
				dI/dt ₂ = 100 kA/m dB/dt ₂ = 100 kA/s	dI/dt ₂ = 100 kA/m dB/dt ₂ = 100 kA/s	
				Cyclic Test cycles	Cyclic Test cycles	
Time	T ₁ 15:18	T ₂ 16:53	T ₃ 14:58	Heater	223 W T _d = s	Heater
						Remarks
Results	IIF_TC_IN=7.94K, IIF_TC_OUT=7.54K at 40kA, IIF_TC_IN=7.89K, IIF_TC_OUT=7.49K at 30kA, IIF_TC_IN=7.77K, IIF_TC_OUT=7.39K at 10kA, IIF_TC_IN=7.74K, IIF_TC_OUT=7.37K at 0kA, OK.	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).	Mass flow of SC bus bars for TF insert is reduced to zero. CSMC 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.			
Results						
Remarks						

CSMC-TF insert Experiment Log		Date 2001.9.28	Time 9:45	P. 53	
Run No.	42 - 1	Objective Daily check			
Procedure No.	4.0	Run No.	43 - 1		
Operation Mode	DC	Procedure No.	4.14		
Coolant condition (before this run)				Coolant condition (before this run)	
Insert	All	Facility condition			
Temperature	~ 8.8 K	~ 4.5 K	Power Supply	Resistor	
Mass Flow Rate	~ 8 g/s	~ 10 g/s	CSMC	50 kA	31.4 mohm
Pressure	~ 0.7 MPa		TFI	60 kA	0.73 mohm
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)			
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	$I_m = 40.7 \text{ kA}$	$I_1 =$	$\frac{dI}{dt_1} = 1 \text{ kA/m}$	$\frac{dB}{dt_1} = \frac{1}{\text{kA/s}}$	T/s
TFI	$I_m = 0 \text{ kA}$	$I_1 =$	$\frac{dI}{dt_2} = \frac{1}{\text{kA/m}}$	$\frac{dB}{dt_2} = \frac{1}{\text{kA/s}}$	T/s
Cyclic Test cycles		Cyclic Test cycles			
Time	$T_1 = 9:57$	$T_2 = 10:29$	$T_3 = 10:39$	Heater	W $T_d =$ s
Results		Remarks			
$V_i=129V, V_o=162V, V_{ins}=5.5V, T_{aumc}=19.0s,$ $T_{aums}=0.053s/17.8s, \text{OK.}$		Mass flow of the mandrel for TF insert is reduced to 2 g/s at 11:23. CSMC charges up at 40.7kA.			
Remarks					



CSMC-TF insert Experiment Log			Date	2001.9.28	Time	11:20	p. 56
Run No. <u>43</u> - <u>2</u>			Objective				
Procedure No. <u>4.14</u>			Tcs measurement of TF insert at 11.4T, 17.6kA				
Operation Mode <u>DC</u>							
Coolant condition (before this run)			Facility condition (before this run)				
Insert	All	Insert	All	Power Supply	Resistor	Power Supply	Resistor
Temperature	~ 8.8 K	Temperature	~ 4.5 K	CSMC	31.4 mohm	CSMC	31.4 mohm
Mass Flow Rate	~ 8 g/s	Mass Flow Rate	~ 10 g/s	TFI	0.73 mohm	TFI	0.73 mohm
Pressure	~ 0.7 MPa	Pressure	~ 0.7 MPa				
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	CSMC+TFI DC1	ADC384L ADC384H ADC64L ADC64H ADC32H			
Sampling	1 s	Sampling	10 ms				
Pre-trigger	100	Pre-trigger	2 k				
Current pattern	Tcs	Current pattern	Tcs	CSMC	I _m = 40.7 kA I ₁ = kA	CSMC	I _m = 40.7 kA I ₁ = kA
Sampling	1 s	Sampling	1 s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s
Pre-trigger	100	Pre-trigger	100	dI/dt ₂ = kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s
TFI	I _m = 17.6 kA I ₁ = kA	TFI	I _m = 17.6 kA I ₁ = kA	dI/dt ₁ = 3 kA/s	dI/dt ₁ = 3 kA/s	dI/dt ₁ = 100 kA/s	dI/dt ₁ = 100 kA/s
				dI/dt ₂ = kA/s	dI/dt ₂ = kA/s	Cyclic Test _____ cycles	Cyclic Test _____ cycles
Time	T ₁ 13:02	Time	T ₂ _____	Heater	W T _d = s	Heater	W T _d = s
Results		Remarks				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	11:20	p. 55
Run No. <u>43</u> - <u>2</u>			Objective				
Procedure No. <u>4.14</u>			Tcs measurement of TF insert at 11.4T, 17.6kA				
Operation Mode <u>DC</u>							
Coolant condition (before this run)			Facility condition				
Insert	All	Insert	All	Power Supply	Resistor	Power Supply	Resistor
Temperature	~ 8.8 K	Temperature	~ 4.5 K	CSMC	31.4 mohm	CSMC	31.4 mohm
Mass Flow Rate	~ 8 g/s	Mass Flow Rate	~ 10 g/s	TFI	0.73 mohm	TFI	0.73 mohm
Pressure	~ 0.7 MPa	Pressure	~ 0.7 MPa				
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	CSMC+TFI DC1	ADC384L ADC384H ADC64L ADC64H ADC32H			
Sampling	1 s	Sampling	10 ms				
Pre-trigger	100	Pre-trigger	2 k				
Current pattern	Tcs	Current pattern	Tcs	CSMC	I _m = 40.7 kA I ₁ = kA	CSMC	I _m = 40.7 kA I ₁ = kA
Sampling	1 s	Sampling	1 s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s	dI/dt ₁ = kA/m dB/dt ₁ = T/s
Pre-trigger	100	Pre-trigger	100	dI/dt ₂ = kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s	dI/dt ₂ = kA/m dB/dt ₂ = T/s
TFI	I _m = 17.6 kA I ₁ = kA	TFI	I _m = 17.6 kA I ₁ = kA	dI/dt ₁ = 3 kA/s	dI/dt ₁ = 3 kA/s	dI/dt ₁ = 100 kA/s	dI/dt ₁ = 100 kA/s
				dI/dt ₂ = kA/s	dI/dt ₂ = kA/s	Cyclic Test _____ cycles	Cyclic Test _____ cycles
Time	T ₁ 13:03	Time	T ₂ _____	Heater	W T _d = s	Heater	W T _d = s
Results		Remarks				Remarks	
						Heat up of the resistive heater is defined by the following shot(#43-3).	
						BH01=10.9T, OK.	
						ITF_TC_IN=10.3K, ITF_TC_OUT=8.76K, Tcs=9.6K (Preliminary, 1 microV/cm at VD_0203) OK.	

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	-																																														
Coolant condition (before this run)																																																
Insert	All	Facility condition	All																																													
Temperature	~ 8.8 K	~ 4.5 K	Temperature	~ 8.8 K																																												
Mass Flow Rate	~ 8 g/s	~ 10 g/s	Power Supply	~ 8 g/s																																												
Pressure	~ 0.7 MPa	60 kPa	Resistor	~ 10 g/s																																												
Data Acquisition System (DAS)	ADC384L ADC384H	CSMC+TFI DC1	Data Acquisition System (DAS)	ADC384L ADC384H																																												
Sampling	1 s	10 ms	Sampling	1 s																																												
Pre-trigger	100	2 k	Pre-trigger	100																																												
10 ms	10 ms	10 ms	10 ms	10 ms																																												
Current pattern T _{cs}																																																
CSMC	$I_m = 41.5$ kA	$I_i = 41.5$ kA	CSMC	$I_m = 41.5$ kA																																												
dI/dt_1 (kA/m)	$dI/dt_1 = 1$ kA/m	$dI/dt_1 = 1$ kA/m	INS	$I_m (kA)$	$dI/dt_1 = 1$ kA/m	$dI/dt_1 = 1$ kA/m	dI/dt_2 (kA/m)	$dI/dt_2 = 3$ kA/m	$dI/dt_2 = 3$ kA/m	T1 (kA)	T2	T1	T1	Cyclic Test cycles					Time	$T_1 = 14:40$	$T_2 = 14:56$	$T_3 = 15:23$	$T_4 = 17:03$	Heater	W	W	W	W	Remarks					Results	Heat up of the resistive heater is defined by the following shot(#44-2).				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, ITF_VD_0203; OK.				
INS	$I_m (kA)$	$dI/dt_1 = 1$ kA/m	$dI/dt_1 = 1$ kA/m																																													
dI/dt_2 (kA/m)	$dI/dt_2 = 3$ kA/m	$dI/dt_2 = 3$ kA/m	T1 (kA)	T2	T1	T1	Cyclic Test cycles					Time	$T_1 = 14:40$	$T_2 = 14:56$	$T_3 = 15:23$	$T_4 = 17:03$	Heater	W	W	W	W	Remarks					Results	Heat up of the resistive heater is defined by the following shot(#44-2).				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, ITF_VD_0203; OK.											
T1 (kA)	T2	T1	T1																																													
Cyclic Test cycles																																																
Time	$T_1 = 14:40$	$T_2 = 14:56$	$T_3 = 15:23$	$T_4 = 17:03$																																												
Heater	W	W	W	W																																												
Remarks																																																
Results	Heat up of the resistive heater is defined by the following shot(#44-2).																																															
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, ITF_VD_0203; OK.																																																

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	-																																													
Coolant condition (before this run)																																															
Insert	All	Facility condition	All																																												
Temperature	~ 8.8 K	~ 4.5 K	Temperature	~ 8.8 K																																											
Mass Flow Rate	~ 8 g/s	~ 10 g/s	Power Supply	~ 8 g/s																																											
Pressure	~ 0.7 MPa	60 kPa	Resistor	~ 10 g/s																																											
Data Acquisition System (DAS)	ADC384L ADC384H	CSMC+TFI DC1	Data Acquisition System (DAS)	ADC384L ADC384H																																											
Sampling	1 s	10 ms	Sampling	1 s																																											
Pre-trigger	100	2 k	Pre-trigger	100																																											
10 ms	10 ms	10 ms	10 ms	10 ms																																											
Current pattern T _{cs}																																															
CSMC	$I_m = 41.5$ kA	$I_i = 41.5$ kA	CSMC	$I_m = 41.5$ kA																																											
dI/dt_1 (kA/m)	$dI/dt_1 = 1$ kA/m	$dI/dt_1 = 1$ kA/m	INS	$I_m (kA)$	$dI/dt_1 = 1$ kA/m	dI/dt_2 (kA/m)	$dI/dt_2 = 3$ kA/m	$dI/dt_2 = 3$ kA/m	T1 (kA)	T2	T1	T1	Cyclic Test cycles					Time	$T_1 = 14:45$	$T_2 = 14:56$	$T_3 = 15:23$	$T_4 = 17:03$	Heater	W	W	W	W	Remarks					Results	Heat up of the resistive heater is defined by the following shot(#44-2).				Remarks					ITF_TC_IN=7.59K, ITF_TC_OUT=7.49K, TC=7.5K (Preliminary), 0.3 microV/cm at VD_0203, OK.				
INS	$I_m (kA)$	$dI/dt_1 = 1$ kA/m																																													
dI/dt_2 (kA/m)	$dI/dt_2 = 3$ kA/m	$dI/dt_2 = 3$ kA/m																																													
T1 (kA)	T2	T1	T1																																												
Cyclic Test cycles																																															
Time	$T_1 = 14:45$	$T_2 = 14:56$	$T_3 = 15:23$	$T_4 = 17:03$																																											
Heater	W	W	W	W																																											
Remarks																																															
Results	Heat up of the resistive heater is defined by the following shot(#44-2).																																														
Remarks																																															
ITF_TC_IN=7.59K, ITF_TC_OUT=7.49K, TC=7.5K (Preliminary), 0.3 microV/cm at VD_0203, OK.																																															

CSMC-TF insert Experiment Log			Date	2001.9.29	Time	8:45	P. 60
Run No.	44	-	3				
Procedure No.	4.1						
Operation Mode	DC						
Coolant condition (before this run)	All						
Temperature	~ 8.8 K	~ 4.5 K					
Mass Flow Rate	~ 8 g/s	~ 10 g/s	CSMC	50 kA	~ 31.4 mohm		
Pressure	~ 0.7 MPa		TFI	60 kA	0.73 mohm		
Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H	ADC32H				
Sampling	1 s	10 ms	1 s	100 ms	1 s	100 ms	
Pre-trigger	100	2 k	100	2 k	300	300	300
Current pattern	Heater pulse						
CSMC	$I_m = 41.5 \text{ kA}$	$I_1 = 0 \text{ kA}$					
$dI/dt_1 = 1 \frac{\text{kA/m}}{\text{s}}$	$dB/dt_1 = \frac{\text{T/s}}{\text{kA/m}}$						
$dI/dt_2 = \frac{\text{kA/s}}{\text{kA/m}}$	$dB/dt_2 = \frac{\text{T/s}}{\text{kA/s}}$						
TFI	$I_m = 0 \text{ kA}$	$I_1 = 0 \text{ kA}$					
$dI/dt_1 = \frac{\text{kA/m}}{\text{s}}$	$dB/dt_1 = \frac{\text{kA/m}}{\text{s}}$						
$dI/dt_2 = \frac{\text{kA/s}}{\text{kA/m}}$	$dB/dt_2 = \frac{\text{T/s}}{\text{kA/s}}$						
Cyclic Test	cycles						
Time	T ₁ 17:19	T ₂ 18:20	T ₃	Heater	144.5 W	T _d = s	
Remarks	Resistive heater turns off at 18:25.						
Results	ITF_IN=54W, MC_IN=215W, MCO_IN1=82W, MCO_IN2=152W, (IM+OM)=449W, OK.						
Objective	Calibration of the heaters for AC losses. Total 550W-60sec.						
Run No.	45	-	1				
Procedure No.	0.3						
Operation Mode	DC						
Coolant condition (before this run)	All						
Facility condition	Power Supply	Resistor					
Temperature	~ 4.5 K	~ K					
Mass Flow Rate	~ 10 g/s	~ g/s					
Pressure	~ 0.6 MPa						
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			

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						
Coolant condition (before this run)	All						
Insert	Insert	Power Supply	Resistor				
Temperature	~ 8.8 K	~ 4.5 K	CSMC	50 kA	~ 31.4 mohm		
Mass Flow Rate	~ 8 g/s	~ 10 g/s	TFI	60 kA	0.73 mohm		
Pressure	~ 0.7 MPa						
Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H	ADC32H				
Sampling	1 s	10 ms	1 s	100 ms			
Pre-trigger	100	2 k	100	2 k			
Current pattern	Discharge						
CSMC	$I_m = 41.5 \text{ kA}$	$I_1 = 0 \text{ kA}$					
$dI/dt_1 = 1 \frac{\text{kA/m}}{\text{s}}$	$dB/dt_1 = \frac{\text{T/s}}{\text{kA/m}}$						
$dI/dt_2 = \frac{\text{kA/s}}{\text{kA/m}}$	$dB/dt_2 = \frac{\text{T/s}}{\text{kA/s}}$						
TFI	$I_m = 0 \text{ kA}$	$I_1 = 0 \text{ kA}$					
$dI/dt_1 = \frac{\text{kA/m}}{\text{s}}$	$dB/dt_1 = \frac{\text{kA/m}}{\text{s}}$						
$dI/dt_2 = \frac{\text{kA/s}}{\text{kA/m}}$	$dB/dt_2 = \frac{\text{T/s}}{\text{kA/s}}$						
Cyclic Test	cycles						
Time	T ₁ 17:19	T ₂ 18:20	T ₃	Heater	144.5 W	T _d = s	
Remarks	Resistive heater turns off at 18:25.						
Results	ITF_IN=54W, MC_IN=215W, MCO_IN1=82W, MCO_IN2=152W, (IM+OM)=449W, OK.						
Objective	Calibration of the heaters for AC losses. Total 550W-60sec.						
Run No.	45	-	1				
Procedure No.	0.3						
Operation Mode	DC						
Coolant condition (before this run)	All						
Facility condition	Power Supply	Resistor					
Temperature	~ 4.5 K	~ K					
Mass Flow Rate	~ 10 g/s	~ g/s					
Pressure	~ 0.6 MPa						
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			

CSMC-TF insert Experiment Log			Date 2001.9.29	Time 12:10	P. 61
Run No. 45 - 2			Objective Calibration of the heaters for AC losses. Total 110W-60sec.		
Procedure No. 0.3			Run No. 45 - 3		
Operation Mode DC			Procedure No. 0.3		
Coolant condition (before this run)			Operation Mode DC		
Facility condition			Facility condition (before this run)		
All	All	Power Supply	All	Power Supply	Resistor
Temperature ~ 4.5 K	~ K	CSMC	Temperature ~ 4.5 K	~ K	CSMC
Mass Flow Rate ~ 10 g/s	~ g/s	TFI	Mass Flow Rate ~ 10 g/s	~ g/s	TFI
Pressure ~ 0.6 MPa			Pressure ~ 0.6 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L	ADC384H	ADC64L	ADC64H	ADC64L	ADC32H
Sampling 1 s	100 ms	1 s	100 ms	1 s	100 ms
Pre-trigger 300	300	300	300	300	300
Current pattern Heater pulse			Current pattern Heater pulse		
CSMC $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s			CSMC $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s		
TFI $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s			TFI $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s		
Cyclic Test cycles			Cyclic Test cycles		
Time	T ₁ 12:12	T ₂	T ₃	Heater	W
				110	s
				60	
Time	T ₁ 12:51	T ₂	T ₃	Heater	W
				220	s
				60	
Remarks					
ITF_IN=6W, MC_IN=5W, MC_O_IN1=18W, MC_O_IN2=35W, (IM+OM=102W), OK.					
Valve open at 9:40. mandrel of TF insert, SC bus burs of TF insert.					
Results					
ITF_IN=23W, MC_IN=96W, MC_O_IN1=34W, MC_O_IN2=64W, (IM+OM=194W), OK.					
Remarks					

CSMC-TF insert Experiment Log			Date 2001.9.29	Time 12:10	P. 62
Run No. 45 - 2			Objective Calibration of the heaters for AC losses. Total 110W-60sec.		
Procedure No. 0.3			Run No. 45 - 3		
Operation Mode DC			Procedure No. 0.3		
Coolant condition (before this run)			Operation Mode DC		
Facility condition			Facility condition (before this run)		
All	All	Power Supply	All	Power Supply	Resistor
Temperature ~ 4.5 K	~ K	CSMC	Temperature ~ 4.5 K	~ K	CSMC
Mass Flow Rate ~ 10 g/s	~ g/s	TFI	Mass Flow Rate ~ 10 g/s	~ g/s	TFI
Pressure ~ 0.6 MPa			Pressure ~ 0.6 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L	ADC384H	ADC64L	ADC64H	ADC64L	ADC32H
Sampling 1 s	100 ms	1 s	100 ms	1 s	100 ms
Pre-trigger 300	300	300	300	300	300
Current pattern Heater pulse			Current pattern Heater pulse		
CSMC $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s			CSMC $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s		
TFI $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s			TFI $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s		
Cyclic Test cycles			Cyclic Test cycles		
Time	T ₁	T ₂	T ₃	Heater	W
				110	s
				60	
Time	T ₁	T ₂	T ₃	Heater	W
				220	s
				60	
Remarks					
ITF_IN=6W, MC_IN=5W, MC_O_IN1=18W, MC_O_IN2=35W, (IM+OM=102W), OK.					
Valve open at 9:40. mandrel of TF insert, SC bus burs of TF insert.					
Results					
ITF_IN=23W, MC_IN=96W, MC_O_IN1=34W, MC_O_IN2=64W, (IM+OM=194W), OK.					
Remarks					

CSMC-TF insert Experiment Log			Date 2001.9.29	Time 13:25	p. 63
Objective					
Calibration of the heaters for AC losses. Total 330W-60sec.					
Run No. 45	-	4	Run No. 45	-	5
Procedure No. 0.3			Procedure No. 0.3		
Operation Mode DC			Operation Mode DC		
Coolant condition (before this run)			Facility condition (before this run)		
All			All		
Temperature ~ 4.5 K	-	K	Temperature ~ 4.5 K	-	K
Mass Flow Rate ~ 10 g/s	-	g/s	Mass Flow Rate ~ 10 g/s	-	g/s
Pressure ~ 0.6 MPa			Pressure ~ 0.6 MPa		
Facility condition			Facility condition		
Power Supply		Resistor	Power Supply		Resistor
CSMC		CSMC	CSMC		CSMC
TFI		TFI	TFI		TFI
Data Acquisition System (DAS) CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling 1 s	100 ms	1 s	Sampling 1 s	100 ms	1 s
Pre-trigger 300	300	300	Pre-trigger 300	300	300
Current pattern Heater pulse			Current pattern Heater pulse		
CSMC	$I_m = 0$	kA	$I_m = 0$	kA	$I_1 = kA$
$dI/dt_1 =$	kA/m	$dB/dt_1 =$	$dI/dt_1 =$	kA/m	$dB/dt_1 = T/s$
$dI/dt_2 =$	kA/s	$dB/dt_2 =$	$dI/dt_2 =$	kA/s	$dB/dt_2 = T/s$
TFI	$I_m = 0$	kA	$I_1 = kA$	$dI/dt_1 =$	kA/m
$dI/dt_1 =$	kA/m	$dB/dt_1 =$	$dI/dt_1 =$	kA/s	$dB/dt_1 = T/s$
$dI/dt_2 =$	kA/m	$dB/dt_2 =$	$dI/dt_2 =$	kA/m	$dB/dt_2 = T/s$
Cyclic Test	cycles		Cyclic Test	cycles	
Time $T_1 = 13:31$	T_2	T_3	Time $T_1 = 14:09$	T_2	T_3
Heater	330	W	$T_4 = 60$	s	
Heater	440	W	$T_4 = 60$	s	
Remarks			Remarks		
Results			Results		
ITF_IN=31W, MC_IN=140W, MCO_IN1=52W, MCO_IN2=96W, (IM+OM=288W), OK.			ITF_IN=41W, MC_IN=180W, MCO_IN1=68W, MCO_IN2=127W, (IM+OM=375W), OK.		

CSMC-TF insert Experiment Log			Date 2001.9.29	Time 13:25	p. 63
Objective					
Calibration of the heaters for AC losses. Total 330W-60sec.					
Run No. 45	-	4	Run No. 45	-	5
Procedure No. 0.3			Procedure No. 0.3		
Operation Mode DC			Operation Mode DC		
Coolant condition (before this run)			Facility condition (before this run)		
All			All		
Temperature ~ 4.5 K	-	K	Temperature ~ 4.5 K	-	K
Mass Flow Rate ~ 10 g/s	-	g/s	Mass Flow Rate ~ 10 g/s	-	g/s
Pressure ~ 0.6 MPa			Pressure ~ 0.6 MPa		
Facility condition			Facility condition		
Power Supply		Resistor	Power Supply		Resistor
CSMC		CSMC	CSMC		CSMC
TFI		TFI	TFI		TFI
Data Acquisition System (DAS) CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling 1 s	100 ms	1 s	Sampling 1 s	100 ms	1 s
Pre-trigger 300	300	300	Pre-trigger 300	300	300
Current pattern Heater pulse			Current pattern Heater pulse		
CSMC	$I_m = 0$	kA	$I_m = 0$	kA	$I_1 = kA$
$dI/dt_1 =$	kA/m	$dB/dt_1 =$	$dI/dt_1 =$	kA/m	$dB/dt_1 = T/s$
$dI/dt_2 =$	kA/s	$dB/dt_2 =$	$dI/dt_2 =$	kA/s	$dB/dt_2 = T/s$
TFI	$I_m = 0$	kA	$I_1 = kA$	$dI/dt_1 =$	kA/m
$dI/dt_1 =$	kA/m	$dB/dt_1 =$	$dI/dt_1 =$	kA/s	$dB/dt_1 = T/s$
$dI/dt_2 =$	kA/m	$dB/dt_2 =$	$dI/dt_2 =$	kA/m	$dB/dt_2 = T/s$
Cyclic Test	cycles		Cyclic Test	cycles	
Time $T_1 = 13:31$	T_2	T_3	Time $T_1 = 14:09$	T_2	T_3
Heater	330	W	$T_4 = 60$	s	
Heater	440	W	$T_4 = 60$	s	
Remarks			Remarks		
Results			Results		
ITF_IN=31W, MC_IN=140W, MCO_IN1=52W, MCO_IN2=96W, (IM+OM=288W), OK.			ITF_IN=41W, MC_IN=180W, MCO_IN1=68W, MCO_IN2=127W, (IM+OM=375W), OK.		

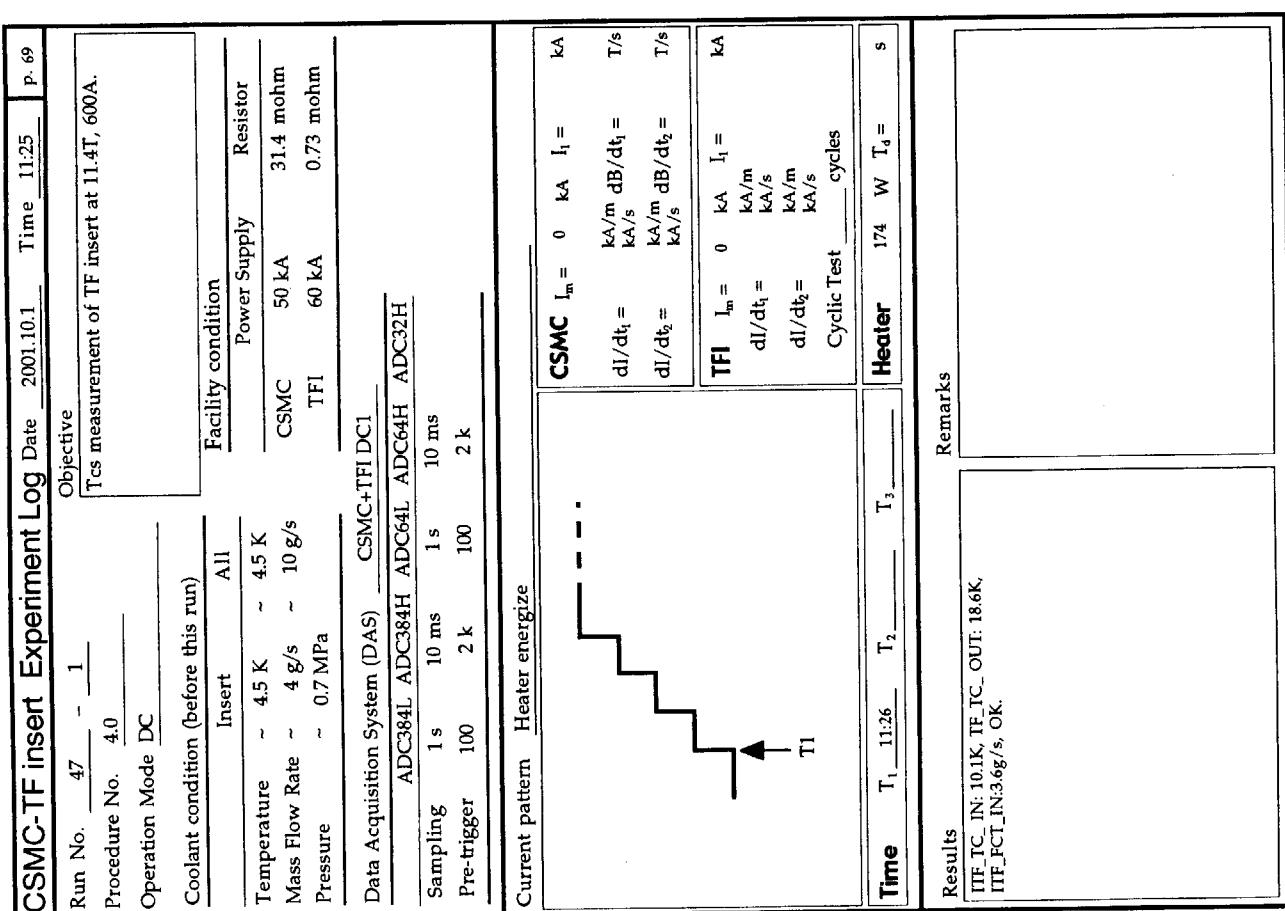
CSMC-TF insert Experiment Log		Date	2001.9.29	Time	14:46	P. 65
Objective		Calibration of the heaters for AC losses. Total 550W-60sec.				
Run No.	45	Procedure No.				
Procedure No.	0.3	Operation Mode				
Operation Mode DC		Coolant condition (before this run)				
Facility condition		Coolant condition (before this run)				
All	All	Facility condition				
Temperature	~ 4.5 K	~	K	Temperature	~ 4.5 K	~
Mass Flow Rate	~ 10 g/s	~	g/s	Mass Flow Rate	~ 10 g/s	~
Pressure	~ 0.6 MPa			Pressure	~ 0.6 MPa	
Data Acquisition System (DAS)		Power Supply				
ADC384L ADC384H ADC64L ADC64H ADC32H		CSMC	CSMC	TFI	CSMC	TFI
Data Acquisition System (DAS)		Resistor				
ADC384L ADC384H ADC64L ADC64H ADC32H		CSMC+TFI DC1	CSMC+TFI DC1			
Sampling	1 s	100 ms	1 s	Sampling	1 s	100 ms
Pre-trigger	300	300	300	Pre-trigger	300	300
Current pattern		Heater pulse				
CSMC		CSMC				
$I_m = 0$	$I_A = I_b = kA$	$I_m = 0$	kA	$I_m = 0$	kA	$I_m = 0$
$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/m	$dI/dt_1 =$
$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/m	$dI/dt_2 =$
TFI		TFI				
$I_m = 0$	$I_A = I_b = kA$	$I_m = 0$	kA	$I_m = 0$	kA	$I_m = 0$
$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/m	$dI/dt_1 =$
$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/m	$dI/dt_2 =$
Cyclic Test	cycles	Cyclic Test	cycles	Cyclic Test	cycles	Cyclic Test cycles
Time	$T_1 = 14:52$	T_2	T_3	Time	$T_1 = 15:37$	T_2
Heater	550 W	$T_d = 60$ s		Heater	550 W	$T_d = 120$ s
Remarks						
Results						
$ITF_IN=53W$, $MC_IN=210W$, $MCO_IN1=82W$, $MCO_IN2=153W$, ($IM+OM=454W$), OK.						

CSMC-TF insert Experiment Log		Date	2001.9.29	Time	14:46	P. 65
Objective		Calibration of the heaters for AC losses. Total 550W-60sec.				
Run No.	45	Procedure No.				
Procedure No.	0.3	Operation Mode				
Operation Mode DC		Coolant condition (before this run)				
Facility condition		Coolant condition (before this run)				
All	All	Facility condition				
Temperature	~ 4.5 K	~	K	Temperature	~ 4.5 K	~
Mass Flow Rate	~ 10 g/s	~	g/s	Mass Flow Rate	~ 10 g/s	~
Pressure	~ 0.6 MPa			Pressure	~ 0.6 MPa	
Data Acquisition System (DAS)		Power Supply				
ADC384L ADC384H ADC64L ADC64H ADC32H		CSMC	CSMC	TFI	CSMC	TFI
Data Acquisition System (DAS)		Resistor				
ADC384L ADC384H ADC64L ADC64H ADC32H		CSMC+TFI DC1	CSMC+TFI DC1			
Sampling	1 s	100 ms	1 s	Sampling	1 s	100 ms
Pre-trigger	300	300	300	Pre-trigger	300	300
Current pattern		Heater pulse				
CSMC		CSMC				
$I_m = 0$	$I_A = I_b = kA$	$I_m = 0$	kA	$I_m = 0$	kA	$I_m = 0$
$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/m	$dI/dt_1 =$
$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/m	$dI/dt_2 =$
TFI		TFI				
$I_m = 0$	$I_A = I_b = kA$	$I_m = 0$	kA	$I_m = 0$	kA	$I_m = 0$
$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/m	$dI/dt_1 =$
$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/m	$dI/dt_2 =$
Cyclic Test	cycles	Cyclic Test	cycles	Cyclic Test	cycles	Cyclic Test cycles
Time	$T_1 = 14:52$	T_2	T_3	Time	$T_1 = 15:37$	T_2
Heater	550 W	$T_d = 60$ s		Heater	550 W	$T_d = 120$ s
Remarks						
Results						
$ITF_IN=53W$, $MC_IN=210W$, $MCO_IN1=82W$, $MCO_IN2=153W$, ($IM+OM=454W$), OK.						

CSMC-TF insert Experiment Log			Date 2001.9.29	Time 16:35	P. 67
Objective					
Run No.	45	-	8		
Procedure No.	0.3				Calibration of the heaters for AC losses. Total 550W-180sec.
Operation Mode	DC				
Coolant condition (before this run)					
All		Facility condition	All		
Temperature	~ 4.5 K	~	K		
Mass Flow Rate	~ 10 g/s	~	g/s		
Pressure	~ 0.6 MPa				
CSMC		Power Supply	Resistor		
TFI					
Data Acquisition System (DAS)					
CSMC+TFI DC1			CSMC+TFI DC1		
ADC384L	ADC384H	ADC64L	ADC64H	ADC32H	
Sampling	1 s		10 ms	1 s	10 ms
Pre-trigger	300	300	2 k	100	2 k
Current pattern					
Simultaneous daily check			Simultaneous daily check		
CSMC	$I_m = 0$ kA	$I_i = kA$	CSMC	$I_m = 9.2$ kA	$I_i = kA$
dI/dt_1	= kA/s	$dB/dt_1 = T/s$	dI/dt_1	= $1 kA/s$	$dB/dt_1 = T/s$
dI/dt_2	= kA/s	$dB/dt_2 = T/s$	dI/dt_2	= kA/s	$dB/dt_2 = T/s$
TFI	$I_m = 0$ kA	$I_i = kA$	TFI	$I_m = 5$ kA	$I_i = kA$
dI/dt_1	= kA/m	$dB/dt_1 = kA/m$	dI/dt_1	= $3 kA/s$	$dB/dt_1 = kA/s$
dI/dt_2	= kA/m	$dB/dt_2 = kA/m$	dI/dt_2	= kA/m	$dB/dt_2 = kA/m$
Cyclic Test	cycles		Cyclic Test	cycles	
Time	T_1 16:37	T_2	T_3	Heater	550 W $T_d = 180$ s
Time	T_1 9:45		T_2 10:05	T_3 10:41	Heater
Remarks					
Daily check.					

CSMC-TF insert Experiment Log			Date 2001.9.29	Time 16:35	P. 67
Objective					
Run No.	45	-	8		
Procedure No.	0.3				Calibration of the heaters for AC losses. Total 550W-180sec.
Operation Mode	DC				
Coolant condition (before this run)					
All		Facility condition	All		
Temperature	~ 4.5 K	~	K		
Mass Flow Rate	~ 10 g/s	~	g/s		
Pressure	~ 0.6 MPa				
CSMC		Power Supply	Resistor		
TFI					
Data Acquisition System (DAS)					
CSMC+TFI DC1			CSMC+TFI DC1		
ADC384L	ADC384H	ADC64L	ADC64H	ADC32H	
Sampling	1 s		10 ms	1 s	10 ms
Pre-trigger	300	300	2 k	100	2 k
Current pattern					
Simultaneous daily check			Simultaneous daily check		
CSMC	$I_m = 0$ kA	$I_i = kA$	CSMC	$I_m = 9.2$ kA	$I_i = kA$
dI/dt_1	= kA/s	$dB/dt_1 = T/s$	dI/dt_1	= $1 kA/s$	$dB/dt_1 = T/s$
dI/dt_2	= kA/s	$dB/dt_2 = T/s$	dI/dt_2	= kA/s	$dB/dt_2 = T/s$
TFI	$I_m = 0$ kA	$I_i = kA$	TFI	$I_m = 5$ kA	$I_i = kA$
dI/dt_1	= kA/m	$dB/dt_1 = kA/m$	dI/dt_1	= $3 kA/s$	$dB/dt_1 = kA/s$
dI/dt_2	= kA/m	$dB/dt_2 = kA/m$	dI/dt_2	= kA/m	$dB/dt_2 = kA/m$
Cyclic Test	cycles		Cyclic Test	cycles	
Time	T_1 16:37	T_2	T_3	Heater	550 W $T_d = 180$ s
Time	T_1 9:45		T_2 10:05	T_3 10:41	Heater
Remarks					
Results					
ITF_IN=53W, MC_IN=200W, MCO_IN1=83W, MCO_IN2=153W, (IM+OM=436W), OK.					
Vi=128V, Vo=161V, Vins=5.7V, Taumc=19.2s, Tauins=0.053s/18.3s, OK.					

CSMC-TF insert Experiment Log			Date 2001.10.1	Time 11:25	p. 69
Run No. 47 - 1			Procedure No. 4.0	4.0	Objective Tcs measurement of TF insert at 11.4T, 600A.
Operation Mode DC					
Coolant condition (before this run)					
Insert	All	Facility condition	Insert	All	Facility condition
Temperature	~ 4.5 K	~ 4.5 K	Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 4 g/s	~ 10 g/s	Mass Flow Rate	~ 4 g/s	~ 10 g/s
Pressure	~ 0.7 MPa		Pressure	~ 0.7 MPa	
Data Acquisition System (DAS)	CSMC+TFI DC1		Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s	10 ms	Sampling	1 s	10 ms
Pre-trigger	100	2 k	Pre-trigger	100	2 k
Current pattern	Heater energize		Current pattern	Charge up and hold	
CSMC	$I_m = 0$ kA	$I_i =$ kA	CSMC	$I_m = 41.6$ kA	$I_i = 0$ kA
	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s		$dI/dt_1 =$ 1 kA/m	$dB/dt_1 =$ T/s
	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s		$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s
TFI	$I_m = 0$ kA	$I_i =$ kA	TFI	$I_m = 0$ kA	$I_i =$ kA
	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s		$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s		$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s
	Cyclic Test	cycles		Cyclic Test	cycles
Time	T_1 11:26	T_2	Time	T_1 13:23	T_2
		T_3			T_3
	Heater			Heater	
	174	W		W	$T_d =$ s
Results	TI_F_TC_IN:10.1K, TI_TC_OUT: 18.6K TI_F_FCT_IN:3.6g/s, OK.		Remarks		
Remarks					
Results	BH01=10.98T, OK.				
Remarks					



CSMC-TF insert Experiment Log			Date 2001.10.1	Time 11:25	P. 71
Run No.	47	-	3	Objective Tcs measurement of TF insert at 11.4T, 600A.	
Procedure No.	4.0				
Operation Mode	DC				
Coolant condition (before this run)					
Insert	All	Facility condition			
Temperature	~ 4.5 K	~ 4.5 K	Power Supply	Resistor	
Mass Flow Rate	~ 4 g/s	~ 10 g/s	CSMC	50 kA	~ 4.5 K
Pressure	~ 0.7 MPa		TFI	60 kA	Mass Flow Rate ~ 4 g/s ~ 10 g/s Pressure ~ 0.7 MPa
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	$I_m = 41.6 \text{ kA}$	$I_1 = 0 \text{ kA}$	$dI/dt_1 = 1 \text{ kA/m}$	$dB/dt_1 = \text{T/s}$	$\frac{\text{kA}}{\text{m}} \cdot \frac{\text{dB}}{\text{dt}} = \text{T/s}$
TFI	$I_m = 0.6 \text{ kA}$	$I_1 = 0 \text{ kA}$	$dI/dt_1 = 3 \text{ kA/m}$	$dB/dt_1 = \text{kA/s}$	$\frac{\text{kA}}{\text{m}} \cdot \frac{\text{dB}}{\text{dt}} = \text{kA/s}$
Cyclic Test cycles					
Time	T_1	$17:03$	T_2	$15:58$	T_3
Heater W $T_d = \text{s}$					
Remarks PS1					

CSMC-TF insert Experiment Log			Date 2001.10.1	Time 11:25	P. 71
Run No.	47	-	3	Objective Tcs measurement of TF insert at 11.4T, 600A.	
Procedure No.	4.0				
Operation Mode	DC				
Coolant condition (before this run)					
Insert	All	Facility condition			
Temperature	~ 4.5 K	~ 4.5 K	Power Supply	Resistor	
Mass Flow Rate	~ 4 g/s	~ 10 g/s	CSMC	50 kA	~ 4.5 K
Pressure	~ 0.7 MPa		TFI	60 kA	Mass Flow Rate ~ 4 g/s ~ 10 g/s Pressure ~ 0.7 MPa
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	$I_m = 41.6 \text{ kA}$	$I_1 = 0 \text{ kA}$	$dI/dt_1 = 1 \text{ kA/m}$	$dB/dt_1 = \text{T/s}$	$\frac{\text{kA}}{\text{m}} \cdot \frac{\text{dB}}{\text{dt}} = \text{T/s}$
TFI	$I_m = 0.6 \text{ kA}$	$I_1 = 0 \text{ kA}$	$dI/dt_1 = 3 \text{ kA/m}$	$dB/dt_1 = \text{kA/s}$	$\frac{\text{kA}}{\text{m}} \cdot \frac{\text{dB}}{\text{dt}} = \text{kA/s}$
Cyclic Test cycles					
Time	T_1	$14:20$	T_2	$14:29$	T_3
Heater W $T_d = \text{s}$					
Remarks PS1					

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				
Coolant condition (before this run)					
Insert	All	Facility condition	All	Facility condition	
Temperature	~ 4.5 K	~ 4.5 K	~ 4.5 K	~ 4.5 K	Resistor
Mass Flow Rate	~ 4 g/s	~ 10 g/s	~ 4 g/s	~ 10 g/s	CSMC 50 kA
Pressure	~ 0.7 MPa		~ 0.7 MPa		TFI 60 kA
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 dB/dt ₁ = T/s $dI/dt_2 =$ kA/m dB/dt ₂ = T/s		
			TFI $I_m = 5$ kA $I_1 =$ kA $dI/dt_1 =$ 3 kA/m dB/dt ₁ = T/s $dI/dt_2 =$ kA/m dB/dt ₂ = T/s Cyclic Test _____ cycles		
Time	T_1 17:17	T_2 _____	T_3 _____	Heater	W $T_d =$ s
Remarks PS1+PS2					
Results	OK.				

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				
Coolant condition (before this run)					
Insert	All	Facility condition	All	Facility condition	
Temperature	~ 4.5 K	~ 4.5 K	~ 4.5 K	~ 4.5 K	Resistor
Mass Flow Rate	~ 4 g/s	~ 10 g/s	~ 4 g/s	~ 10 g/s	CSMC 50 kA
Pressure	~ 0.7 MPa		~ 0.7 MPa		TFI 60 kA
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 dB/dt ₁ = T/s $dI/dt_2 =$ kA/m dB/dt ₂ = T/s		
			TFI $I_m = 5$ kA $I_1 =$ kA $dI/dt_1 =$ 3 kA/m dB/dt ₁ = T/s $dI/dt_2 =$ kA/m dB/dt ₂ = T/s Cyclic Test _____ cycles		
Time	T_1 17:37	T_2 _____	T_3 _____	Heater	W $T_d =$ s
Remarks PS2					
Results	OK.				

CSMC-TF insert Experiment Log			Date 2001.10.1	Time 17:00	P. 75	
Run No. 48	- 4	Procedure No. 4.0	Objective Check of power supply system			
Operation Mode DC						
Coolant condition (before this run)			Facility condition (before this run)			
Insert	All	Power Supply	Resistor	Power Supply	Resistor	
Temperature	~ 4.5 K	~ 4.5 K	~ 4.5 K	~ 4.5 K	31.4 mohm	
Mass Flow Rate	~ 4 g/s	~ 10 g/s	CSMC	50 kA	31.4 mohm	
Pressure	~ 0.7 MPa		TFI	60 kA	0.73 mohm	
Data Acquisition System (DAS)	CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
Sampling	1 s	10 ms	1 s	10 ms	ADC384L ADC384H ADC64L ADC64H ADC32H	
Pre-trigger	100	2 k	100	2 k	2 k	
Current pattern T _{CS}			Current pattern T _{CS}			
CSMC	I _m = 0 kA	I ₁ = kA	CSMC	I _m = 0 kA	I ₁ = kA	
dI/dt _{t1}	= kA/m	dB/dt _{t1} = kA/s	dI/dt _{t1}	= kA/m	dB/dt _{t1} = kA/s	
dI/dt _{t2}	= kA/m	dB/dt _{t2} = kA/s	dI/dt _{t2}	= kA/m	dB/dt _{t2} = kA/s	
TFI	I _m = 5 kA	I ₁ = kA	TFI	I _m = 0.6 kA	I ₁ = kA	
dI/dt _{t1}	= 3 kA/m	dI/dt _{t1} = 3 kA/s	dI/dt _{t1}	= 3 kA/m	dI/dt _{t1} = 3 kA/s	
dI/dt _{t2}	= 3 kA/m	dI/dt _{t2} = 3 kA/m	dI/dt _{t2}	= 3 kA/s	dI/dt _{t2} = 3 kA/s	
Cyclic Test cycles			Cyclic Test cycles			
Time T ₁ 17:48	T ₂	T ₃	Time T ₁ 18:45	T ₂ 17:11	T ₃ 20:01	
Heater W	T _d = s		Heater W	T _d = s		
Remarks			Remarks			
Results OK.			Results OK. PS1			

CSMC-TF insert Experiment Log			Date 2001.10.1	Time 17:00	P. 76	
Run No. 49	- 1	Procedure No. 4.0	Objective Tcs measurement of TF insert at 600A, 0T.			
Operation Mode DC						
Coolant condition (before this run)			Facility condition			
Insert	All	Power Supply	Resistor	Power Supply	Resistor	
Temperature	~ 4.5 K	~ 4.5 K	~ 4.5 K	~ 4.5 K	31.4 mohm	
Mass Flow Rate	~ 4 g/s	~ 10 g/s	CSMC	50 kA	31.4 mohm	
Pressure	~ 0.7 MPa	~ 0.7 MPa	TFI	60 kA	0.73 mohm	
Data Acquisition System (DAS)	CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
Sampling	1 s	10 ms	1 s	10 ms	ADC384L ADC384H ADC64L ADC64H ADC32H	
Pre-trigger	100	2 k	100	2 k	2 k	
Current pattern T _{CS}			Current pattern T _{CS}			
CSMC	I _m = 0 kA	I ₁ = kA	CSMC	I _m = 0 kA	I ₁ = kA	
dI/dt _{t1}	= kA/m	dB/dt _{t1} = kA/s	dI/dt _{t1}	= kA/m	dB/dt _{t1} = kA/s	
dI/dt _{t2}	= kA/m	dB/dt _{t2} = kA/s	dI/dt _{t2}	= kA/m	dB/dt _{t2} = kA/s	
TFI	I _m = 5 kA	I ₁ = kA	TFI	I _m = 0.6 kA	I ₁ = kA	
dI/dt _{t1}	= 3 kA/m	dI/dt _{t1} = 3 kA/s	dI/dt _{t1}	= 3 kA/m	dI/dt _{t1} = 3 kA/s	
dI/dt _{t2}	= 3 kA/m	dI/dt _{t2} = 3 kA/m	dI/dt _{t2}	= 3 kA/s	dI/dt _{t2} = 3 kA/s	
Cyclic Test cycles			Cyclic Test cycles			
Time T ₁ 17:48	T ₂	T ₃	Time T ₁ 18:45	T ₂ 17:11	T ₃ 20:01	
Heater W	T _d = s		Heater W	T _d = s		
Remarks			Remarks			
Results OK.			Results OK. PS1			

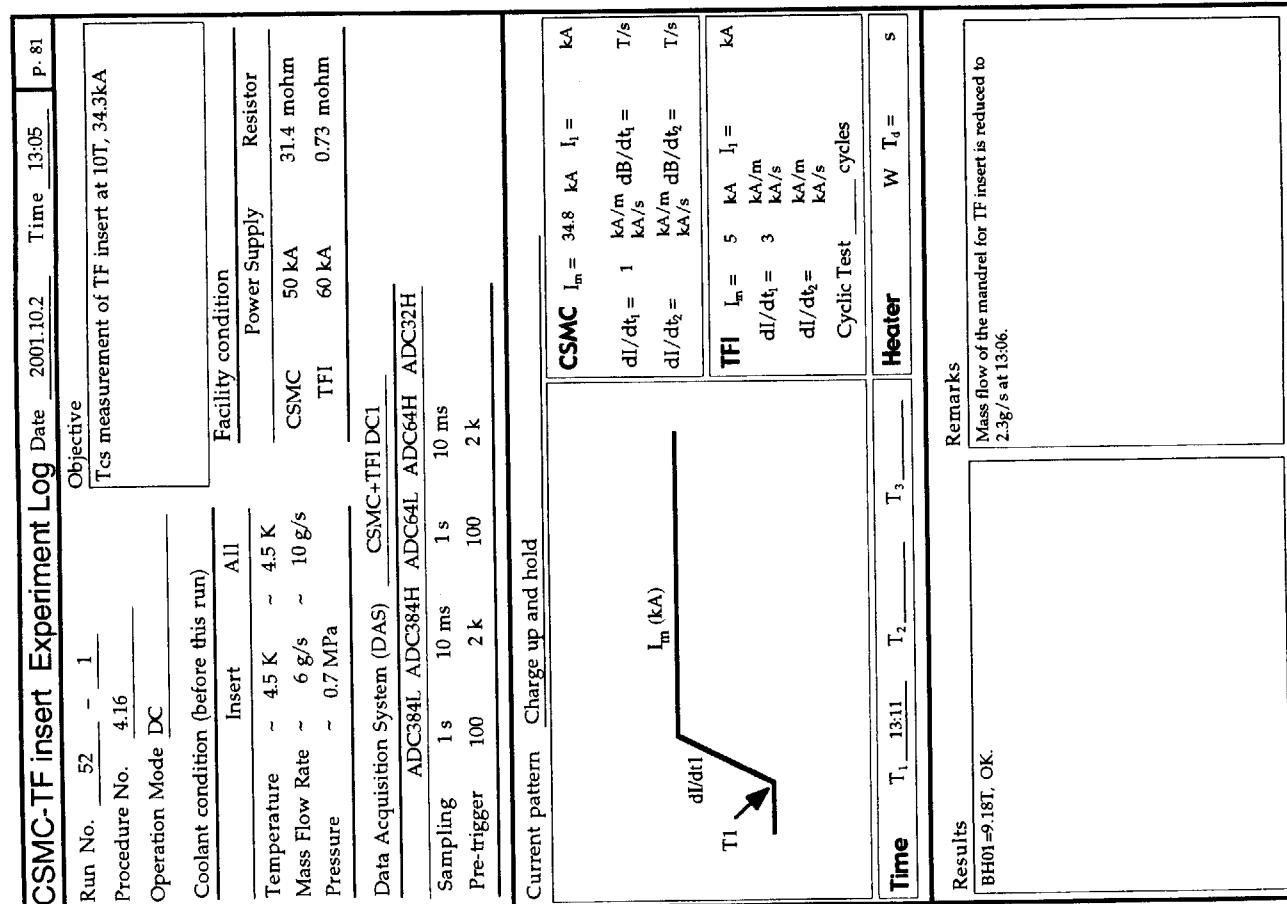
CSMC-TF insert Experiment Log			Date 2001.10.2	Time 9:20	P. 78
Run No. 50 - 1			Run No. 50 - 2		Objective Check power supply systems.
Procedure No. _____			Procedure No. _____		
Operation Mode DC			Operation Mode DC		
Coolant condition (before this run)			Coolant condition (before this run)		
Insert	All	Facility condition	Insert	All	Facility condition
		Power Supply			Power Supply
Temperature	~ 4.5 K	~ 4.5 K	Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 6 g/s	~ 10 g/s	Mass Flow Rate	~ 6 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	0.7 MPa	Pressure	~ 0.7 MPa	0.7 MPa
Data Acquisition System (DAS)	CSMC+TFI DC1		Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s	10 ms	Sampling	1 s	10 ms
Pre-trigger	100	2 k	Pre-trigger	100	2 k
Current pattern	Trapezoidal		Current pattern	Trapezoidal	
CSMC	$I_m =$ kA	$I_i =$ kA	CSMC	$I_m =$ kA	$I_i =$ kA
	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s		$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s		$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s
TFI	$I_m =$ 46 kA	$I_i =$ kA	TFI	$I_m =$ 25 kA	$I_i =$ kA
	$dI/dt_1 =$ 5 kA/m	$dB/dt_1 =$ 10 kA/m		$dI/dt_1 =$ 10 kA/m	$dB/dt_1 =$ 10 kA/m
	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ kA/m		$dI/dt_2 =$ kA/m	$dB/dt_2 =$ kA/m
Cyclic Test	cycles		Cyclic Test	cycles	
Time	$T_1 = 9:45$	$T_2 =$	Time	$T_1 = 10:33$	$T_2 =$
	$T_3 =$			$T_3 =$	
Heater	$W =$	$T_d =$	Heater	$W =$	$T_d =$
Results			Results		
Remarks			Remarks		
					Current supplies by short circuit in PS. No current supply on the CSMC and TFI. PS1+PS2
					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. 77
Run No. 50 - 1			Run No. 50 - 2		Objective Check power supply systems.
Procedure No. _____			Procedure No. _____		
Operation Mode DC			Operation Mode DC		
Coolant condition (before this run)			Coolant condition (before this run)		
Insert	All	Facility condition	Insert	All	Facility condition
		Power Supply			Power Supply
Temperature	~ 4.5 K	~ 4.5 K	Temperature	~ 4.5 K	~ 4.5 K
Mass Flow Rate	~ 6 g/s	~ 10 g/s	Mass Flow Rate	~ 6 g/s	~ 10 g/s
Pressure	~ 0.7 MPa	0.7 MPa	Pressure	~ 0.7 MPa	0.7 MPa
Data Acquisition System (DAS)	CSMC+TFI DC1		Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s	10 ms	Sampling	1 s	10 ms
Pre-trigger	100	2 k	Pre-trigger	100	2 k
Current pattern	Trapezoidal		Current pattern	Trapezoidal	
CSMC	$I_m =$ kA	$I_i =$ kA	CSMC	$I_m =$ kA	$I_i =$ kA
	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s		$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s		$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s
TFI	$I_m =$ 46 kA	$I_i =$ kA	TFI	$I_m =$ 25 kA	$I_i =$ kA
	$dI/dt_1 =$ 5 kA/m	$dB/dt_1 =$ 10 kA/m		$dI/dt_1 =$ 10 kA/m	$dB/dt_1 =$ 10 kA/m
	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ kA/m		$dI/dt_2 =$ kA/m	$dB/dt_2 =$ kA/m
Cyclic Test	cycles		Cyclic Test	cycles	
Time	$T_1 = 9:45$	$T_2 =$	Time	$T_1 = 10:33$	$T_2 =$
	$T_3 =$			$T_3 =$	
Heater	$W =$	$T_d =$	Heater	$W =$	$T_d =$
Results			Results		
Remarks			Remarks		
					Current supplies by short circuit in PS. No current supply on the CSMC and TFI. PS1+PS2
					Current supplies by short circuit in PS. No current supply on the CSMC and TFI. PS1

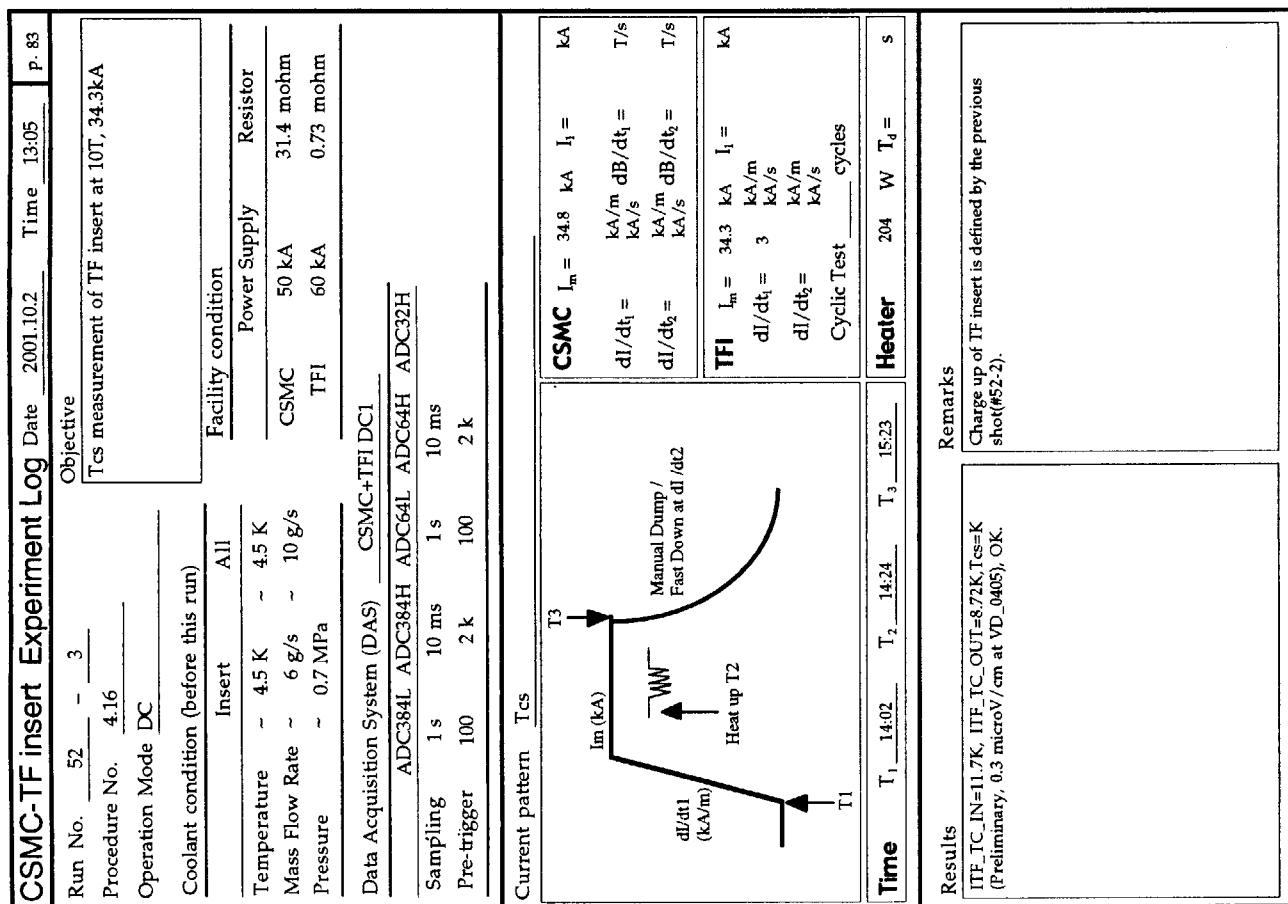
CSMC-TF insert Experiment Log			Date 2001.10.2	Time 9:20	p. 79	
Objective						
Run No.	50	-	3			
Procedure No.			Check power supply systems.			
Operation Mode	DC					
Coolant condition (before this run)						
Insert	All	Facility condition				
		Power Supply	Resistor			
Temperature	~ 4.5 K	~ 4.5 K	~ 4.5 K	31.4 mohm		
Mass Flow Rate	~ 6 g/s	~ 10 g/s	CSMC	50 kA	31.4 mohm	
Pressure	~ 0.7 MPa		TFI	60 kA	0.73 mohm	
Data Acquisition System (DAS)	CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L ADC384H ADC64H ADC32H				ADC384L ADC384H 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 $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s TFI $I_m = 5$ kA $I_1 =$ kA $dI/dt_1 = 3$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s Cyclic Test cycles Cyclic Test cycles			
Time	T_1 10:46	T_2	T_3	T_1 11:12	T_2 11:41	T_3 11:51
Heater	W	$T_d =$ s	W	$T_d =$ s	W	$T_d =$ s
Remarks			Remarks			
Results			<p>Vi=129V, Vo=162V, Vin=3.6V, Taume=19.2s, $T_{auns}=0.055s/18.0s$, OK.</p>			

CSMC-TF insert Experiment Log			Date 2001.10.2	Time 9:20	p. 79	
Objective						
Run No.	51	-	1			
Procedure No.	4.0					
Operation Mode	DC					
Coolant condition (before this run)						
Insert	All	Facility condition				
		Power Supply	Resistor			
Temperature	~ 4.5 K	~ 4.5 K	~ 4.5 K	31.4 mohm		
Mass Flow Rate	~ 6 g/s	~ 10 g/s	CSMC	50 kA	31.4 mohm	
Pressure	~ 0.7 MPa		TFI	60 kA	0.73 mohm	
Data Acquisition System (DAS)	CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L ADC384H ADC64H ADC32H				ADC384L ADC384H 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/s $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/s $dB/dt_2 =$ T/s TFI $I_m =$ 25 kA $I_1 =$ kA $dI/dt_1 = 10$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/s $dB/dt_2 =$ T/s Cyclic Test cycles Cyclic Test cycles			
Time	T_1 10:46	T_2	T_3	T_1 11:12	T_2 11:41	T_3 11:51
Heater	W	$T_d =$ s	W	$T_d =$ s	W	$T_d =$ s
Remarks			Remarks			
Results			<p>Current supplies by short circuit in PS. No current supply on the CSMC and TFI. P_{S2}</p>			

CSMC-TF insert Experiment Log				Date 2001.10.2	Time 13:05	P. 81
Objective				Objective		
Run No. 52	-	1	Tcs measurement of TF insert at 10T, 34.3kA			
Procedure No. 4.16				Tcs measurement of TF insert at 10T, 34.3kA		
Operation Mode DC						
Coolant condition (before this run)				Coolant condition (before this run)		
Insert	All	Facility condition	All	Insert	All	Facility condition
Temperature	~ 4.5 K	~ 4.5 K	Temperature	~ 4.5 K	~ 4.5 K	Power Supply
Mass Flow Rate	~ 6 g/s	~ 10 g/s	Mass Flow Rate	~ 6 g/s	~ 10 g/s	Resistor
Pressure	~ 0.7 MPa		Pressure	~ 0.7 MPa		
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	CSMC+TFI DC1	ADC384L ADC384H ADC64L ADC64H ADC32H	CSMC+TFI DC1		
Sampling	1 s	10 ms	Sampling	1 s	10 ms	CSMC
Pre-trigger	100	2 k	Pre-trigger	100	2 k	$I_m = 34.8 \text{ kA}$
Current pattern	Charge up and hold	Tcs	T3	$dI/dt_1 = 1 \text{ kA/m}$	$dI/dt_1 = 1 \text{ kA/m}$	$dI/dt_1 = 1 \text{ kA/m}$
				$dB/dt_1 = 1 \text{ dB/m}$	$dB/dt_1 = 1 \text{ dB/m}$	$dB/dt_1 = 1 \text{ dB/m}$
				kA/s	kA/s	kA/s
				$dI/dt_2 = 3 \text{ kA/s}$	$dI/dt_2 = 3 \text{ kA/s}$	$dI/dt_2 = 3 \text{ kA/s}$
				$dB/dt_2 = 3 \text{ dB/m}$	$dB/dt_2 = 3 \text{ dB/m}$	$dB/dt_2 = 3 \text{ dB/m}$
				$\text{Cyclic Test cycles}$	$\text{Cyclic Test cycles}$	$\text{Cyclic Test cycles}$
Time	$T_1 = 13:11$	$T_2 =$	$T_3 =$	$T_1 = 14:02$	$T_2 =$	$T_3 =$
Heater	W	$T_d =$	s	Heater	W	$T_d =$
Results	BH01 → 1.18T, OK.			Remarks		
	Mass flow of the mandrel for TF insert is reduced to 2.3g/s at 13:06.			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
Objective							
Run No.	52	-	3				
Procedure No.	4.16						
Operation Mode	DC						
Coolant condition (before this run)							
Insert	All	Facility condition	Insert	All	Facility condition	Insert	All
Temperature	~ 4.5 K	~ 4.5 K	Temperature	~ 4.5 K	~ 4.5 K	Power Supply	Resistor
Mass Flow Rate	~ 6 g/s	~ 10 g/s	Mass Flow Rate	~ 6 g/s	~ 10 g/s	CSMC	50 kA
Pressure	~ 0.7 MPa		Pressure	~ 0.7 MPa		TFI	60 kA
Data Acquisition System (DAS)	CSMC+TFI DC1		Data Acquisition System (DAS)	CSMC+TFI DC1			
Sampling	1 s	10 ms	Sampling	1 s	10 ms	ADC384L ADC384H ADC64L ADC64H ADC32H	
Pre-trigger	100	2 k	Pre-trigger	100	2 k	100	2 k
Current pattern Tcs			Current pattern Discharge				
T3	Im (kA)		T1	Im (kA)	dI/dt1	CSMC	Im = 34.8 kA I1 = 16 kA
						dl/dt1 = 1 kA/s	dB/dt1 = T/s
						dl/dt2 = 1 kA/s	dB/dt2 = T/s
						TFI	Im = 34.3 kA I1 = 16 kA
						dl/dt1 = 3 kA/s	dl/dt2 = 3 kA/s
						Cyclic Test cycles	Cyclic Test cycles
Time	T1 14:02	T2 14:24	T3 15:23	Heater	204 W	Td = s	Heater 204 W Td = s
Results	Remarks						Results
	Charge up of TF insert is defined by the previous shot(#32-2).						Remarks

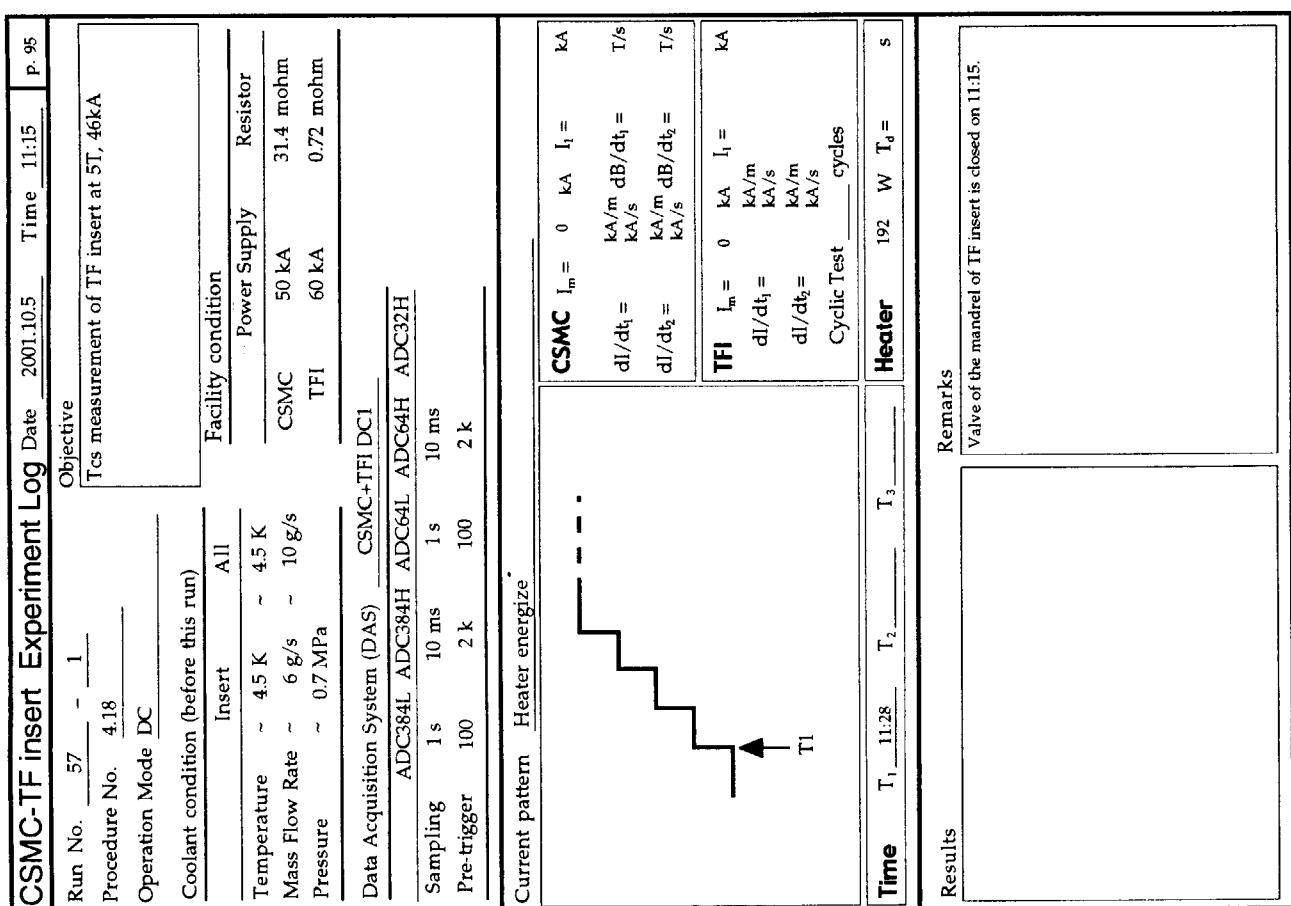


CSMC-TF insert Experiment Log				Date 2001.10.3	Time 14:05	P. 89
Run No.	54	-	4	Objective Check 60kA-PS.		
Procedure No.				Procedure No.	54	-
Operation Mode	DC			Operation Mode	DC	
Coolant condition (before this run)				Facility condition		
				All	Power Supply Resistors	
Temperature	~ 4.5 K	-	K	Temperature	~ 4.5 K	-
Mass Flow Rate	~ 10 g/s	-	g/s	Mass Flow Rate	~ 10 g/s	-
Pressure	~ 0.7 MPa	-		Pressure	~ 0.7 MPa	-
Data Acquisition System (DAS) CSMC+TFI DC1				Facility condition		
ADC384L ADC384H ADC64L ADC64H ADC32H				Power Supply	Resistor	
Sampling	1 s	10 ms		CSMC	50 kA	31.4 mohm
Pre-trigger	100	2 k		TFI	60 kA	0.73 mohm
Data Acquisition System (DAS) CSMC+TFI DC1				Power Supply Resistors		
ADC384L ADC384H ADC64L ADC64H ADC32H				CSMC	50 kA	31.4 mohm
Sampling	1 s	10 ms		TFI	60 kA	0.73 mohm
Pre-trigger	100	2 k				
Current pattern Trapezoidal with one step				Cyclic Test cycles		
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				Cyclic Test	cycles	
				CSMC	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	kA/s	T/s
				TFI	$I_m =$	$I_i =$
				$dI/dt_1 =$	kA/m	kA
				$dI/dt_2 =$	<math	

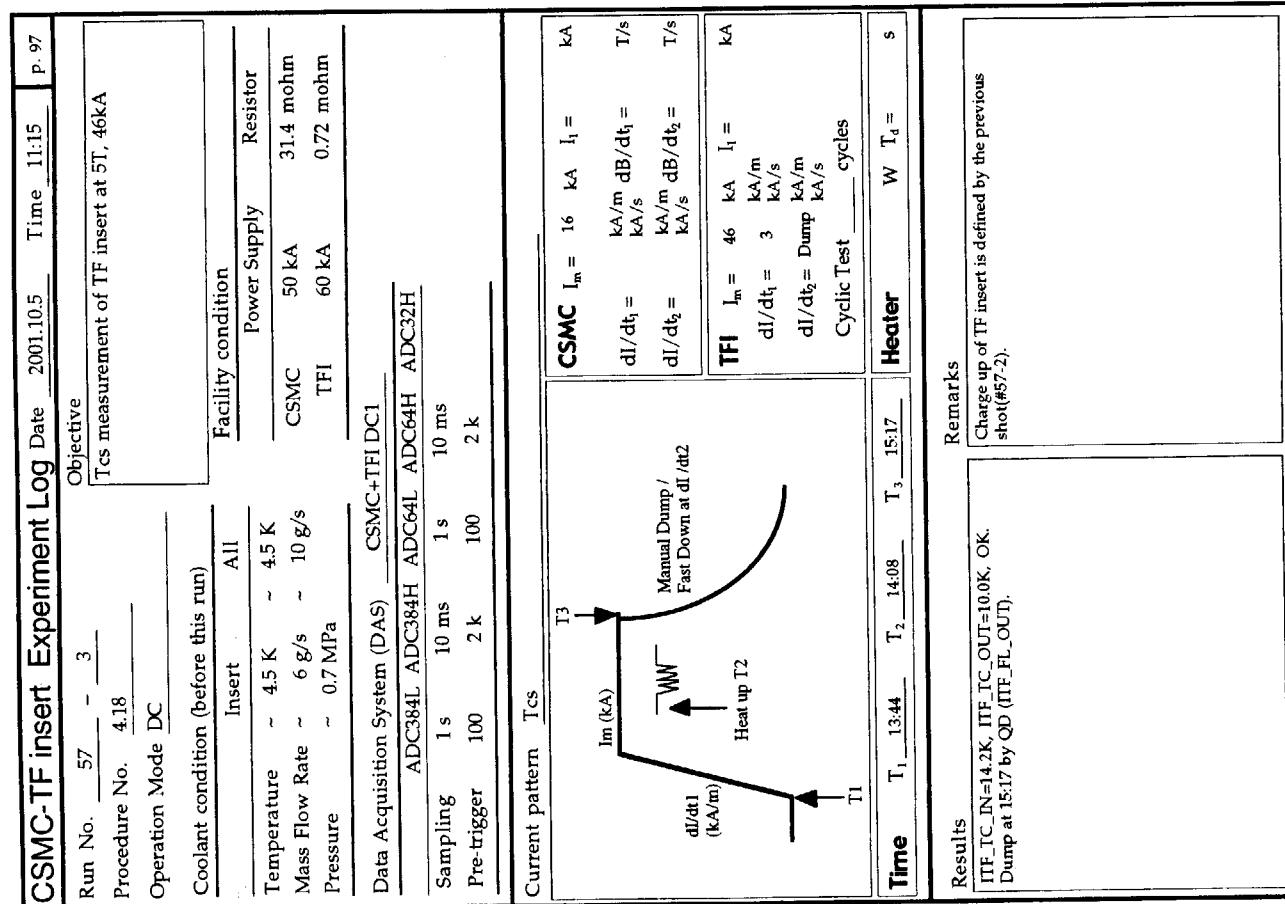
CSMC-TF Insert		Experiment Log		Date	2001.10.4	Time	9:00	P. 92
Run No.	55	-	2	Objective				
Procedure No.				Calibration of TW temperature sensors, 0T-20A Tcs measurement.				
Operation Mode	DC							
Coolant condition (before this run)								
Insert	All			Facility condition				
Temperature	~ 4.5 K	~	4.5 K	Power Supply				
Mass Flow Rate	~ 5 g/s	~	10 g/s	Resistor				
Pressure	~ 0.7 MPa			CSMC				
				TFI				
Data Acquisition System (DAS)								
ADC384L	ADC384H	ADC64L	ADC64H	ADC32H				
Sampling	2 s							
Pre-trigger	100							
Current pattern	curr							
T3				CSMC	$I_m =$	$I_1 =$	k_A	
Im (kA)				$dI/dt_1 =$	kA/m	$dB/dt_1 =$	T/s	
				$dI/dt_2 =$	kA/m	$dB/dt_2 =$	T/s	
				TFI	$I_m =$	$I_1 =$	k_A	
				$dI/dt_1 =$	kA/m	$dI/dt_2 =$	kA/m	
					kA/s		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: 91
Run No.	55	-	1			
Procedure No.						Objective
Operation Mode	DC					Calibration of TW temperature sensors, 0T-20A Tcs measurement.
Coolant condition (before this run)						
Insert	All	Facility condition				
Temperature	~ 4.5 K	~ 4.5 K	Power Supply	Resistor		
Mass Flow Rate	~ 5 g/s	~ 10 g/s	CSMC	TFI		
Pressure	~ 0.7 MPa					
Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H	ADC32H			CSMC+TFI DC1
Sampling	1 s	1 s				
Pre-trigger	100	100				
Current pattern	Tcs	T3	CSMC	I _m =	kA	I _i =
			dI/dt ₁ =	kA/m	dB/dt ₁ =	T/s
			dI/dt ₂ =	kA/s	kA/m	T/s
			TFI	I _m =	kA	I _i =
			dI/dt ₁ =	kA/m	kA/s	kA
			dI/dt ₂ =	kA/s	kA/m	
			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_0607:x200->x10000					
	ITF_VD_0809:x200->x10000					
	ITF_VD_0910:x200->x10000					
	ITF_VD_1011:x50->x1000					

CSMC-TF insert Experiment Log				Date 2001.10.5	Time 11:15	p. 95
				Objective		
Run No. <u>57</u> - <u>1</u>				Run No. <u>57</u> - <u>2</u>		
Procedure No. <u>4.18</u>				Procedure No. <u>4.18</u>		
Operation Mode <u>DC</u>				Operation Mode <u>DC</u>		
Coolant condition (before this run)				Coolant condition (before this run)		
Insert All				Insert	A1	
Temperature ~ 4.5 K				Temperature ~ 4.5 K	~ 4.5 K	
Mass Flow Rate ~ 6 g/s				Mass Flow Rate ~ 6 g/s	~ 10 g/s	
Pressure ~ 0.7 MPa				Pressure ~ 0.7 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1				Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H ADC64L ADC64H ADC32H				ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling 1 s 10 ms 1 s 10 ms				Sampling 1 s 10 ms 1 s 10 ms		
Pre-trigger 100 2 k 100 2 k				Pre-trigger 100 2 k 100 2 k		
Facility condition				Facility condition		
Power Supply Resistor				Power Supply	Resistor	
CSMC 50 kA				CSMC 50 kA	31.4 mohm	31.4 mohm
TFI 60 kA				TFI 60 kA	0.72 mohm	0.72 mohm
Data Acquisition System (DAS) CSMC+TFI DC1				Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H ADC64L ADC64H ADC32H				ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling 1 s 10 ms 1 s 10 ms				Sampling 1 s 10 ms 1 s 10 ms		
Pre-trigger 100 2 k 100 2 k				Pre-trigger 100 2 k 100 2 k		
Current pattern Double charge up				Current pattern Double charge up		
CSMC $I_m = 0$ $I_1 = kA$ $dI/dt_1 = kA/m$ $dI/dt_2 = kA/m$				CSMC $I_m = 16$ kA $dI/dt_1 = 1 kA/m$ $dI/dt_2 = 1 kA/m$		
TFI $I_m = 0$ $I_1 = kA$ $dI/dt_1 = kA/m$ $dI/dt_2 = kA/m$				TFI $I_m = 48$ kA $dI/dt_1 = 3 kA/m$ $dI/dt_2 = 3 kA/m$		
Cyclic Test cycles				Cyclic Test cycles		
Time T_1 11:28 T_2 T_3 Heater				Time T_1 13:18 T_2 13:44 T_3 Heater	$T_{12} = 192$ W	$T_d = 1$ s
Results Remarks				Results Remarks		
Remarks				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. 97			
Objective Tcs measurement of TF insert at 5T, 46kA			
Run No. 57 - 3	Procedure No. 4.18	Operation Mode DC	Coolant condition (before this run)
Insert All	Facility condition Power Supply Resistor	Temperature ~ 4.5 K ~ 4.5 K ~ K Mass Flow Rate ~ 10 g/s ~ 10 g/s ~ g/s Pressure ~ 0.7 MPa ~ 0.7 MPa ~	CSMC 50 kA 31.4 mohm TFI 60 kA 0.72 mohm
Data Acquisition System (DAS) ADC384L ADC384H ADC64L ADC32H	Data Acquisition System (DAS) CSMC+TFI DDC1 ADC384L ADC384H ADC64L ADC32H	Sampling 1 s 10 ms 1 s 10 ms Pre-trigger 100 2 k 100 2 k	CSMC+TFI DC1
Current pattern Tcs	CSMC $I_m = 16$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s	CSMC $I_m = 46$ kA $I_1 =$ kA $dI/dt_1 =$ 3 kA/s $dB/dt_1 =$ Dump $dI/dt_2 =$ Dump $dB/dt_2 =$ Cyclic Test cycles	CSMC $I_m = 14$ kA $I_1 =$ kA $dI/dt_1 =$ 1 kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s
Time $T_1 = 13:44$ $T_2 = 14:08$ $T_3 = 15:17$	Heater W $T_d =$ s	Time $T_1 = 16:47$ $T_2 = 17:08$ $T_3 =$ s	Heater W $T_d =$ s

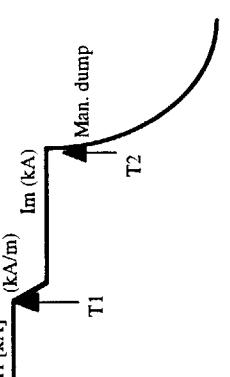


CSMC-TF insert Experiment Log		Date 2001.10.8	Time 9:47	P. 100																																													
Run No.	59 - 2	Run No.	59 - 1	Objective Daily check for cycle test																																													
Procedure No.	5.1	Procedure No.	5.1																																														
Operation Mode	DC	Operation Mode	DC																																														
Coolant condition (before this run)																																																	
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> <th colspan="3">All</th> </tr> <tr> <th colspan="2">Power Supply</th> <th>Temperature</th> <th>~ 4.5 K</th> <th>~ K</th> </tr> </thead> <tbody> <tr> <td colspan="2">CSMC</td> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td colspan="2">TFI</td> <td>Pressure</td> <td>~ 0.7 MPa</td> <td>~ 0.7 MPa</td> </tr> <tr> <td colspan="2"></td> <td>Data Acquisition System (DAS)</td> <td>ADC384L ADC384H</td> <td>ADC64L ADC64H ADC32H</td> </tr> <tr> <td colspan="2"></td> <td></td> <td>Sampling 1 s</td> <td>10 ms</td> </tr> <tr> <td colspan="2"></td> <td></td> <td>Pre-trigger 100</td> <td>2 k</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td>1 s</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td>10 ms</td> </tr> </tbody> </table>					Facility condition		All			Power Supply		Temperature	~ 4.5 K	~ K	CSMC		Mass Flow Rate	~ 10 g/s	~ g/s	TFI		Pressure	~ 0.7 MPa	~ 0.7 MPa			Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H ADC32H				Sampling 1 s	10 ms				Pre-trigger 100	2 k					1 s					10 ms
Facility condition		All																																															
Power Supply		Temperature	~ 4.5 K	~ K																																													
CSMC		Mass Flow Rate	~ 10 g/s	~ g/s																																													
TFI		Pressure	~ 0.7 MPa	~ 0.7 MPa																																													
		Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H ADC32H																																													
			Sampling 1 s	10 ms																																													
			Pre-trigger 100	2 k																																													
				1 s																																													
				10 ms																																													
Facility condition (before this run)																																																	
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> <th colspan="3">All</th> </tr> <tr> <th colspan="2">Power Supply</th> <th>Temperature</th> <th>~ 4.5 K</th> <th>~ K</th> </tr> </thead> <tbody> <tr> <td colspan="2">CSMC</td> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td colspan="2">TFI</td> <td>Pressure</td> <td>~ 0.7 MPa</td> <td>~ 0.7 MPa</td> </tr> <tr> <td colspan="2"></td> <td>Data Acquisition System (DAS)</td> <td>ADC384L ADC384H</td> <td>ADC64L ADC64H ADC32H</td> </tr> <tr> <td colspan="2"></td> <td></td> <td>Sampling 1 s</td> <td>10 ms</td> </tr> <tr> <td colspan="2"></td> <td></td> <td>Pre-trigger 100</td> <td>2 k</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td>1 s</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td>10 ms</td> </tr> </tbody> </table>					Facility condition		All			Power Supply		Temperature	~ 4.5 K	~ K	CSMC		Mass Flow Rate	~ 10 g/s	~ g/s	TFI		Pressure	~ 0.7 MPa	~ 0.7 MPa			Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H ADC32H				Sampling 1 s	10 ms				Pre-trigger 100	2 k					1 s					10 ms
Facility condition		All																																															
Power Supply		Temperature	~ 4.5 K	~ K																																													
CSMC		Mass Flow Rate	~ 10 g/s	~ g/s																																													
TFI		Pressure	~ 0.7 MPa	~ 0.7 MPa																																													
		Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H ADC32H																																													
			Sampling 1 s	10 ms																																													
			Pre-trigger 100	2 k																																													
				1 s																																													
				10 ms																																													
Current pattern Cyclic daily check																																																	
<p>CSMC $I_m = 9.2 \text{ kA}$ $I_i = \text{kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \text{kA/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{kA/s}$</p> <p>TFI $I_m = 14 \text{ kA}$ $I_i = \text{kA}$ $dI/dt_1 = 5 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$</p> <p>Cyclic Test 5 cycles</p>																																																	
Time $T_1 = 17:17$ $T_2 = 18:09$ $T_3 = \text{s}$ Heater $W = \text{s}$ $T_d = \text{s}$																																																	
Remarks																																																	
<p>Results $V_i=152V$, $V_o=181V$, $V_{ins}=2.1V$, $T_{aumc}=19.0s$, OK. $T_{atuns}=0.1s/18.8s$, OK.</p> <p>Results $V_i=128V$, $V_o=160V$, $V_{ins}=9.0V$, $T_{aumc}=19.3s$, $T_{atuns}=0.1s/18.8s$, OK.</p>																																																	

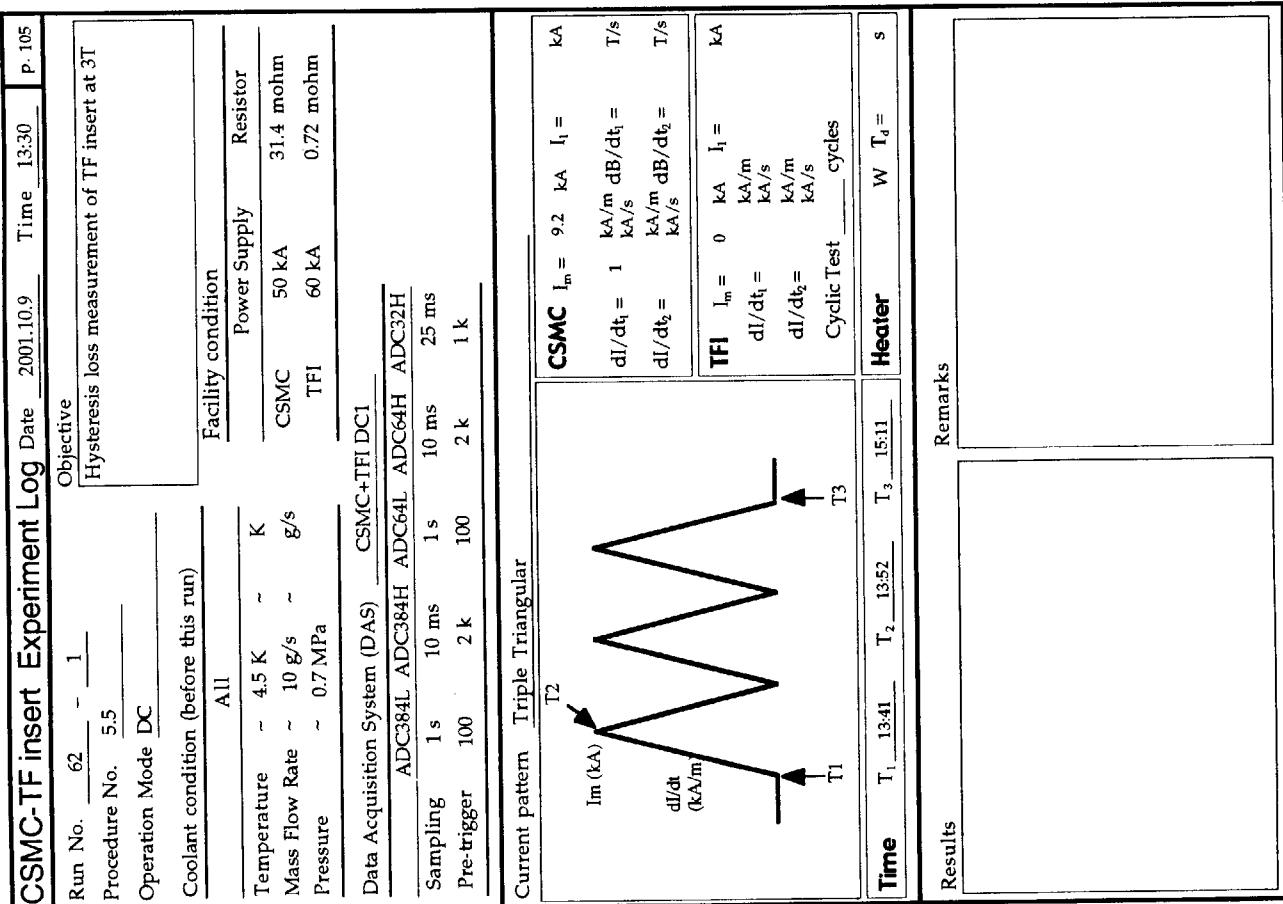
CSMC-TF insert Experiment Log		Date 2001.10.5	Time 16:30	P. 99																																													
Objective Check the cycle test procedure.																																																	
Run No.	58 - 2	Run No.	5.1																																														
Procedure No.	5.1	Procedure No.	5.1																																														
Operation Mode	DC	Operation Mode	DC																																														
Coolant condition (before this run)																																																	
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> <th colspan="3">All</th> </tr> <tr> <th colspan="2">Power Supply</th> <th>Temperature</th> <th>~ 4.5 K</th> <th>~ K</th> </tr> </thead> <tbody> <tr> <td colspan="2">CSMC</td> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td colspan="2">TFI</td> <td>Pressure</td> <td>~ 0.7 MPa</td> <td>~ 0.7 MPa</td> </tr> <tr> <td colspan="2"></td> <td>Data Acquisition System (DAS)</td> <td>ADC384L ADC384H</td> <td>ADC64L ADC64H ADC32H</td> </tr> <tr> <td colspan="2"></td> <td></td> <td>Sampling 1 s</td> <td>10 ms</td> </tr> <tr> <td colspan="2"></td> <td></td> <td>Pre-trigger 100</td> <td>2 k</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td>1 s</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td>10 ms</td> </tr> </tbody> </table>					Facility condition		All			Power Supply		Temperature	~ 4.5 K	~ K	CSMC		Mass Flow Rate	~ 10 g/s	~ g/s	TFI		Pressure	~ 0.7 MPa	~ 0.7 MPa			Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H ADC32H				Sampling 1 s	10 ms				Pre-trigger 100	2 k					1 s					10 ms
Facility condition		All																																															
Power Supply		Temperature	~ 4.5 K	~ K																																													
CSMC		Mass Flow Rate	~ 10 g/s	~ g/s																																													
TFI		Pressure	~ 0.7 MPa	~ 0.7 MPa																																													
		Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H ADC32H																																													
			Sampling 1 s	10 ms																																													
			Pre-trigger 100	2 k																																													
				1 s																																													
				10 ms																																													
Coolant condition (before this run)																																																	
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> <th colspan="3">All</th> </tr> <tr> <th colspan="2">Power Supply</th> <th>Temperature</th> <th>~ 4.5 K</th> <th>~ K</th> </tr> </thead> <tbody> <tr> <td colspan="2">CSMC</td> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td colspan="2">TFI</td> <td>Pressure</td> <td>~ 0.7 MPa</td> <td>~ 0.7 MPa</td> </tr> <tr> <td colspan="2"></td> <td>Data Acquisition System (DAS)</td> <td>ADC384L ADC384H</td> <td>ADC64L ADC64H ADC32H</td> </tr> <tr> <td colspan="2"></td> <td></td> <td>Sampling 1 s</td> <td>10 ms</td> </tr> <tr> <td colspan="2"></td> <td></td> <td>Pre-trigger 100</td> <td>2 k</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td>1 s</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td>10 ms</td> </tr> </tbody> </table>					Facility condition		All			Power Supply		Temperature	~ 4.5 K	~ K	CSMC		Mass Flow Rate	~ 10 g/s	~ g/s	TFI		Pressure	~ 0.7 MPa	~ 0.7 MPa			Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H ADC32H				Sampling 1 s	10 ms				Pre-trigger 100	2 k					1 s					10 ms
Facility condition		All																																															
Power Supply		Temperature	~ 4.5 K	~ K																																													
CSMC		Mass Flow Rate	~ 10 g/s	~ g/s																																													
TFI		Pressure	~ 0.7 MPa	~ 0.7 MPa																																													
		Data Acquisition System (DAS)	ADC384L ADC384H	ADC64L ADC64H ADC32H																																													
			Sampling 1 s	10 ms																																													
			Pre-trigger 100	2 k																																													
				1 s																																													
				10 ms																																													
Current pattern Manual dump discharge																																																	
<p>CSMC $I_m = 10.6 \text{ kA}$ $I_i = 14 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \text{T/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{T/s}$</p> <p>TFI $I_m = \text{kA}$ $I_i = \text{kA}$ $dI/dt_1 = \text{kA/m}$ $dI/dt_2 = \text{kA/m}$</p> <p>Man. dump</p>																																																	
Time $T_1 = 9:53$ $T_2 = 10:33$ $T_3 = 10:34$ Heater $W = \text{s}$ $T_d = \text{s}$																																																	
Remarks																																																	
<p>Results $V_i=152V$, $V_o=181V$, $V_{ins}=2.1V$, $T_{aumc}=19.0s$, OK. $T_{atuns}=0.1s/18.8s$, OK.</p> <p>Results $V_i=128V$, $V_o=160V$, $V_{ins}=9.0V$, $T_{aumc}=19.3s$, $T_{atuns}=0.1s/18.8s$, OK.</p>																																																	

CSMC-TF insert Experiment Log				Date 2001.10.8	Time 11:08	P. 101																								
				Objective																										
Run No.	60	-	1	Cycle test 1(0-14kA, 1000 cycles), 1st-334th cycle.																										
Procedure No.	5.2			Procedure No. 5.2																										
Operation Mode	DC			Operation Mode DC																										
Coolant condition (before this run)				Coolant condition (before this run)																										
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> </tr> </tbody> </table>				Facility condition			Power Supply	Temperature	~ 4.5 K	Mass Flow Rate	~ 10 g/s	Pressure	~ 0.7 MPa	<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> </tr> </tbody> </table>			Facility condition			Power Supply	Temperature	~ 4.5 K	Mass Flow Rate	~ 10 g/s	Pressure	~ 0.7 MPa				
Facility condition																														
	Power Supply																													
Temperature	~ 4.5 K																													
Mass Flow Rate	~ 10 g/s																													
Pressure	~ 0.7 MPa																													
Facility condition																														
	Power Supply																													
Temperature	~ 4.5 K																													
Mass Flow Rate	~ 10 g/s																													
Pressure	~ 0.7 MPa																													
<table border="1"> <thead> <tr> <th colspan="2">Data Acquisition System (DAS)</th> </tr> <tr> <th></th> <th>DAS</th> </tr> </thead> <tbody> <tr> <td>ADC384L</td> <td>ADC384H</td> </tr> <tr> <td>ADC64L</td> <td>ADC64H</td> </tr> <tr> <td>ADC32H</td> <td></td> </tr> </tbody> </table>				Data Acquisition System (DAS)			DAS	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H		<table border="1"> <thead> <tr> <th colspan="2">Data Acquisition System (DAS)</th> </tr> <tr> <th></th> <th>DAS</th> </tr> </thead> <tbody> <tr> <td>ADC384L</td> <td>ADC384H</td> </tr> <tr> <td>ADC64L</td> <td>ADC64H</td> </tr> <tr> <td>ADC32H</td> <td></td> </tr> </tbody> </table>			Data Acquisition System (DAS)			DAS	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H					
Data Acquisition System (DAS)																														
	DAS																													
ADC384L	ADC384H																													
ADC64L	ADC64H																													
ADC32H																														
Data Acquisition System (DAS)																														
	DAS																													
ADC384L	ADC384H																													
ADC64L	ADC64H																													
ADC32H																														
Sampling	1 s	10 ms	1 s	10 ms	1 s	10 ms																								
Pre-trigger	100	2 k	100	2 k	100	2 k																								
Current pattern Cyclic				<p>CSMC I_m [kA] persistent current mode</p> <p>$CSMC_dl/dt_1$ [kA/m]</p> <p>Ins_Im [kA]</p> <p>INS_dl/dt_1 [kA/s]</p> <p>T_1</p> <p>T_2</p> <p>I_s</p>																										
<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> </tr> <tr> <th></th> <th>$I_m =$</th> </tr> </thead> <tbody> <tr> <td>$CSMC_dl/dt_1$</td> <td>1</td> </tr> <tr> <td>$CSMC_dB/dt_1$</td> <td>1</td> </tr> <tr> <td>dI/dt_1</td> <td>1</td> </tr> <tr> <td>dI/dt_2</td> <td>1</td> </tr> </tbody> </table>				CSMC			$I_m =$	$CSMC_dl/dt_1$	1	$CSMC_dB/dt_1$	1	dI/dt_1	1	dI/dt_2	1	<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> </tr> <tr> <th></th> <th>$I_m =$</th> </tr> </thead> <tbody> <tr> <td>$CSMC_dl/dt_1$</td> <td>1</td> </tr> <tr> <td>$CSMC_dB/dt_1$</td> <td>1</td> </tr> <tr> <td>dI/dt_1</td> <td>1</td> </tr> <tr> <td>dI/dt_2</td> <td>1</td> </tr> </tbody> </table>			CSMC			$I_m =$	$CSMC_dl/dt_1$	1	$CSMC_dB/dt_1$	1	dI/dt_1	1	dI/dt_2	1
CSMC																														
	$I_m =$																													
$CSMC_dl/dt_1$	1																													
$CSMC_dB/dt_1$	1																													
dI/dt_1	1																													
dI/dt_2	1																													
CSMC																														
	$I_m =$																													
$CSMC_dl/dt_1$	1																													
$CSMC_dB/dt_1$	1																													
dI/dt_1	1																													
dI/dt_2	1																													
<table border="1"> <thead> <tr> <th colspan="2">TFI</th> </tr> <tr> <th></th> <th>$I_m =$</th> </tr> </thead> <tbody> <tr> <td>TFI_dl/dt_1</td> <td>5</td> </tr> <tr> <td>TFI_dB/dt_1</td> <td>5</td> </tr> <tr> <td>dI/dt_1</td> <td>5</td> </tr> <tr> <td>dI/dt_2</td> <td>5</td> </tr> </tbody> </table>				TFI			$I_m =$	TFI_dl/dt_1	5	TFI_dB/dt_1	5	dI/dt_1	5	dI/dt_2	5	<table border="1"> <thead> <tr> <th colspan="2">TFI</th> </tr> <tr> <th></th> <th>$I_m =$</th> </tr> </thead> <tbody> <tr> <td>TFI_dl/dt_1</td> <td>5</td> </tr> <tr> <td>TFI_dB/dt_1</td> <td>5</td> </tr> <tr> <td>dI/dt_1</td> <td>5</td> </tr> <tr> <td>dI/dt_2</td> <td>5</td> </tr> </tbody> </table>			TFI			$I_m =$	TFI_dl/dt_1	5	TFI_dB/dt_1	5	dI/dt_1	5	dI/dt_2	5
TFI																														
	$I_m =$																													
TFI_dl/dt_1	5																													
TFI_dB/dt_1	5																													
dI/dt_1	5																													
dI/dt_2	5																													
TFI																														
	$I_m =$																													
TFI_dl/dt_1	5																													
TFI_dB/dt_1	5																													
dI/dt_1	5																													
dI/dt_2	5																													
Cyclic Test 334 cycles				Cyclic Test 668 cycles																										
Time	$T_1 = 11:20$	$T_2 = 12:12$	$T_3 =$	Heater	$W =$	$T_d =$																								
				Results	Remarks																									
				Charge up of CS MC is defined by the previous shot #60-1). 668th cycle is started on 14:10.																										

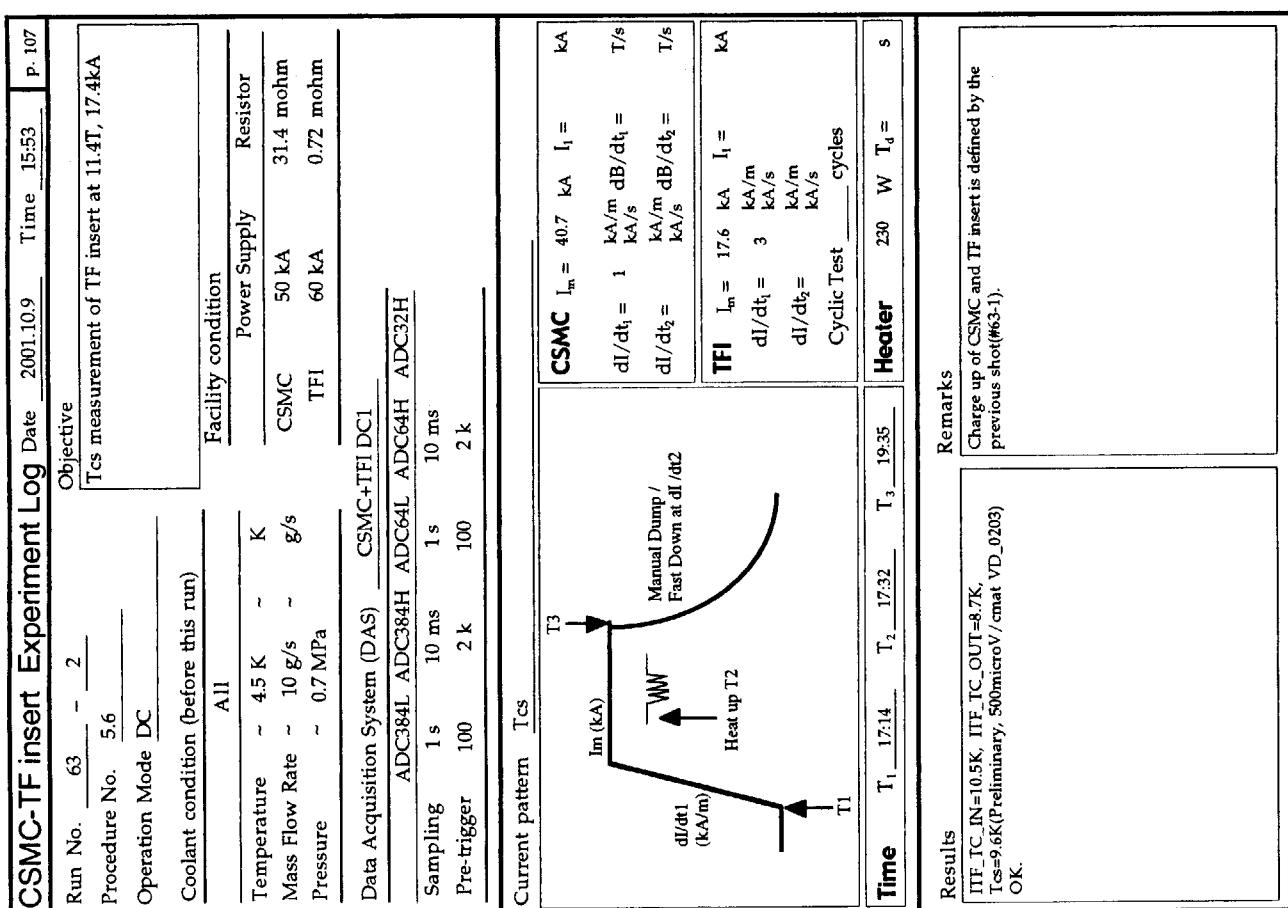
CSMC-TF insert Experiment Log				Date 2001.10.8	Time 11:08	P. 101																								
				Objective																										
Run No.	60	-	1	Cycle test 1(0-14kA, 1000 cycles), 1st-334th cycle.																										
Procedure No.	5.2			Procedure No. 5.2																										
Operation Mode	DC			Operation Mode DC																										
Coolant condition (before this run)				Coolant condition (before this run)																										
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> </tr> </tbody> </table>				Facility condition			Power Supply	Temperature	~ 4.5 K	Mass Flow Rate	~ 10 g/s	Pressure	~ 0.7 MPa	<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> </tr> </tbody> </table>			Facility condition			Power Supply	Temperature	~ 4.5 K	Mass Flow Rate	~ 10 g/s	Pressure	~ 0.7 MPa				
Facility condition																														
	Power Supply																													
Temperature	~ 4.5 K																													
Mass Flow Rate	~ 10 g/s																													
Pressure	~ 0.7 MPa																													
Facility condition																														
	Power Supply																													
Temperature	~ 4.5 K																													
Mass Flow Rate	~ 10 g/s																													
Pressure	~ 0.7 MPa																													
<table border="1"> <thead> <tr> <th colspan="2">Data Acquisition System (DAS)</th> </tr> <tr> <th></th> <th>DAS</th> </tr> </thead> <tbody> <tr> <td>ADC384L</td> <td>ADC384H</td> </tr> <tr> <td>ADC64L</td> <td>ADC64H</td> </tr> <tr> <td>ADC32H</td> <td></td> </tr> </tbody> </table>				Data Acquisition System (DAS)			DAS	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H		<table border="1"> <thead> <tr> <th colspan="2">Data Acquisition System (DAS)</th> </tr> <tr> <th></th> <th>DAS</th> </tr> </thead> <tbody> <tr> <td>ADC384L</td> <td>ADC384H</td> </tr> <tr> <td>ADC64L</td> <td>ADC64H</td> </tr> <tr> <td>ADC32H</td> <td></td> </tr> </tbody> </table>			Data Acquisition System (DAS)			DAS	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H					
Data Acquisition System (DAS)																														
	DAS																													
ADC384L	ADC384H																													
ADC64L	ADC64H																													
ADC32H																														
Data Acquisition System (DAS)																														
	DAS																													
ADC384L	ADC384H																													
ADC64L	ADC64H																													
ADC32H																														
Sampling	1 s	10 ms	1 s	10 ms	1 s	10 ms																								
Pre-trigger	100	2 k	100	2 k	100	2 k																								
Current pattern Cyclic				<p>CSMC I_m [kA] persistent current mode</p> <p>$CSMC_dl/dt_1$ [kA/m]</p> <p>Ins_Im [kA]</p> <p>INS_dl/dt_1 [kA/s]</p> <p>T_1</p> <p>T_2</p> <p>I_s</p>																										
<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> </tr> <tr> <th></th> <th>$I_m =$</th> </tr> </thead> <tbody> <tr> <td>$CSMC_dl/dt_1$</td> <td>1</td> </tr> <tr> <td>$CSMC_dB/dt_1$</td> <td>1</td> </tr> <tr> <td>dI/dt_1</td> <td>1</td> </tr> <tr> <td>dI/dt_2</td> <td>1</td> </tr> </tbody> </table>				CSMC			$I_m =$	$CSMC_dl/dt_1$	1	$CSMC_dB/dt_1$	1	dI/dt_1	1	dI/dt_2	1	<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> </tr> <tr> <th></th> <th>$I_m =$</th> </tr> </thead> <tbody> <tr> <td>$CSMC_dl/dt_1$</td> <td>1</td> </tr> <tr> <td>$CSMC_dB/dt_1$</td> <td>1</td> </tr> <tr> <td>dI/dt_1</td> <td>1</td> </tr> <tr> <td>dI/dt_2</td> <td>1</td> </tr> </tbody> </table>			CSMC			$I_m =$	$CSMC_dl/dt_1$	1	$CSMC_dB/dt_1$	1	dI/dt_1	1	dI/dt_2	1
CSMC																														
	$I_m =$																													
$CSMC_dl/dt_1$	1																													
$CSMC_dB/dt_1$	1																													
dI/dt_1	1																													
dI/dt_2	1																													
CSMC																														
	$I_m =$																													
$CSMC_dl/dt_1$	1																													
$CSMC_dB/dt_1$	1																													
dI/dt_1	1																													
dI/dt_2	1																													
<table border="1"> <thead> <tr> <th colspan="2">TFI</th> </tr> <tr> <th></th> <th>$I_m =$</th> </tr> </thead> <tbody> <tr> <td>TFI_dl/dt_1</td> <td>5</td> </tr> <tr> <td>TFI_dB/dt_1</td> <td>5</td> </tr> <tr> <td>dI/dt_1</td> <td>5</td> </tr> <tr> <td>dI/dt_2</td> <td>5</td> </tr> </tbody> </table>				TFI			$I_m =$	TFI_dl/dt_1	5	TFI_dB/dt_1	5	dI/dt_1	5	dI/dt_2	5	<table border="1"> <thead> <tr> <th colspan="2">TFI</th> </tr> <tr> <th></th> <th>$I_m =$</th> </tr> </thead> <tbody> <tr> <td>TFI_dl/dt_1</td> <td>5</td> </tr> <tr> <td>TFI_dB/dt_1</td> <td>5</td> </tr> <tr> <td>dI/dt_1</td> <td>5</td> </tr> <tr> <td>dI/dt_2</td> <td>5</td> </tr> </tbody> </table>			TFI			$I_m =$	TFI_dl/dt_1	5	TFI_dB/dt_1	5	dI/dt_1	5	dI/dt_2	5
TFI																														
	$I_m =$																													
TFI_dl/dt_1	5																													
TFI_dB/dt_1	5																													
dI/dt_1	5																													
dI/dt_2	5																													
TFI																														
	$I_m =$																													
TFI_dl/dt_1	5																													
TFI_dB/dt_1	5																													
dI/dt_1	5																													
dI/dt_2	5																													
Cyclic Test 334 cycles				Cyclic Test 668 cycles																										
Time	$T_1 = 11:20$	$T_2 = 12:12$	$T_3 =$	Heater	$W =$	$T_d =$																								
				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			Objective				
Operation Mode	DC			Coupling loss of TF insert after cycle test 1 at 3T, 4.5K.				
Coolant condition (before this run)		Facility condition						
All				Power Supply		Resistor		
Temperature	~ 4.5 K	~	K	CSMC	50 kA	31.4 mohm		
Mass Flow Rate	~ 10 g/s	~	g/s	TFI	60 kA	0.72 mohm		
Pressure	~ 0.7 MPa							
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 $I_i = 46$ kA $dI/dt_1 = 1$ kA/m dB/dt ₁ = T/s $dI/dt_2 =$ kA/m dB/dt ₂ = T/s						
TFI $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dI/dt_2 =$ kA/m Cyclic Test _668 cycles								
Time	T ₁ 14:53	T ₂ 15:55	T ₃	Heater	W	T _d =	s	
Results		Remarks						
V _i =151V, V _o =180V, V _{ins} =2.0V, T _{aunc} =19.3s, OK.								

CSMC-TF insert Experiment Log		Date	2001.10.9	Time	15:53	P. 106				
Run No.	$\frac{63}{5.6}$ - $\frac{1}{\text{---}}$	Objective	Tcs measurement of TF insert at 11.4T, 17.4kA							
Procedure No.	5.6	Tcs measurement of TF insert at 11.4T, 17.4kA								
Operation Mode	DC	Tcs measurement of TF insert at 11.4T, 17.4kA								
Coolant condition (before this run)		Facility condition								
All		Power Supply		Resistor						
Temperature	~ 4.5 K	~ K	CSMC	50 kA	31.4 mohm					
Mass Flow Rate	~ 10 g/s	~ g/s	TFI	60 kA	0.72 mohm					
Pressure	~ 0.7 MPa									
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_dI/dt1 (kA/m)	CSMC_Im (kA)	---	---	---	---					
T1	INS_Im (kA)	---	---	---	---					
I1(kA)	INS_dI/dt1 (kA/m)	---	---	---	---					
I1(kA)	T2	---	---	---	---					
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 bushbars for TF insert is 8g/s.									



CSMC-TF insert Experiment Log		Date 2001.10.9	Time 15:53	P. 107			
Objective				Tcs measurement of TF insert at 11.4T, 17.4kA			
Run No.	63	-	3				
Procedure No.	5.6						
Operation Mode	DC						
Coolant condition (before this run)		Facility condition (before this run)					
All		All					
Temperature	~ 4.5 K	~	K				
Mass Flow Rate	~ 10 g/s	~	g/s				
Pressure	~ 0.7 MPa						
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		Discharge					
CSMC	$I_m = 40.7 \text{ kA}$	$I_i =$	kA				
$dI/dt_1 = 1 \text{ kA/m dB/dt}_1 =$			T/s				
$dI/dt_2 = \frac{\text{kA/m dB/dt}_2}{\text{kA/s}} =$			T/s				
TFI	$I_m = 17.6 \text{ kA}$	$I_i =$	kA				
$dI/dt_1 = 3 \text{ kA/m}$			kA/s				
$dI/dt_2 = \frac{\text{kA/m}}{\text{kA/s}} =$			kA/m				
Cyclic Test	cycles						
Time	$T_1 = 17:14$	$T_2 = 17:32$	$T_3 = 19:35$	Heater 230 W $T_d =$ s			
Remarks		Remarks					
ITT_TC_IN=10.5K, ITT_TC_OUT=8.7K, Tcs=9.6K(Preliminary, 500microV/cm at VD_0203) OK.							
Charge up of CSMC and TF insert is defined by the previous shot(#63-1). Heater off at 20:58.							



CSMC-TF insert Experiment Log				Date 2001.10.10	Time 9:30	P. 109
Objective						
Daily check.						
Run No. 64	-	1				
Procedure No. 5.0						
Operation Mode DC						
Coolant condition (before this run)						
Facility condition				All		
Temperature ~ 4.5 K	~	K		Temperature ~ 4.5 K	~	K
Mass Flow Rate ~ 10 g/s	~	g/s		Mass Flow Rate ~ 10 g/s	~	g/s
Pressure ~ 0.7 MPa				Pressure ~ 0.7 MPa		
CSMC	50 kA	31.4 mohm		CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm		TFI	60 kA	0.73 mohm
Data Acquisition System (DAS)				Power Supply		
CSMC+TFI DC1				CSMC		
ADC384L ADC384H ADC64L ADC32H				ADC64L ADC32H		
Sampling 1 s	10 ms	1 s		Sampling 1 s	10 ms	10 ms
Pre-trigger 100	2 k	100		Pre-trigger 100	2 k	2 k
Current pattern Cyclic				Resistor		
CSMC I _m [kA] persistent current mode				CSMC I _m = 46 kA I ₁ = kA		
CSMC dI/dt ₁ [kA/m]				dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s		
I _{ms} I _m [kA]				dI/dt ₂ = kA/m dB/dt ₂ = T/s		
INS dI/dt ₁ [kA/s]				TFI I _m = 36 kA I ₁ = kA		
T1				dI/dt ₁ = 5 kA/m		
T2				dI/dt ₂ = kA/m		
T3				Cyclic Test 400 cycles		
CSMC I _m [kA] persistent current mode				Heater		
CSMC dI/dt ₁ [kA/m]				Time T ₁ 11:04	T ₂ 10:35	T ₃ 11:56 T ₄ = s
I _{ms} I _m [kA]						
INS dI/dt ₁ [kA/s]						
T1						
T2						
T3						
Remarks				Results		
201st cycle is stated on 13:04.				OK.		

CSMC-TF insert Experiment Log				Date 2001.10.10	Time 9:30	P. 109
Objective						
Daily check.						
Run No. 64	-	1				
Procedure No. 5.0						
Operation Mode DC						
Coolant condition (before this run)						
Facility condition				All		
Temperature ~ 4.5 K	~	K		Temperature ~ 4.5 K	~	K
Mass Flow Rate ~ 10 g/s	~	g/s		Mass Flow Rate ~ 10 g/s	~	g/s
Pressure ~ 0.7 MPa				Pressure ~ 0.7 MPa		
CSMC	50 kA	31.4 mohm		CSMC	50 kA	31.4 mohm
TFI	60 kA	0.72 mohm		TFI	60 kA	0.73 mohm
Data Acquisition System (DAS)				Power Supply		
CSMC+TFI DC1				CSMC		
ADC384L ADC384H ADC64L ADC32H				ADC64L ADC32H		
Sampling 1 s	10 ms	1 s		Sampling 1 s	10 ms	10 ms
Pre-trigger 100	2 k	100		Pre-trigger 100	2 k	2 k
Current pattern Cyclic				Resistor		
CSMC I _m [kA] persistent current mode				CSMC I _m = 46 kA I ₁ = kA		
CSMC dI/dt ₁ [kA/m]				dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s		
I _{ms} I _m [kA]				dI/dt ₂ = kA/m dB/dt ₂ = T/s		
INS dI/dt ₁ [kA/s]				TFI I _m = 36 kA I ₁ = kA		
T1				dI/dt ₁ = 5 kA/m		
T2				dI/dt ₂ = kA/m		
T3				Cyclic Test 400 cycles		
CSMC I _m [kA] persistent current mode				Heater		
CSMC dI/dt ₁ [kA/m]				Time T ₁ 11:04	T ₂ 10:35	T ₃ 11:56 T ₄ = s
I _{ms} I _m [kA]						
INS dI/dt ₁ [kA/s]						
T1						
T2						
T3						
Remarks				Results		
V _i =129V, V _o =159V, V _{ans} =11.2V, Taume=19.1s, Tauris=0.073s/18.3s, OK.				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-x10000, 10Hz-->x20, 100Hz				ITF_VD_0304-x1000, 10Hz-->x20, 100Hz		
ITF_VD_0405-x10000, 10Hz-->x20, 100Hz				ITF_VD_0506-x10000, 0.2Hz-->x50, 100Hz		
ITF_VD_0708-x10000, 0.2Hz-->x50, 100Hz				ITF_VD_0809-x10000, 0.2Hz-->x50, 100Hz		
ITF_VD_0910-x10000, 0.2Hz-->x50, 100Hz				ITF_VD_1011-x1000, 10Hz-->x10, 100Hz		
ITF_VC_01-x10-->x1, ITF_VC_02-x10->x1.				Amp gain is changed as follows since this shot.		

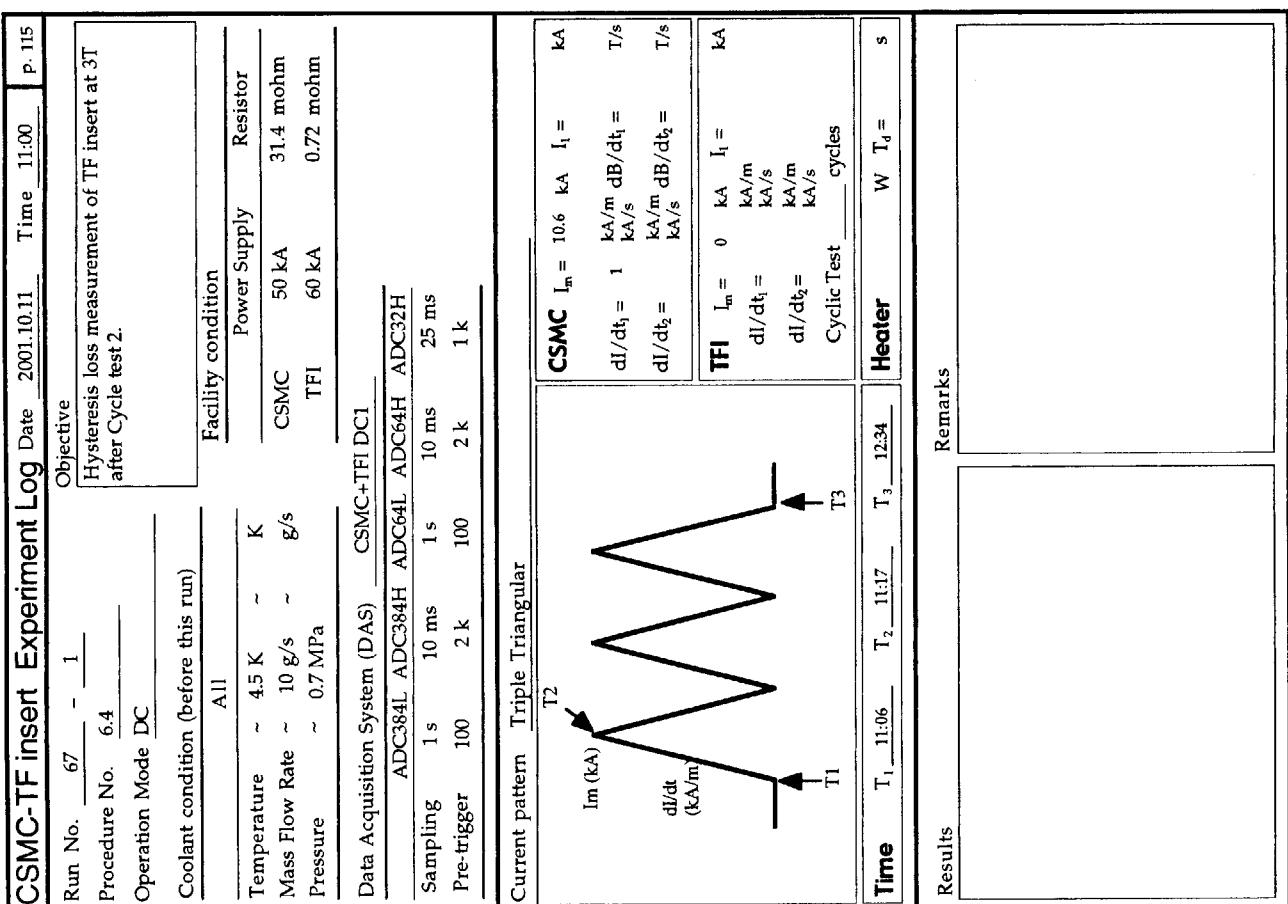
CSMC-TF insert Experiment Log		Date 2001.10.10	Time 11:04	P. 111
Run No.	65	-	2	Objective
Procedure No.	6.1	-	6.1	Cycle test 2(0-36kA, 1000 cycles), 401st-800th cycle.
Operation Mode	DC	-	DC	
Coolant condition (before this run)	All	Facility condition	All	Facility condition
Temperature	~ 4.5 K	Power Supply	~ 4.5 K	Resistor
Mass Flow Rate	~ 10 g/s	Resistor	~ 10 g/s	
Pressure	~ 0.7 MPa	CSMC	~ 0.7 MPa	CSMC
Data Acquisition System (DAS)	CSMC+TFI DC1	TFI	CSMC+TFI DC1	TFI
	ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s	Sampling	1 s	Power Supply
Pre-trigger	100	Pre-trigger	100	Resistor
	2 k		2 k	
Current pattern	Cyclic	Current pattern	Cyclic	
CSMC	$I_m = 46$ kA	CSMC	$I_m = 46$ kA	CSMC
dI/dt_1 [kA/m]	$dI/dt_1 = 5$ kA/m	dI/dt_1 [kA/m]	$dI/dt_1 = 5$ kA/m	$I_m = 46$ kA
dI/dt_2 [kA/m]	$dI/dt_2 = 5$ kA/m	dI/dt_2 [kA/m]	$dI/dt_2 = 5$ kA/m	$dI/dt_1 = 5$ kA/m
TFI	$I_m = 36$ kA	TFI	$I_m = 36$ kA	TFI
dI/dt_1 [kA/m]	$dI/dt_1 = 5$ kA/m	dI/dt_1 [kA/m]	$dI/dt_1 = 5$ kA/m	$dI/dt_1 = 5$ kA/m
dI/dt_2 [kA/m]	$dI/dt_2 = 5$ kA/m	dI/dt_2 [kA/m]	$dI/dt_2 = 5$ kA/m	$dI/dt_2 = 5$ kA/m
Cyclic Test	400 cycles	Cyclic Test	200 cycles	Cyclic Test 200 cycles
Time	$T_1 = 11:04$	Time	$T_1 = 11:04$	Heater
	$T_2 = 14:11$		$T_2 = 16:25$	$W = T_d = s$
	T_3		T_3	Time
Results	Remarks	Results	Remarks	Results
	Charge up of CSMC is defined by the previous shot(#65-1). Ramp down of CSMC to 10.6kA (1kA/m) is included this shot.		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. 111
Run No.	65	-	2	Objective
Procedure No.	6.1	-	6.1	Cycle test 2(0-36kA, 1000 cycles), 401st-800th cycle.
Operation Mode	DC	-	DC	
Coolant condition (before this run)	All	Facility condition	All	Facility condition
Temperature	~ 4.5 K	Power Supply	~ 4.5 K	Resistor
Mass Flow Rate	~ 10 g/s	Resistor	~ 10 g/s	
Pressure	~ 0.7 MPa	CSMC	~ 0.7 MPa	CSMC
Data Acquisition System (DAS)	CSMC+TFI DC1	TFI	CSMC+TFI DC1	TFI
	ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s	Sampling	1 s	Power Supply
Pre-trigger	100	Pre-trigger	100	Resistor
	2 k		2 k	
Current pattern	Cyclic	Current pattern	Cyclic	
CSMC	$I_m = 46$ kA	CSMC	$I_m = 46$ kA	CSMC
dI/dt_1 [kA/m]	$dI/dt_1 = 5$ kA/m	dI/dt_1 [kA/m]	$dI/dt_1 = 5$ kA/m	$I_m = 46$ kA
dI/dt_2 [kA/m]	$dI/dt_2 = 5$ kA/m	dI/dt_2 [kA/m]	$dI/dt_2 = 5$ kA/m	$dI/dt_1 = 5$ kA/m
TFI	$I_m = 36$ kA	TFI	$I_m = 36$ kA	TFI
dI/dt_1 [kA/m]	$dI/dt_1 = 5$ kA/m	dI/dt_1 [kA/m]	$dI/dt_1 = 5$ kA/m	$dI/dt_1 = 5$ kA/m
dI/dt_2 [kA/m]	$dI/dt_2 = 5$ kA/m	dI/dt_2 [kA/m]	$dI/dt_2 = 5$ kA/m	$dI/dt_2 = 5$ kA/m
Cyclic Test	400 cycles	Cyclic Test	200 cycles	Cyclic Test 200 cycles
Time	$T_1 = 11:04$	Time	$T_1 = 11:04$	Heater
	$T_2 = 14:11$		$T_2 = 16:25$	$W = T_d = s$
	T_3		T_3	Time
Results	Remarks	Results	Remarks	Results
	Charge up of CSMC is defined by the previous shot(#65-1). Ramp down of CSMC to 10.6kA (1kA/m) is included this shot.		Charge up of CSMC is defined by the previous shot(#65-1). 601st cycle is stated on 15:18.	

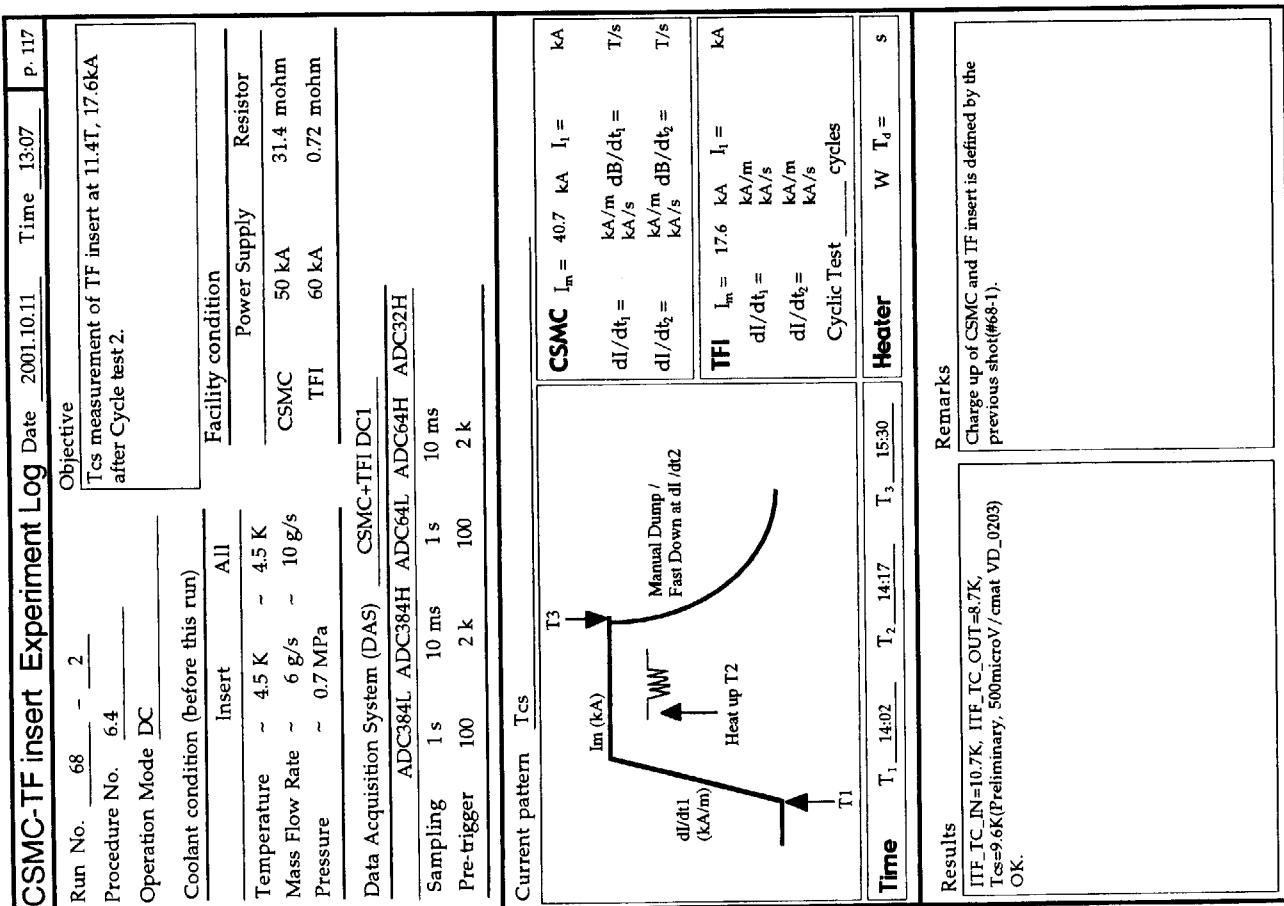
CSMC-TF insert Experiment Log							
Run No.	66	-	1	Date	2001.10.11	Time	9:30
Procedure No.	4.0				Objective		
Operation Mode	DC				Daily check.		
Coolant condition (before this run)							
All							
Temperature	~ 4.5 K	~	K	Power Supply		Resistor	
Mass Flow Rate	~ 10 g/s	~	g/s	CSMC	50 kA	31.4 mohm	
Pressure	~ 0.7 MPa			TFI	60 kA	0.72 mohm	
Data Acquisition System (DAS)	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	
	CSMC_dI/dt1 (kA/m)	INS_dI/dt1 (kA/m)	Man. Dump	dI/dt _{t1} = 1	kA/m	T/s	
			T3	dI/dt _{t2} =	kA/m	T/s	
			T2	TFI I _m = 5 kA	kA/m	T/s	
			T1	dI/dt _{t1} = 3	kA/s	Cyclic Test cycles	
Time	T ₁	9:50	T ₂	10:24	T ₃	10:32	
				Heater	W	T _d = s	
Results							
V _i =128.6V, V _o =161.7V, V _{ins} =6.7V, T _{aum} =19.3s, T _{aums} =0.038s/19.1s, OK.	Remarks						
Taums=0.038s/19.1s, OK.	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:s50, 100Hz-->x1000, 0.2Hz ITF_VD_0102:x10, 100Hz-->x10, 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	2001.10.10	Time	11:04	P. 113																								
Run No.	65 - 4	Objective		Coupling loss of TF insert at 3T after Cycle test 2.																										
Procedure No.	6.1																													
Operation Mode	DC																													
Coolant condition (before this run)		Facility condition																												
All		Power Supply		Resistor																										
Temperature	~ 4.5 K	~ K		CSMC	50 kA	31.4 mohm																								
Mass Flow Rate	~ 10 g/s	~ g/s		TFI	60 kA	0.73 mohm																								
Pressure	~ 0.7 MPa																													
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		<table border="1"> <tr> <td>CSMC</td> <td>$I_m = 10.6 \text{ kA}$</td> <td>$I_i = 46 \text{ kA}$</td> <td></td> </tr> <tr> <td>dI/dt_1</td> <td>(kA/m)</td> <td>$dB/dt_1 = 1 \text{ kA}/\text{m}$</td> <td>$T/s$</td> </tr> <tr> <td>$I_m (\text{kA})$</td> <td></td> <td>$kA/\text{s}$</td> <td></td> </tr> <tr> <td>T_1</td> <td></td> <td>$dI/dt_2 = kA/\text{s}$</td> <td>T/s</td> </tr> <tr> <td>T_2</td> <td></td> <td>$dB/dt_2 = kA/\text{s}$</td> <td></td> </tr> <tr> <td></td> <td></td> <td>Cyclic Test</td> <td>200 cycles</td> </tr> </table>				CSMC	$I_m = 10.6 \text{ kA}$	$I_i = 46 \text{ kA}$		dI/dt_1	(kA/m)	$dB/dt_1 = 1 \text{ kA}/\text{m}$	T/s	$I_m (\text{kA})$		kA/s		T_1		$dI/dt_2 = kA/\text{s}$	T/s	T_2		$dB/dt_2 = kA/\text{s}$				Cyclic Test	200 cycles
CSMC	$I_m = 10.6 \text{ kA}$	$I_i = 46 \text{ kA}$																												
dI/dt_1	(kA/m)	$dB/dt_1 = 1 \text{ kA}/\text{m}$	T/s																											
$I_m (\text{kA})$		kA/s																												
T_1		$dI/dt_2 = kA/\text{s}$	T/s																											
T_2		$dB/dt_2 = kA/\text{s}$																												
		Cyclic Test	200 cycles																											
	$I_1 [\text{kA}]$	$dI/dt_1 [\text{kA}/\text{m}]$	$I_m (\text{kA})$	$dB/dt_1 [1 \text{ kA}/\text{m}]$	$I_i = 46 \text{ kA}$																									
			Man. dump																											
Time	T_1 17:21	T_2 18:32	T_3	Heater	W	$T_d =$																								
Results			Remarks																											
$V_i=151V$, $V_o=181V$, $V_{ins}=2.09V$, $T_{aumc}=19.5s$, OK.	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 11:00	P. 115		
Objective								
Hysteresis loss measurement of TF insert at 3T after Cycle test 2.								
Run No. 67	-	1						
Procedure No. 6.4								
Operation Mode DC								
Coolant condition (before this run)				Facility condition				
All	All	Insert	All	Power Supply				
Temperature ~ 4.5 K	~ K	Temperature ~ 4.5 K	~ 4.5 K	Resistor	Resistor			
Mass Flow Rate ~ 10 g/s	~ g/s	Mass Flow Rate ~ 6 g/s	~ 10 g/s	CSMC	CSMC	31.4 mohm		
Pressure ~ 0.7 MPa	~ 0.7 MPa	Pressure ~ 0.7 MPa	~ 0.7 MPa	TFI	TFI	0.72 mohm		
Data Acquisition System (DAS) CSMC+TFI DC1				Data Acquisition System (DAS) CSMC+TFI DC1				
ADC384L ADC384H ADC64L ADC64H ADC32H				ADC384L ADC384H ADC64L ADC64H ADC32H				
Sampling 1 s	10 ms	Sampling 1 s	10 ms	Pre-trigger 100	2 k	100		
Pre-trigger 100	2 k	Pre-trigger 100	2 k	100	2 k	100		
Current pattern Double charge up				CSMC I _m = 40.7 kA I _i = kA				
CSMC dI/dt ₁ (kA/m) T1				dI/dt ₁ = 1 kA/m dB/dt ₁ = T/s				
INS Im (kA) T2				dI/dt ₂ = 1 kA/m dB/dt ₂ = T/s				
CSMC dI/dt ₁ (kA/m) T1				TFI I _m = 17.6 kA I _i = kA				
INS Im (kA) T2				dI/dt ₁ = 3 kA/m				
CSMC dI/dt ₁ (kA/m) T1				dI/dt ₂ = 1 kA/m				
INS Im (kA) T2				Cyclic Test cycles				
Time T ₁ 11:06 T ₂ 11:17 T ₃ 12:34 Heater W T _a = s				Time T ₁ 13:11 T ₂ 14:02 T ₃ Heater W T _a = s				
Results Remarks				Remarks				
Valve for mandrel of TF insert is closed at 13:00. Mass flow rate of bushars for TF insert is 8g/s each.								



CSMC-TF insert Experiment Log			Date 2001.10.11	Time 13:07	P. 117
Run No. <u>68</u> - <u>2</u>			Objective Tcs measurement of TF insert at 11.4T, 17.6kA after Cycle test 2.		
Procedure No. <u>6.4</u>			Procedure No. <u>5.6</u>		
Operation Mode <u>DC</u>			Operation Mode <u>DC</u>		
Coolant condition (before this run)			Coolant condition (before this run)		
Insert All			All		
Facility condition			Facility condition		
Power Supply CSMC			Power Supply CSMC		
Resistor 50 kA			Resistor 50 kA		
Temperature ~ 4.5 K			Temperature ~ 4.5 K		
Mass Flow Rate ~ 10 g/s			Mass Flow Rate ~ 10 g/s		
Pressure ~ 0.7 MPa			Pressure ~ 0.7 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1			Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling 1 s			Sampling 1 s		
Pre-trigger 100			Pre-trigger 100		
10 ms			10 ms		
2 k			2 k		
Cyclic Test			Discharge		
Current pattern Tcs			Current pattern Tcs		
CSMC $I_m = 40.7 \text{ kA}$ $I_i = 0 \text{ kA}$			CSMC $I_m = 40.7 \text{ kA}$ $I_i = 0 \text{ kA}$		
$dI/dt_1 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$			$dI/dt_1 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$		
$dI/dt_2 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$			$dI/dt_2 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$		
TFI $I_m = 17.6 \text{ kA}$ $I_i = 0 \text{ kA}$			TFI $I_m = 0 \text{ kA}$ $I_i = 0 \text{ kA}$		
$dI/dt_1 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$			$dI/dt_1 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$		
$dI/dt_2 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$			$dI/dt_2 = \frac{\text{kA}/\text{m}}{\text{kA}/\text{s}}$		
Cyclic Test _____ cycles			Cyclic Test _____ cycles		
Time $T_1 = 14:02$ $T_2 = 14:17$ $T_3 = 15:30$ Heater			Time $T_1 = 15:33$ $T_2 =$ $T_3 =$ Heater		
W $T_d =$ s			W $T_d =$ s		
Remarks			Remarks		
Results			Results		
ITF_IC_IN=10.7K ITF_IC_OUT=8.7K Ts=9.6K(Preliminary, 500microV/cm ² mat VD_0203) OK.			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 16:55	P. 119
Run No. 69 - 1		Objective Check the inductive heater		
Procedure No.				
Operation Mode DC				
Coolant condition (before this run)		Facility condition		
All				All
Temperature ~ 4.5 K	Power Supply	Resistor	Power Supply	Resistor
Mass Flow Rate ~ 10 g/s	CSMC	50 kA	CSMC	50 kA
Pressure ~ 0.7 MPa	TFI	60 kA	TFI	60 kA
Data Acquisition System (DAS) CSMC+TFI DC1		CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H				
Sampling 5 ms		5 ms		0.02 ms
Pre-trigger 2 k		2 k		1 k
Current pattern Heater pulse		Heater pulse		
CSMC $I_m = 0$ kA $I_1 =$ kA		$\frac{dI}{dt_1} = \frac{kA}{s}$ $\frac{dB}{dt_1} = \frac{T/s}{m}$		
$dI/dt_1 =$ kA/s		$\frac{dI}{dt_1} = \frac{kA}{s}$		
$dI/dt_2 =$ kA/s		$\frac{dI}{dt_2} = \frac{kA}{s}$		
TFI $I_m = 0$ kA $I_1 =$ kA		$\frac{dI}{dt_1} = \frac{kA}{m}$ $\frac{dB}{dt_1} = \frac{T/s}{m}$		
$dI/dt_1 =$ kA/m		$\frac{dI}{dt_1} = \frac{kA}{m}$		
$dI/dt_2 =$ kA/m		$\frac{dI}{dt_2} = \frac{kA}{m}$		
Cyclic Test cycles		Cyclic Test cycles		
Time $T_1 = 17.92$	$T_2 =$	$T_3 =$	Heater	W $T_d = 0.02$ s
Time $T_1 = 17.13$	$T_2 =$	$T_3 =$	Heater	W $T_d = 0.02$ s
Results		Remarks		
Inductive heater voltage : 41.5V Inductive heater current : 135.5A I ² integral : 138.9 A ² s				

CSMC-TF insert Experiment Log		Date 2001.10.11	Time 16:55	P. 119
Run No. 69 - 2		Objective Check the inductive heater		
Procedure No.				
Operation Mode DC				
Coolant condition (before this run)		Facility condition		
All				All
Temperature ~ 4.5 K	Power Supply	Resistor	Power Supply	Resistor
Mass Flow Rate ~ 10 g/s	CSMC	31.4 mohm	CSMC	31.4 mohm
Pressure ~ 0.7 MPa	TFI	0.72 mohm	TFI	0.72 mohm
Data Acquisition System (DAS) CSMC+TFI DC1		CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H				
Sampling 5 ms		5 ms		0.02 ms
Pre-trigger 2 k		2 k		1 k
Current pattern Heater pulse		Heater pulse		
CSMC $I_m = 0$ kA $I_1 =$ kA		$\frac{dI}{dt_1} = \frac{kA}{s}$ $\frac{dB}{dt_1} = \frac{T/s}{m}$		
$dI/dt_1 =$ kA/s		$\frac{dI}{dt_1} = \frac{kA}{s}$		
$dI/dt_2 =$ kA/s		$\frac{dI}{dt_2} = \frac{kA}{s}$		
TFI $I_m = 0$ kA $I_1 =$ kA		$\frac{dI}{dt_1} = \frac{kA}{m}$ $\frac{dB}{dt_1} = \frac{T/s}{m}$		
$dI/dt_1 =$ kA/m		$\frac{dI}{dt_1} = \frac{kA}{m}$		
$dI/dt_2 =$ kA/m		$\frac{dI}{dt_2} = \frac{kA}{m}$		
Cyclic Test cycles		Cyclic Test cycles		
Time $T_1 = 17.92$	$T_2 =$	$T_3 =$	Heater	W $T_d = 0.02$ s
Time $T_1 = 17.13$	$T_2 =$	$T_3 =$	Heater	W $T_d = 0.02$ s
Results		Remarks		
Inductive heater voltage : 75V Inductive heater current : 256.1A I ² integral : 486.8 A ² s				

CSMC-TF insert Experiment Log		Date 2001.10.11	Time 16:55	P. 121																		
Run No. <u>69</u>	- <u>3</u>	Objective Check the inductive heater																				
Procedure No.	<u> </u>	Procedure No.	<u> </u>																			
Operation Mode	<u>DC</u>	Operation Mode	<u>DC</u>																			
Coolant condition (before this run)																						
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> </tr> <tr> <td>Resistor</td> <td>31.4 mohm</td> </tr> <tr> <td>CSMC</td> <td>50 kA</td> </tr> <tr> <td>TFI</td> <td>60 kA</td> </tr> <tr> <td> </td> <td>0.72 mohm</td> </tr> </tbody> </table>					Facility condition			Power Supply	Temperature	~ 4.5 K	Mass Flow Rate	~ 10 g/s	Pressure	~ 0.7 MPa	Resistor	31.4 mohm	CSMC	50 kA	TFI	60 kA		0.72 mohm
Facility condition																						
	Power Supply																					
Temperature	~ 4.5 K																					
Mass Flow Rate	~ 10 g/s																					
Pressure	~ 0.7 MPa																					
Resistor	31.4 mohm																					
CSMC	50 kA																					
TFI	60 kA																					
	0.72 mohm																					
Facility condition (before this run)																						
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> </tr> <tr> <td>Resistor</td> <td>31.4 mohm</td> </tr> <tr> <td>CSMC</td> <td>50 kA</td> </tr> <tr> <td>TFI</td> <td>60 kA</td> </tr> <tr> <td> </td> <td>0.72 mohm</td> </tr> </tbody> </table>					Facility condition			Power Supply	Temperature	~ 4.5 K	Mass Flow Rate	~ 10 g/s	Pressure	~ 0.7 MPa	Resistor	31.4 mohm	CSMC	50 kA	TFI	60 kA		0.72 mohm
Facility condition																						
	Power Supply																					
Temperature	~ 4.5 K																					
Mass Flow Rate	~ 10 g/s																					
Pressure	~ 0.7 MPa																					
Resistor	31.4 mohm																					
CSMC	50 kA																					
TFI	60 kA																					
	0.72 mohm																					
Data Acquisition System (DAS) CSMC+TFI DC1																						
<table border="1"> <thead> <tr> <th colspan="2">Data Acquisition System (DAS)</th> </tr> <tr> <th></th> <th>DAS</th> </tr> </thead> <tbody> <tr> <td>ADC384L</td> <td>ADC384H</td> </tr> <tr> <td>ADC64L</td> <td>ADC64H</td> </tr> <tr> <td>ADC32H</td> <td>ADC32H</td> </tr> <tr> <td>Sampling</td> <td>5 ms</td> </tr> <tr> <td>Pre-trigger</td> <td>2 k</td> </tr> <tr> <td> </td> <td>0.02 ms</td> </tr> <tr> <td> </td> <td>1 k</td> </tr> </tbody> </table>					Data Acquisition System (DAS)			DAS	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H	ADC32H	Sampling	5 ms	Pre-trigger	2 k		0.02 ms		1 k
Data Acquisition System (DAS)																						
	DAS																					
ADC384L	ADC384H																					
ADC64L	ADC64H																					
ADC32H	ADC32H																					
Sampling	5 ms																					
Pre-trigger	2 k																					
	0.02 ms																					
	1 k																					
Current pattern Heater pulse																						
<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> </tr> </thead> <tbody> <tr> <td>$I_m = 0$</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/s</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/s</td> </tr> </tbody> </table>					CSMC		$I_m = 0$	kA	$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/s	$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/s						
CSMC																						
$I_m = 0$	kA																					
$dI/dt_1 =$	kA/m																					
$dI/dt_1 =$	kA/s																					
$dI/dt_2 =$	kA/m																					
$dI/dt_2 =$	kA/s																					
<table border="1"> <thead> <tr> <th colspan="2">TFI</th> </tr> </thead> <tbody> <tr> <td>$I_m = 0$</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/s</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/s</td> </tr> <tr> <td>Cyclic Test</td> <td>cycles</td> </tr> </tbody> </table>					TFI		$I_m = 0$	kA	$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/s	$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/s	Cyclic Test	cycles				
TFI																						
$I_m = 0$	kA																					
$dI/dt_1 =$	kA/m																					
$dI/dt_1 =$	kA/s																					
$dI/dt_2 =$	kA/m																					
$dI/dt_2 =$	kA/s																					
Cyclic Test	cycles																					
Time	<u>T₁</u>	<u>T₂</u>	<u>T₃</u>	<u>Heater</u>																		
	17:18			W $T_d = 0.02$ s																		
Remarks																						
<table border="1"> <thead> <tr> <th colspan="2">Results</th> </tr> </thead> <tbody> <tr> <td>Inductive heater voltage</td> <td>: 175V</td> </tr> <tr> <td>Inductive heater current</td> <td>: 604A</td> </tr> <tr> <td>I^2 integral</td> <td>: 2706.7 A²s</td> </tr> <tr> <td>Inductive heater current</td> <td>: 400.8A</td> </tr> <tr> <td>I^2 integral</td> <td>: 1221.7 A²s</td> </tr> </tbody> </table>					Results		Inductive heater voltage	: 175V	Inductive heater current	: 604A	I^2 integral	: 2706.7 A ² s	Inductive heater current	: 400.8A	I^2 integral	: 1221.7 A ² s						
Results																						
Inductive heater voltage	: 175V																					
Inductive heater current	: 604A																					
I^2 integral	: 2706.7 A ² s																					
Inductive heater current	: 400.8A																					
I^2 integral	: 1221.7 A ² s																					
Remarks																						
<table border="1"> <thead> <tr> <th colspan="2">Objective</th> </tr> </thead> <tbody> <tr> <td colspan="2">Check the inductive heater</td> </tr> </tbody> </table>					Objective		Check the inductive heater															
Objective																						
Check the inductive heater																						

CSMC-TF insert Experiment Log		Date 2001.10.11	Time 16:55	P. 121																		
Run No. <u>69</u>	- <u>3</u>	Objective Check the inductive heater																				
Procedure No.	<u> </u>	Procedure No.	<u> </u>																			
Operation Mode	<u>DC</u>	Operation Mode	<u>DC</u>																			
Coolant condition (before this run)																						
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> </tr> <tr> <td>Resistor</td> <td>31.4 mohm</td> </tr> <tr> <td>CSMC</td> <td>50 kA</td> </tr> <tr> <td>TFI</td> <td>60 kA</td> </tr> <tr> <td> </td> <td>0.72 mohm</td> </tr> </tbody> </table>					Facility condition			Power Supply	Temperature	~ 4.5 K	Mass Flow Rate	~ 10 g/s	Pressure	~ 0.7 MPa	Resistor	31.4 mohm	CSMC	50 kA	TFI	60 kA		0.72 mohm
Facility condition																						
	Power Supply																					
Temperature	~ 4.5 K																					
Mass Flow Rate	~ 10 g/s																					
Pressure	~ 0.7 MPa																					
Resistor	31.4 mohm																					
CSMC	50 kA																					
TFI	60 kA																					
	0.72 mohm																					
Facility condition (before this run)																						
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th></th> <th>Power Supply</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> </tr> <tr> <td>Resistor</td> <td>31.4 mohm</td> </tr> <tr> <td>CSMC</td> <td>50 kA</td> </tr> <tr> <td>TFI</td> <td>60 kA</td> </tr> <tr> <td> </td> <td>0.72 mohm</td> </tr> </tbody> </table>					Facility condition			Power Supply	Temperature	~ 4.5 K	Mass Flow Rate	~ 10 g/s	Pressure	~ 0.7 MPa	Resistor	31.4 mohm	CSMC	50 kA	TFI	60 kA		0.72 mohm
Facility condition																						
	Power Supply																					
Temperature	~ 4.5 K																					
Mass Flow Rate	~ 10 g/s																					
Pressure	~ 0.7 MPa																					
Resistor	31.4 mohm																					
CSMC	50 kA																					
TFI	60 kA																					
	0.72 mohm																					
Data Acquisition System (DAS) CSMC+TFI DC1																						
<table border="1"> <thead> <tr> <th colspan="2">Data Acquisition System (DAS)</th> </tr> <tr> <th></th> <th>DAS</th> </tr> </thead> <tbody> <tr> <td>ADC384L</td> <td>ADC384H</td> </tr> <tr> <td>ADC64L</td> <td>ADC64H</td> </tr> <tr> <td>ADC32H</td> <td>ADC32H</td> </tr> <tr> <td>Sampling</td> <td>5 ms</td> </tr> <tr> <td>Pre-trigger</td> <td>2 k</td> </tr> <tr> <td> </td> <td>0.02 ms</td> </tr> <tr> <td> </td> <td>1 k</td> </tr> </tbody> </table>					Data Acquisition System (DAS)			DAS	ADC384L	ADC384H	ADC64L	ADC64H	ADC32H	ADC32H	Sampling	5 ms	Pre-trigger	2 k		0.02 ms		1 k
Data Acquisition System (DAS)																						
	DAS																					
ADC384L	ADC384H																					
ADC64L	ADC64H																					
ADC32H	ADC32H																					
Sampling	5 ms																					
Pre-trigger	2 k																					
	0.02 ms																					
	1 k																					
Current pattern Heater pulse																						
<table border="1"> <thead> <tr> <th colspan="2">CSMC</th> </tr> </thead> <tbody> <tr> <td>$I_m = 0$</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/s</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/s</td> </tr> </tbody> </table>					CSMC		$I_m = 0$	kA	$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/s	$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/s						
CSMC																						
$I_m = 0$	kA																					
$dI/dt_1 =$	kA/m																					
$dI/dt_1 =$	kA/s																					
$dI/dt_2 =$	kA/m																					
$dI/dt_2 =$	kA/s																					
<table border="1"> <thead> <tr> <th colspan="2">TFI</th> </tr> </thead> <tbody> <tr> <td>$I_m = 0$</td> <td>kA</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_1 =$</td> <td>kA/s</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/m</td> </tr> <tr> <td>$dI/dt_2 =$</td> <td>kA/s</td> </tr> <tr> <td>Cyclic Test</td> <td>cycles</td> </tr> </tbody> </table>					TFI		$I_m = 0$	kA	$dI/dt_1 =$	kA/m	$dI/dt_1 =$	kA/s	$dI/dt_2 =$	kA/m	$dI/dt_2 =$	kA/s	Cyclic Test	cycles				
TFI																						
$I_m = 0$	kA																					
$dI/dt_1 =$	kA/m																					
$dI/dt_1 =$	kA/s																					
$dI/dt_2 =$	kA/m																					
$dI/dt_2 =$	kA/s																					
Cyclic Test	cycles																					
Time	<u>T₁</u>	<u>T₂</u>	<u>T₃</u>	<u>Heater</u>																		
	17:18			W $T_d = 0.02$ s																		
Remarks																						
<table border="1"> <thead> <tr> <th colspan="2">Results</th> </tr> </thead> <tbody> <tr> <td>Inductive heater voltage</td> <td>: 175V</td> </tr> <tr> <td>Inductive heater current</td> <td>: 604A</td> </tr> <tr> <td>I^2 integral</td> <td>: 2706.7 A²s</td> </tr> <tr> <td>Inductive heater current</td> <td>: 400.8A</td> </tr> <tr> <td>I^2 integral</td> <td>: 1221.7 A²s</td> </tr> </tbody> </table>					Results		Inductive heater voltage	: 175V	Inductive heater current	: 604A	I^2 integral	: 2706.7 A ² s	Inductive heater current	: 400.8A	I^2 integral	: 1221.7 A ² s						
Results																						
Inductive heater voltage	: 175V																					
Inductive heater current	: 604A																					
I^2 integral	: 2706.7 A ² s																					
Inductive heater current	: 400.8A																					
I^2 integral	: 1221.7 A ² s																					
Remarks																						

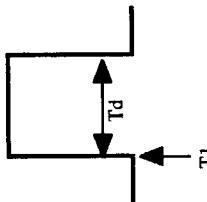
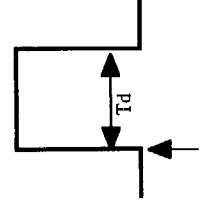
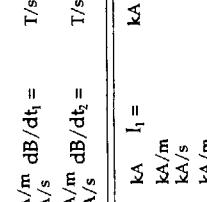
CSMC-TF insert Experiment Log		Date 2001.10.11	Time 16:55	P. 123
Objective		Check the inductive heater		
Run No.	69	-	6	
Procedure No.				
Operation Mode	DC			
Coolant condition (before this run)				
Facility condition				
All				
Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.7 MPa			
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				
Facility condition				
All				
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
Facility condition				
All				
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				
Facility condition				
All				
Power Supply		Resistor		
CSMC	I_m = 0 kA	I_1 = kA		
dI/dt_1 =	kA/m	dB/dt_1 =		
dI/dt_2 =	kA/s	T/s		
TFI	I_m = 0 kA	I_1 = kA		
dI/dt_1 =	kA/m	dB/dt_1 =		
dI/dt_2 =	kA/s	T/s		
Cyclic Test	cycles			
Time	T ₁ 17:29	T ₂	T ₃	Heater
				W T _d = 0.02 s
Time	T ₁ 17:34	T ₂	T ₃	Heater
				W T _d = 0.02 s
Remarks				
Results				
Inductive heater voltage : 261.5V Inductive heater current : 944.7A I^2 integral : 4168.3A^2s				

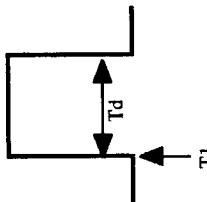
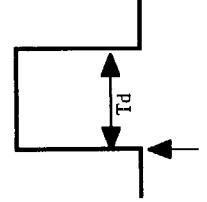
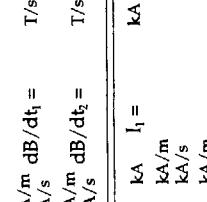
CSMC-TF insert Experiment Log		Date 2001.10.11	Time 16:55	P. 123
Objective		Check the inductive heater		
Run No.	69	-	5	
Procedure No.				
Operation Mode	DC			
Coolant condition (before this run)				
Facility condition				
All				
Temperature	~ 4.5 K	~	K	
Mass Flow Rate	~ 10 g/s	~	g/s	
Pressure	~ 0.7 MPa			
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				
Facility condition				
All				
Power Supply		Resistor		
CSMC	I_m = 0 kA	I_1 = kA		
dI/dt_1 =	kA/m	dB/dt_1 =		
dI/dt_2 =	kA/s	T/s		
TFI	I_m = 0 kA	I_1 = kA		
dI/dt_1 =	kA/m	dB/dt_1 =		
dI/dt_2 =	kA/s	T/s		
Cyclic Test	cycles			
Time	T ₁	T ₂	T ₃	Heater
				W T _d = 0.02 s
Time	T ₁ 17:29	T ₂	T ₃	Heater
				W T _d = 0.02 s
Remarks				
Results				
Inductive heater voltage : 290V Inductive heater current : 944.7A I^2 integral : 2039A^2s				

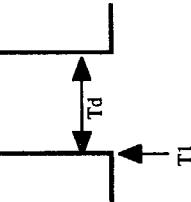
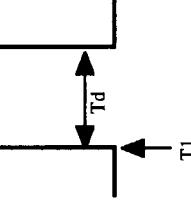
CSMC-TF insert Experiment Log		Date 2001.10.11	Time 16:55	P. 125																						
Run No.	69	-	8																							
Procedure No.				Check the inductive heater																						
Operation Mode	DC																									
Coolant condition (before this run)																										
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> <td>~ K</td> <td>~ 4.5 K</td> <td>~ K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> <td></td> <td>~ 0.7 MPa</td> <td></td> </tr> </tbody> </table>					Facility condition		All	Power Supply	Resistor	Power Supply	Resistor	Temperature	~ 4.5 K	~ K	~ 4.5 K	~ K	Mass Flow Rate	~ 10 g/s	~ g/s	~ 10 g/s	~ g/s	Pressure	~ 0.7 MPa		~ 0.7 MPa	
Facility condition																										
All	Power Supply	Resistor	Power Supply	Resistor																						
Temperature	~ 4.5 K	~ K	~ 4.5 K	~ K																						
Mass Flow Rate	~ 10 g/s	~ g/s	~ 10 g/s	~ g/s																						
Pressure	~ 0.7 MPa		~ 0.7 MPa																							
<table border="1"> <thead> <tr> <th colspan="2">Data Acquisition System (DAS)</th> </tr> <tr> <th>CSMC+TFI DC1</th> <th>CSMC+TFI DC1</th> </tr> </thead> <tbody> <tr> <td>ADC384L ADC384H</td> <td>ADC384L ADC384H</td> </tr> <tr> <td>Sampling</td> <td>5 ms</td> </tr> <tr> <td>Pre-trigger</td> <td>2 k</td> </tr> </tbody> </table>					Data Acquisition System (DAS)		CSMC+TFI DC1	CSMC+TFI DC1	ADC384L ADC384H	ADC384L ADC384H	Sampling	5 ms	Pre-trigger	2 k												
Data Acquisition System (DAS)																										
CSMC+TFI DC1	CSMC+TFI DC1																									
ADC384L ADC384H	ADC384L ADC384H																									
Sampling	5 ms																									
Pre-trigger	2 k																									
<table border="1"> <thead> <tr> <th colspan="2">Current pattern Heater pulse</th> </tr> <tr> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td>$I_m = 0$ kA</td> <td>$I_m = 0$ kA</td> </tr> <tr> <td>$dI/dt_1 =$ kA/m</td> <td>$dI/dt_1 =$ kA/m</td> </tr> <tr> <td>$dI/dt_2 =$ kA/m</td> <td>$dI/dt_2 =$ kA/m</td> </tr> <tr> <td>T_1</td> <td>T_1</td> </tr> <tr> <td>T_d</td> <td>T_d</td> </tr> </tbody> </table>					Current pattern Heater pulse		CSMC	TFI	$I_m = 0$ kA	$I_m = 0$ kA	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	T_1	T_1	T_d	T_d								
Current pattern Heater pulse																										
CSMC	TFI																									
$I_m = 0$ kA	$I_m = 0$ kA																									
$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m																									
$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m																									
T_1	T_1																									
T_d	T_d																									
<table border="1"> <thead> <tr> <th colspan="2">Cyclic Test cycles</th> </tr> <tr> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td>$I_m = 0$ kA</td> <td>$I_m = 0$ kA</td> </tr> <tr> <td>$dI/dt_1 =$ kA/m</td> <td>$dI/dt_1 =$ kA/m</td> </tr> <tr> <td>$dI/dt_2 =$ kA/m</td> <td>$dI/dt_2 =$ kA/m</td> </tr> <tr> <td>T_1</td> <td>T_1</td> </tr> <tr> <td>T_d</td> <td>T_d</td> </tr> </tbody> </table>					Cyclic Test cycles		CSMC	TFI	$I_m = 0$ kA	$I_m = 0$ kA	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	T_1	T_1	T_d	T_d								
Cyclic Test cycles																										
CSMC	TFI																									
$I_m = 0$ kA	$I_m = 0$ kA																									
$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m																									
$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m																									
T_1	T_1																									
T_d	T_d																									
<table border="1"> <thead> <tr> <th colspan="2">Cyclic Test cycles</th> </tr> <tr> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td>$I_m = 0$ kA</td> <td>$I_m = 0$ kA</td> </tr> <tr> <td>$dI/dt_1 =$ kA/m</td> <td>$dI/dt_1 =$ kA/m</td> </tr> <tr> <td>$dI/dt_2 =$ kA/m</td> <td>$dI/dt_2 =$ kA/m</td> </tr> <tr> <td>T_1</td> <td>T_1</td> </tr> <tr> <td>T_d</td> <td>T_d</td> </tr> </tbody> </table>					Cyclic Test cycles		CSMC	TFI	$I_m = 0$ kA	$I_m = 0$ kA	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	T_1	T_1	T_d	T_d								
Cyclic Test cycles																										
CSMC	TFI																									
$I_m = 0$ kA	$I_m = 0$ kA																									
$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m																									
$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m																									
T_1	T_1																									
T_d	T_d																									
Time	T_1 17:41	T_2 _____	T_3 _____	Heater																						
W	$T_d = 0.02$ s																									
Remarks																										
<p>Inductive heater voltage : 246.7V Inductive heater current : 851A I^2 integral : 8053.5A²s</p>																										

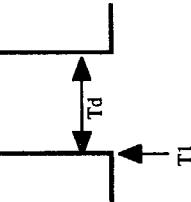
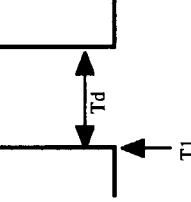
CSMC-TF insert Experiment Log		Date 2001.10.11	Time 16:55	P. 125																						
Run No.	69	-	7																							
Procedure No.				Objective Check the inductive heater																						
Operation Mode	DC																									
Coolant condition (before this run)																										
<table border="1"> <thead> <tr> <th colspan="2">Facility condition</th> </tr> <tr> <th>All</th> <th>Power Supply</th> <th>Resistor</th> <th>Power Supply</th> <th>Resistor</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>~ 4.5 K</td> <td>~ K</td> <td>~ 4.5 K</td> <td>~ K</td> </tr> <tr> <td>Mass Flow Rate</td> <td>~ 10 g/s</td> <td>~ g/s</td> <td>~ 10 g/s</td> <td>~ g/s</td> </tr> <tr> <td>Pressure</td> <td>~ 0.7 MPa</td> <td></td> <td>~ 0.7 MPa</td> <td></td> </tr> </tbody> </table>					Facility condition		All	Power Supply	Resistor	Power Supply	Resistor	Temperature	~ 4.5 K	~ K	~ 4.5 K	~ K	Mass Flow Rate	~ 10 g/s	~ g/s	~ 10 g/s	~ g/s	Pressure	~ 0.7 MPa		~ 0.7 MPa	
Facility condition																										
All	Power Supply	Resistor	Power Supply	Resistor																						
Temperature	~ 4.5 K	~ K	~ 4.5 K	~ K																						
Mass Flow Rate	~ 10 g/s	~ g/s	~ 10 g/s	~ g/s																						
Pressure	~ 0.7 MPa		~ 0.7 MPa																							
<table border="1"> <thead> <tr> <th colspan="2">Data Acquisition System (DAS)</th> </tr> <tr> <th>CSMC+TFI DC1</th> <th>CSMC+TFI DC1</th> </tr> </thead> <tbody> <tr> <td>ADC384L ADC384H</td> <td>ADC64L ADC64H</td> </tr> <tr> <td>Sampling</td> <td>0.02 ms</td> </tr> <tr> <td>Pre-trigger</td> <td>1 k</td> </tr> </tbody> </table>					Data Acquisition System (DAS)		CSMC+TFI DC1	CSMC+TFI DC1	ADC384L ADC384H	ADC64L ADC64H	Sampling	0.02 ms	Pre-trigger	1 k												
Data Acquisition System (DAS)																										
CSMC+TFI DC1	CSMC+TFI DC1																									
ADC384L ADC384H	ADC64L ADC64H																									
Sampling	0.02 ms																									
Pre-trigger	1 k																									
<table border="1"> <thead> <tr> <th colspan="2">Current pattern Heater pulse</th> </tr> <tr> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td>$I_m = 0$ kA</td> <td>$I_m = 0$ kA</td> </tr> <tr> <td>$dI/dt_1 =$ kA/m</td> <td>$dI/dt_1 =$ kA/m</td> </tr> <tr> <td>$dI/dt_2 =$ kA/m</td> <td>$dI/dt_2 =$ kA/m</td> </tr> <tr> <td>T_1</td> <td>T_1</td> </tr> <tr> <td>T_d</td> <td>T_d</td> </tr> </tbody> </table>					Current pattern Heater pulse		CSMC	TFI	$I_m = 0$ kA	$I_m = 0$ kA	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	T_1	T_1	T_d	T_d								
Current pattern Heater pulse																										
CSMC	TFI																									
$I_m = 0$ kA	$I_m = 0$ kA																									
$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m																									
$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m																									
T_1	T_1																									
T_d	T_d																									
<table border="1"> <thead> <tr> <th colspan="2">Cyclic Test cycles</th> </tr> <tr> <th>CSMC</th> <th>TFI</th> </tr> </thead> <tbody> <tr> <td>$I_m = 0$ kA</td> <td>$I_m = 0$ kA</td> </tr> <tr> <td>$dI/dt_1 =$ kA/m</td> <td>$dI/dt_1 =$ kA/m</td> </tr> <tr> <td>$dI/dt_2 =$ kA/m</td> <td>$dI/dt_2 =$ kA/m</td> </tr> <tr> <td>T_1</td> <td>T_1</td> </tr> <tr> <td>T_d</td> <td>T_d</td> </tr> </tbody> </table>					Cyclic Test cycles		CSMC	TFI	$I_m = 0$ kA	$I_m = 0$ kA	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	T_1	T_1	T_d	T_d								
Cyclic Test cycles																										
CSMC	TFI																									
$I_m = 0$ kA	$I_m = 0$ kA																									
$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m																									
$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m																									
T_1	T_1																									
T_d	T_d																									
Time	T_1 17:49	T_2 _____	T_3 _____	Heater																						
W	$T_d = 0.02$ s																									
Results																										
<p>Inductive heater voltage : 246.7V Inductive heater current : 851A I^2 integral : 8505.1A²s</p>																										
Remarks																										

CSMC-TF insert Experiment Log				Date	2001.10.12	Time	9:30	P. 127
Run No.	70	-	1	Objective				
Procedure No.	4.0			Daily check.				
Operation Mode	DC							
Coolant condition (before this run)	All			Facility condition				
Temperature	~ 4.5 K	~	K	Power Supply				
Mass Flow Rate	~ 10 g/s	~	g/s	CSMC	50 kA	31.4 mohm		
Pressure	~ 0.7 MPa			TFI	60 kA	0.72 mohm		
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H			Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H			
Sampling	1 s	5 ms	5 ms	Sampling	1 s	5 ms	1 s	
Pre-trigger	60	2 k	60	Pre-trigger	60	2 k	60	0.02 ms
Current pattern	Simultaneous daily check			Charge up and hold				
CSMC	$I_m = 9.2 \text{ kA}$	$I_1 =$	kA	CSMC	$I_m = 41.5 \text{ kA}$	$I_1 =$	kA	
dI/dt_1	1 kA/m	$dB/dt_1 =$	T/s	dI/dt_1	1 kA/s	$dB/dt_1 =$	T/s	
dI/dt_2	1 kA/m	$dB/dt_2 =$	T/s	dI/dt_2	1 kA/s	$dB/dt_2 =$	T/s	
TFI	$I_m = 5 \text{ kA}$	$I_1 =$	kA	TFI	$I_m = 0 \text{ kA}$	$I_1 =$	kA	
dI/dt_1	3 kA/m	$dB/dt_1 =$	kA/m	dI/dt_1	3 kA/s	$dB/dt_1 =$	kA/s	
dI/dt_2	3 kA/m	$dB/dt_2 =$	kA/m	dI/dt_2	3 kA/s	$dB/dt_2 =$	kA/s	
		Cyclic Test	cycles		Cyclic Test	cycles		
Time	$T_1 = 9:50$	$T_2 = 10:28$	$T_3 = 10:37$	Heater	W	$T_d =$	s	
Results	Remarks				Heater	110	W	$T_d =$ s
V _i =129V, V _o =163.9V, V _{ims} =7.5V, T _{ausm} =19.6s, Tauins=0.039s/19.8, OK.	Amp gain & low pass filters are changed as follows since this shot. ITF_VD_ALLi: $\times 1000$, 0.2Hz- $\rightarrow x1$, 500Hz ITF_VD_0102: $\times 100$, 100Hz- $\rightarrow x10$, 500Hz ITF_VD_0203: $\times 10000$, 100Hz- $\rightarrow x10$, 500Hz ITF_VD_0304: $\times 10000$, 100Hz- $\rightarrow x10$, 500Hz ITF_VD_0405: $\times 10000$, 100Hz- $\rightarrow x10$, 500Hz ITF_VD_0506: $\times x10000$, 100Hz- $\rightarrow x10$, 500Hz ITF_VD_0607: $\times x10000$, 100Hz- $\rightarrow x10$, 500Hz ITF_VD_0708: $\times x10000$, 100Hz- $\rightarrow x10$, 500Hz ITF_VD_0809: $\times 10000$, 100Hz- $\rightarrow x10$, 500Hz ITF_VD_0910: $\times 10000$, 100Hz- $\rightarrow x10$, 500Hz ITF_VD_1011: $\times 1000$, 10Hz- $\rightarrow x10$, 500Hz ITF_VC_01: $\times 10$ - $\rightarrow x1$, ITF_VC_02: $\times 10$ - $\rightarrow x1$				Remarks			
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.	Heat TFI insert up is started on 11:45.							

CSMC-TF insert Experiment Log			Date 2001.10.12	Time 11:13	P. 129
Run No. <u>71</u> - <u>2</u>			Objective e Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.		
Procedure No. <u>7.5</u>			Procedure No. <u>7.5</u>		
Operation Mode <u>DC</u>			Operation Mode <u>DC</u>		
Coolant condition (before this run)			Coolant condition (before this run)		
All	Insert	Facility condition	All	Insert	Facility condition
Temperature	~ 4.5 K	~ 6.5 K	Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s	Power Supply	~ 10 g/s	Power Supply
Pressure	~ 0.7 MPa	~ 0.7 MPa	Resistor	~ 0.7 MPa	Resistor
		CSMC	50 kA	31.4 mohm	CSMC
		TFI	60 kA	0.72 mohm	TFI
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	CSMC+TFI DC1	Data Acquisition System (DAS)
ADC384L	ADC384H	Sampling	1 s	5 ms	ADC384H
ADC64L	ADC64H	Pre-trigger	60	2 k	ADC64L
ADC32H	ADC32H			60	2 k
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	Current pattern	Heater pulse	Current pattern	Heater pulse
CSMC		CSMC		CSMC	
$I_m = 41.5$ kA	$I_i =$ kA	$I_m = 41.5$ kA	$I_i =$ kA	$I_m = 41.5$ kA	$I_i =$ kA
$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s
TFI	$I_m = 0$ kA	$I_i =$ kA	TFI	$I_m = 0$ kA	$I_i =$ kA
$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m
$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m
Cyclic Test	cycles	Cyclic Test	cycles	Cyclic Test	cycles
Time	T ₁ <u>13:05</u>	T ₂ <u> </u>	Time	T ₁ <u>13:10</u>	T ₂ <u> </u>
Heater	W	T _d = <u>0.02</u> s	Heater	W	T _d = <u>0.02</u> s
Results	Remarks	Results	Remarks	Results	Remarks
Inductive heater voltage : 46.9V	Inductive heater current : 111.4A	Inductive heater voltage : 88.5V	Inductive heater current : 210.8A	Inductive heater voltage : 350.8A ² s	Inductive heater current : 101.5A ² s

CSMC-TF insert Experiment Log			Date 2001.10.12	Time 11:13	P. 130
Run No. <u>71</u> - <u>3</u>			Objective f Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.		
Procedure No. <u>7.5</u>			Procedure No. <u>7.5</u>		
Operation Mode <u>DC</u>			Operation Mode <u>DC</u>		
Coolant condition (before this run)			Coolant condition (before this run)		
All	Insert	Facility condition	All	Insert	Facility condition
Temperature	~ 4.5 K	~ 6.5 K	Temperature	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s	Power Supply	~ 10 g/s	Power Supply
Pressure	~ 0.7 MPa	~ 0.7 MPa	Resistor	~ 0.7 MPa	Resistor
	CSMC	50 kA	31.4 mohm	31.4 mohm	31.4 mohm
	TFI	60 kA	0.72 mohm	0.72 mohm	0.72 mohm
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	CSMC+TFI DC1	Data Acquisition System (DAS)
ADC384L	ADC384H	Sampling	1 s	5 ms	ADC384H
ADC64L	ADC64H	Pre-trigger	60	2 k	ADC64L
ADC32H	ADC32H			60	2 k
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	Current pattern	Heater pulse	Current pattern	Heater pulse
CSMC		CSMC		CSMC	
$I_m = 41.5$ kA	$I_i =$ kA	$I_m = 41.5$ kA	$I_i =$ kA	$I_m = 41.5$ kA	$I_i =$ kA
$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s	$dI/dt_2 =$ kA/m	$dB/dt_2 =$ T/s
TFI	$I_m = 0$ kA	$I_i =$ kA	TFI	$I_m = 0$ kA	$I_i =$ kA
$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/m
$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/m
Cyclic Test	cycles	Cyclic Test	cycles	Cyclic Test	cycles
Time	T ₁ <u>13:05</u>	T ₂ <u> </u>	Time	T ₁ <u>13:10</u>	T ₂ <u> </u>
Heater	W	T _d = <u>0.02</u> s	Heater	W	T _d = <u>0.02</u> s
Results	Remarks	Results	Remarks	Results	Remarks
Inductive heater voltage : 46.9V	Inductive heater current : 111.4A	Inductive heater voltage : 88.5V	Inductive heater current : 210.8A	Inductive heater voltage : 350.8A ² s	Inductive heater current : 101.5A ² s

CSMC-TF insert Experiment Log		Date 2001.10.12	Time 11:13	P. 131
Objective				
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.				
Run No.	71 - 4			
Procedure No.	7.5			
Operation Mode	DC			
Coolant condition (before this run)		Facility condition (before this run)		
All	Insert	All	Insert	
Temperature	~ 4.5 K	~ 6.5 K	~ 6.5 K	
Mass Flow Rate	~ 10 g/s	~ 10 g/s	~ 10 g/s	
Pressure	~ 0.7 MPa	60 kPa	0.7 MPa	
Data Acquisition System (DAS)		Data Acquisition System (DAS)		
ADC384L ADC384H ADC64L ADC64H ADC32H		CSMC+TFI DC1		
Sampling	1 s	5 ms	1 s	5 ms
Pre-trigger	60	2 k	60	2 k
Current pattern		Heater pulse		
				
CSMC		CSMC		
I_m =	41.5 kA	I_i =	kA	
dI/dt_i =	kA/m	dB/dt_i =	T/s	
dI/dt_2 =	kA/m	dB/dt_2 =	T/s	
TFI	I_m = 0 kA	I_i =	kA	
dI/dt_i =	kA/m	dI/dt_i =	kA/m	
dI/dt_2 =	kA/m	dI/dt_2 =	kA/m	
Cyclic Test	cycles	Cyclic Test	cycles	
Time	T ₁ 13:16	T ₂	T ₃	
Heater	W	T _d = 0.02 s	Heater	W T _d = 0.02 s
Remarks		Remarks		
Results		Results		
Inductive heater voltage: 172V		Inductive heater voltage: 249V		
Inductive heater current: 413A		Inductive heater current: 600A		
I ² integral: 1338.9 A ² s		I ² integral: 2810 A ² s		
Remarks				

CSMC-TF insert Experiment Log		Date 2001.10.12	Time 11:13	P. 131
Objective				
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.				
Run No.	71 - 4			
Procedure No.	7.5			
Operation Mode	DC			
Coolant condition (before this run)		Facility condition		
All	Insert	Power Supply	Resistor	
Temperature	~ 4.5 K	~ 6.5 K	~ 6.5 K	
Mass Flow Rate	~ 10 g/s	~ 10 g/s	~ 10 g/s	
Pressure	~ 0.7 MPa	60 kPa	0.7 MPa	
Data Acquisition System (DAS)		Data Acquisition System (DAS)		
ADC384L ADC384H ADC64L ADC64H ADC32H		CSMC+TFI DC1		
Sampling	1 s	5 ms	1 s	5 ms
Pre-trigger	60	2 k	60	2 k
Current pattern		Heater pulse		
				
CSMC		CSMC		
I_m =	41.5 kA	I_i =	kA	
dI/dt_i =	kA/m	dB/dt_i =	T/s	
dI/dt_2 =	kA/m	dB/dt_2 =	T/s	
TFI	I_m = 0 kA	I_i =	kA	
dI/dt_i =	kA/m	dI/dt_i =	kA/m	
dI/dt_2 =	kA/m	dI/dt_2 =	kA/m	
Cyclic Test	cycles	Cyclic Test	cycles	
Time	T ₁ 13:16	T ₂	T ₃	
Heater	W	T _d = 0.02 s	Heater	W T _d = 0.02 s
Remarks		Remarks		
Results		Results		
Inductive heater voltage: 172V		Inductive heater voltage: 249V		
Inductive heater current: 413A		Inductive heater current: 600A		
I ² integral: 1338.9 A ² s		I ² integral: 2810 A ² s		
Remarks				

CSMC-TF insert Experiment Log				Date 2001.10.12	Time 11:13	P. 133
Run No. <u>71</u> - <u>6</u>				Objective		
Procedure No. <u>7.5</u>				Run No. <u>71</u>	- <u>7</u>	
Operation Mode <u>DC</u>				Procedure No. <u>7.5</u>		
Coolant condition (before this run)				Facility condition		
All		Insert		All	Insert	
Temperature ~ 4.5 K		~ 6.5 K		Temperature ~ 4.5 K	~ 6.5 K	
Mass Flow Rate ~ 10 g/s		~ 10 g/s		Mass Flow Rate ~ 10 g/s	~ 10 g/s	
Pressure ~ 0.7 MPa				Pressure ~ 0.7 MPa		
Data Acquisition System (DAS) CSMC+TFI DC1				Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H				ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling		1 s		Sampling	1 s	5 ms
Pre-trigger		60		Pre-trigger	60	60
					2 k	2 k
					1 k	
Current pattern Charge up and hold						
CSMC $I_m = 41.5$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s				CSMC $I_m = 41.5$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s		
TFI $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s Cyclic Test cycles				TFI $I_m = 46$ kA $I_i =$ kA $dI/dt_1 =$ 3 kA/s $dB/dt_1 =$ kA/m $dI/dt_2 =$ kA/s $dB/dt_2 =$ kA/m Cyclic Test cycles		
Time <u>T₁</u> <u>13:27</u> <u>T₂</u> <u>T₃</u>				Heater	W <u>T_d</u> = <u>0.02</u> s	Heater W <u>T_d</u> = <u>s</u>
Results				Remarks		
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.						
Objective						

CSMC-TF insert Experiment Log				Date 2001.10.12	Time 11:13	P. 133
Run No. <u>71</u> - <u>6</u>				Objective		
Procedure No. <u>7.5</u>				Run No. <u>71</u>	- <u>7</u>	
Operation Mode <u>DC</u>				Procedure No. <u>7.5</u>		
Coolant condition (before this run)				Facility condition		
All		Insert		Power Supply	Resistor	
Temperature ~ 4.5 K		~ 6.5 K		CSMC	31.4 mohm	
Mass Flow Rate ~ 10 g/s		~ 10 g/s		TFI	0.72 mohm	
Pressure ~ 0.7 MPa						
Data Acquisition System (DAS) CSMC+TFI DC1				Data Acquisition System (DAS) CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H				ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling		1 s		Sampling	1 s	5 ms
Pre-trigger		60		Pre-trigger	60	60
					2 k	2 k
					1 k	
Current pattern Heater pulse						
CSMC $I_m = 41.5$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s				CSMC $I_m = 41.5$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s		
TFI $I_m = 0$ kA $I_i =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ T/s Cyclic Test cycles				TFI $I_m = 46$ kA $I_i =$ kA $dI/dt_1 =$ 3 kA/s $dB/dt_1 =$ kA/m $dI/dt_2 =$ kA/s $dB/dt_2 =$ kA/m Cyclic Test cycles		
Time <u>T₁</u> <u>13:38</u> <u>T₂</u> <u>T₃</u>				Heater	W <u>T_d</u> = <u>0.02</u> s	Heater W <u>T_d</u> = <u>s</u>
Results				Remarks		
Inductive heater voltage : 355V Inductive heater current : 854 A I^2 integral : $5694A^2s$						

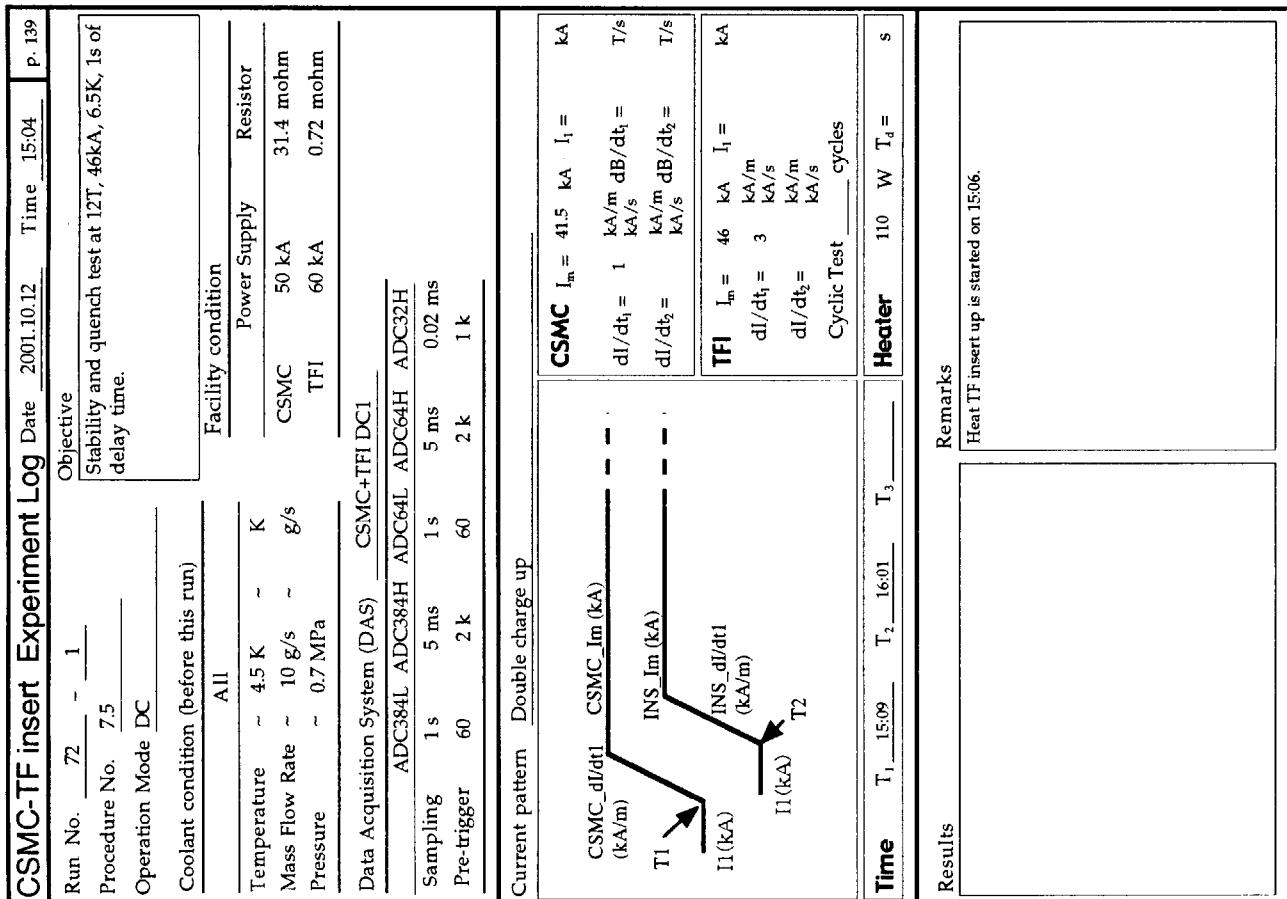
CSMC-TF insert Experiment Log		Date 2001.10.12	Time 11:13	P. 135
Run No.	71 - 8	Objective		
Procedure No.	7.5	Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.		
Operation Mode	DC			
Coolant condition (before this run)				
Facility condition				
All	Insert	All	Insert	
Temperature	~ 4.5 K	~ 6.5 K		
Mass Flow Rate	~ 10 g/s	~ 10 g/s	Power Supply	Resistor
Pressure	~ 0.7 MPa	60 kPa	CSMC	50 kA
			TFI	60 kA
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	Heater pulse			

CSMC-TF insert Experiment Log		Date 2001.10.12	Time 11:13	P. 136
Run No.	71 - 9	Objective		
Procedure No.	7.5	Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.		
Operation Mode	DC			
Coolant condition (before this run)				
Facility condition				
All	Insert	All	Insert	
Temperature	~ 4.5 K	~ 6.5 K		
Mass Flow Rate	~ 10 g/s	~ 10 g/s	Power Supply	Resistor
Pressure	~ 0.7 MPa	60 kPa	CSMC	50 kA
			TFI	60 kA
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	Heater pulse			

CSMC-TF insert Experiment Log		Date 2001.10.12	Time 11:13	P. 138
Run No. 71 - 10		Objective		
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.				
Procedure No. 7.5	—	Procedure No. 7.5	—	
Operation Mode DC	—	Operation Mode DC	—	
Coolant condition (before this run)		Coolant condition (before this run)		
All	Insert	All	Insert	
Temperature ~ 4.5 K	~ 6.5 K	Power Supply	Resistor	
Mass Flow Rate ~ 10 g/s	~ 10 g/s	CSMC	50 kA	31.4 mohm
Pressure ~ 0.7 MPa	—	TFI	60 kA	0.72 mohm
Data Acquisition System (DAS) CSMC+TFI DC1		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 Manual dump (synchronized)		Current pattern Manual dump (synchronized)		
CSMC	$I_m = 41.5$ kA	$I_1 =$ kA	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
	$dI/dt_1 =$ kA/s	$dB/dt_1 =$ kA/m	$dI/dt_2 =$ kA/s	$dB/dt_2 =$ kA/m
TFI	$I_m = 46$ kA	$I_1 =$ kA	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ kA/s
	$dI/dt_1 =$ kA/s	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/s	Cyclic Test cycles
CSMC	$I_m = 41.5$ kA	$I_1 =$ kA	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
	$dI/dt_1 =$ kA/s	$dB/dt_1 =$ kA/m	$dI/dt_2 =$ kA/s	$dB/dt_2 =$ kA/m
TFI	$I_m = 46$ kA	$I_1 =$ kA	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
	$dI/dt_1 =$ kA/s	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/s	Cyclic Test cycles
Time	$T_1 = 14:19$	T_2	T_3	Heater
				W $T_d =$ s
Remarks		Remarks		
Results		Results		
Inductive heater voltage : 130.5V		Inductive heater voltage : 130.5V		
Inductive heater current : 317A		Inductive heater current : 317A		
I^2 integral : 794A \times 2 s		I^2 integral : 794A \times 2 s		
Remarks		Remarks		
Results		Results		
Power supply for resistive heater of TF insert does not work.		Power supply for resistive heater of TF insert does not work.		

CSMC-TF insert Experiment Log		Date 2001.10.12	Time 11:13	P. 137
Run No. 71 - 10		Objective		
Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.				
Procedure No. 7.5	—	Procedure No. 7.5	—	
Operation Mode DC	—	Operation Mode DC	—	
Coolant condition (before this run)		Coolant condition (before this run)		
All	Insert	All	Insert	
Temperature ~ 4.5 K	~ 6.5 K	Power Supply	Resistor	
Mass Flow Rate ~ 10 g/s	~ 10 g/s	CSMC	50 kA	31.4 mohm
Pressure ~ 0.7 MPa	—	TFI	60 kA	0.72 mohm
Data Acquisition System (DAS) CSMC+TFI DC1		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	1 k
Current pattern Heater pulse		Current pattern Heater pulse		
CSMC	$I_m = 41.5$ kA	$I_1 =$ kA	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
	$dI/dt_1 =$ kA/s	$dB/dt_1 =$ kA/m	$dI/dt_2 =$ kA/s	$dB/dt_2 =$ kA/m
TFI	$I_m = 46$ kA	$I_1 =$ kA	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s
	$dI/dt_1 =$ kA/s	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/s	Cyclic Test cycles
Time	$T_1 = 14:19$	T_2	T_3	Heater
				W $T_d =$ s
Remarks		Remarks		
Results		Results		
Inductive heater voltage : 130.5V		Inductive heater voltage : 130.5V		
Inductive heater current : 317A		Inductive heater current : 317A		
I^2 integral : 794A \times 2 s		I^2 integral : 794A \times 2 s		
Remarks		Remarks		
Results		Results		
Power supply for resistive heater of TF insert does not work.		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
Objective				Stability and quench test at 12T, 46kA, 6.5K, 1s of delay time.
Run No.	72 - 1	Run No.	72 - 2	
Procedure No.	7.5	Procedure No.	7.5	
Operation Mode	DC	Operation Mode	DC	
Coolant condition (before this run)				
All	Facility condition	All	Insert	Facility condition
Temperature	~ 4.5 K	~	~ 6.5 K	Power Supply
Mass Flow Rate	~ 10 g/s	~	~ 10 g/s	Resistor
Pressure	~ 0.7 MPa	CSMC TFI	50 kA 60 kA	31.4 mohm 0.72 mohm
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	CSMC+TFI DC1	
	ADC384L ADC384H ADC64L ADC64H ADC32H		ADC384L ADC384H ADC64L ADC64H ADC32H	
Sampling	1 s	5 ms	1 s	5 ms
Pre-trigger	60	2 k	60	2 k
	1 k		1 k	
Current pattern Heater pulse				
CSMC	$I_m = 41.5 \text{ kA}$	$I_1 = \text{kA}$	$I_m = 41.5 \text{ kA}$	$I_1 = \text{kA}$
	$dI/dt_1 = 1 \text{ kA/m}$	$dB/dt_1 = \text{T/s}$	$dI/dt_1 = \text{kA/s}$	$kA/m dB/dt_1 = \text{T/s}$
	$dI/dt_2 = \text{kA/s}$	$dB/dt_2 = \text{T/s}$	$dI/dt_2 = \text{kA/s}$	$kA/m dB/dt_2 = \text{T/s}$
TFI	$I_m = 46 \text{ kA}$	$I_1 = \text{kA}$	$I_m = 46 \text{ kA}$	$I_1 = \text{kA}$
	$dI/dt_1 = 3 \text{ kA/m}$	$dI/dt_1 = \text{kA/m}$	$dI/dt_1 = \text{kA/m}$	kA/m
	$dI/dt_2 = \text{kA/s}$	$dI/dt_2 = \text{kA/s}$	$dI/dt_2 = \text{kA/s}$	kA/s
	Cyclic Test _____ cycles	Cyclic Test _____ cycles	Cyclic Test _____ cycles	Cyclic Test _____ cycles
Time	$T_1 = 15:09$	$T_2 = 16:01$	$T_3 = \text{s}$	Heater
				W $T_d = 0.02 \text{ s}$



CSMC-TF insert Experiment Log		Date 2001.10.12	Time 15:04	P. 141
		Objective		
Run No. 72 - 3		Stability and quench test at 12T, 46kA, 6.5K, 5s of delay time.		
Procedure No. 7.5		Procedure No. 7.5		
Operation Mode DC		Operation Mode DC		
Coolant condition (before this run)		Facility condition		
All	Insert	All		
Temperature	~ 4.5 K	~ 6.5 K	Temperature	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s	Mass Flow Rate	~ 10 g/s
Pressure	~ 0.7 MPa		Pressure	~ 0.7 MPa
Data Acquisition System (DAS)	CSMC+TFI DC1	Power Supply		
ADC384L ADC384H ADC64L ADC64H ADC32H		CSMC	50 kA	31.4 mohm
Sampling	1 s	5 ms	Sampling	1 s
Pre-trigger	60	2 k	Pre-trigger	60
				5 ms
				0.02 ms
				2 k
				1 k
Current pattern	Double charge up	Resistor		
CSMC	$I_m = 41.5 \text{ kA}$	CSMC	$I_m (\text{kA})$	$I_1 = \text{kA}$
$dI/dt_1 =$	kA/m	CSMC	dI/dt_1	$dI/dt_1 = \text{kA}/\text{s}$
$dI/dt_2 =$	kA/m	CSMC	dB/dt_1	$dB/dt_1 = \text{kA}/\text{m}$
TFI	$I_m = 46 \text{ kA}$	TFI	$I_m (\text{kA})$	$I_1 = \text{kA}$
$dI/dt_1 =$	kA/m	TFI	dI/dt_1	$dI/dt_1 = \text{kA}/\text{s}$
$dI/dt_2 =$	kA/m	TFI	dB/dt_1	$dB/dt_1 = \text{kA}/\text{m}$
Cyclic Test	cycles	Cyclic Test	cycles	Cyclic Test cycles
Time	T_1 16:35	T_2	T_3	$T_d = \text{s}$
				Heater
Results	Remarks			
Inductive heater voltage : 179V	Heat TF insert up is started on 17:09.			
Inductive heater current : 437A				
$I^2 \text{ integral} : 1519 \text{ A}^2 \cdot \text{s}$				

CSMC-TF insert Experiment Log		Date 2001.10.12	Time 15:04	P. 141
		Objective		
Run No. 72 - 3		Stability and quench test at 12T, 46kA, 6.5K, 5s of delay time.		
Procedure No. 7.5		Procedure No. 7.5		
Operation Mode DC		Operation Mode DC		
Coolant condition (before this run)		Facility condition		
All	Insert	All		
Temperature	~ 4.5 K	~ 6.5 K	Temperature	~ 4.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s	Mass Flow Rate	~ 10 g/s
Pressure	~ 0.7 MPa	0.72 mohm	Pressure	~ 0.7 MPa
Data Acquisition System (DAS)	CSMC+TFI DC1	Power Supply		
ADC384L ADC384H ADC64L ADC64H ADC32H		CSMC	50 kA	31.4 mohm
Sampling	1 s	5 ms	Sampling	1 s
Pre-trigger	60	2 k	Pre-trigger	60
				5 ms
				0.02 ms
Current pattern	Double charge up	Resistor		
CSMC	$I_m = 41.5 \text{ kA}$	CSMC	$I_m (\text{kA})$	$I_1 = \text{kA}$
$dI/dt_1 =$	kA/m	CSMC	dI/dt_1	$dI/dt_1 = \text{kA}/\text{s}$
$dI/dt_2 =$	kA/m	CSMC	dB/dt_1	$dB/dt_1 = \text{kA}/\text{m}$
TFI	$I_m = 46 \text{ kA}$	TFI	$I_m (\text{kA})$	$I_1 = \text{kA}$
$dI/dt_1 =$	kA/m	TFI	dI/dt_1	$dI/dt_1 = \text{kA}/\text{s}$
$dI/dt_2 =$	kA/m	TFI	dB/dt_1	$dB/dt_1 = \text{kA}/\text{m}$
Cyclic Test	cycles	Cyclic Test	cycles	Cyclic Test cycles
Time	T_1 16:35	T_2	T_3	$T_d = \text{s}$
				Heater
Results	Remarks			
Inductive heater voltage : 179V	Heat TF insert up is started on 17:09.			
Inductive heater current : 437A				
$I^2 \text{ integral} : 1519 \text{ A}^2 \cdot \text{s}$				

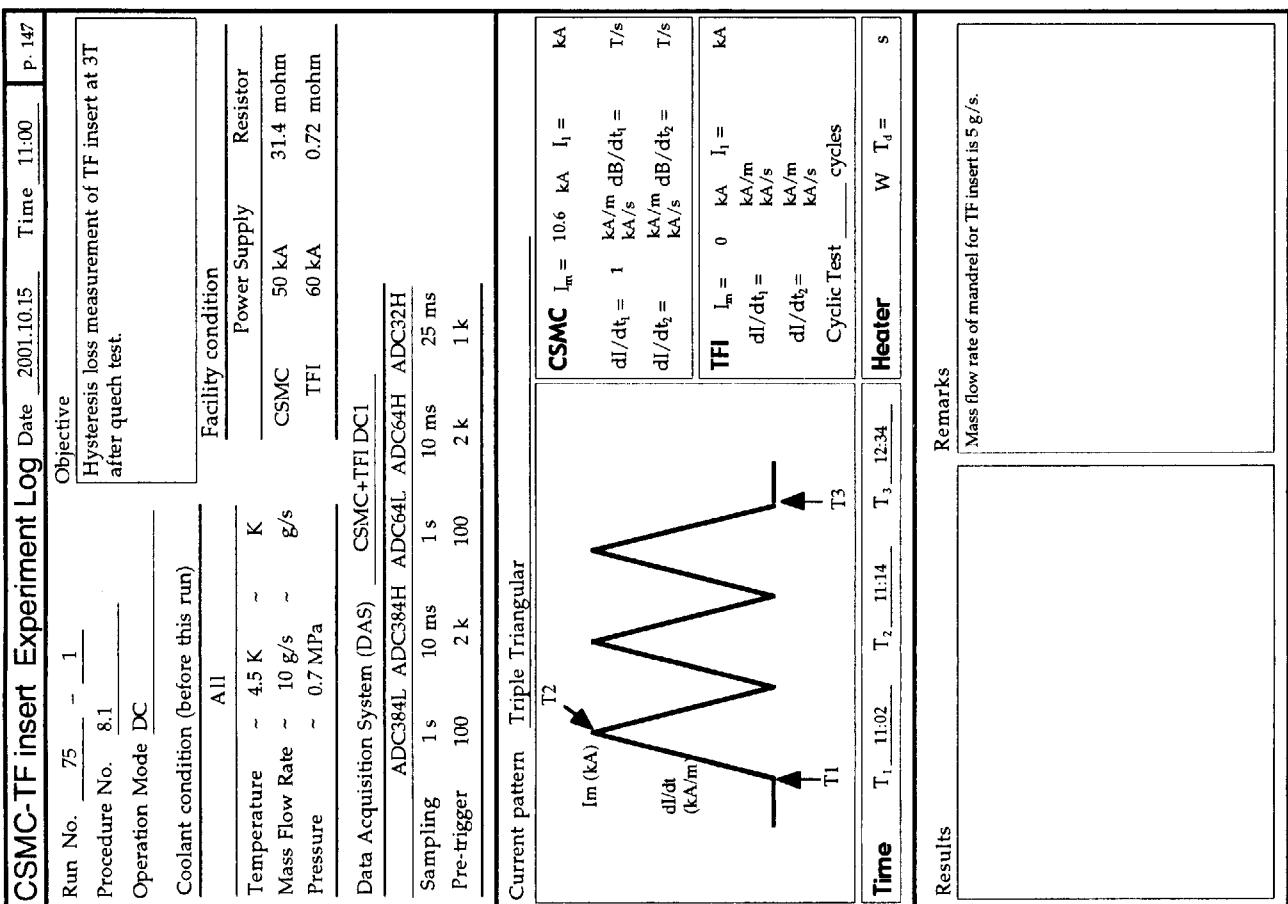
CSMC-TF insert Experiment Log			Date 2001.10.12	Time 17:10	P. 144
Run No. <u>73</u> - <u>2</u>			Procedure No. <u>7.5</u>	7.5	Objective
Operation Mode <u>DC</u>			Delay time.	5s	Stability and quench test at 12T, 46kA, 6.5K, 5s of delay time.
Coolant condition (before this run)			Coolant condition (before this run)		
All Insert			All Insert	Insert	Facility condition
Temperature	~ 4.5 K	~ 6.5 K	Power Supply	~ 4.5 K	Resistor
Mass Flow Rate	~ 10 g/s	~ 10 g/s	CSMC	31.4 mohm	31.4 mohm
Pressure	~ 0.7 MPa	~ 0.7 MPa	TFI	50 kA	50 kA
Data Acquisition System (DAS)			Data Acquisition System (DAS)		
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s	5 ms	Sampling	1 s	5 ms
Pre-trigger	60	2 k	Pre-trigger	60	2 k
Current pattern Heater pulse			Current pattern Heater pulse		
CSMC $I_m = 41.5$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/s $dB/dt_2 =$ T/s			CSMC $I_m = 41.5$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/s $dB/dt_2 =$ T/s		
TFI $I_m = 46$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ kA/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ kA/s Cyclic Test cycles			TFI $I_m = 46$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ kA/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ kA/s Cyclic Test cycles		
Time <u>T₁ 18:31</u>	<u>T₂</u>	<u>T₃</u>	Time <u>T₁ 18:40</u>	<u>T₂</u>	<u>T₃</u>
Heater			Heater	W	$T_d = 0.02$ s
Results			Remarks		
Inductive heater voltage : 143V Inductive heater current : 347A I^2 integral : 973A ² s			Inductive heater voltage : 148V Inductive heater current : 359A I^2 integral : 1038A ² s		

CSMC-TF insert Experiment Log			Date 2001.10.12	Time 17:10	P. 143
Run No. <u>73</u> - <u>2</u>			Procedure No. <u>7.5</u>	7.5	Objective
Operation Mode <u>DC</u>			Delay time.	5s	Stability and quench test at 12T, 46kA, 6.5K, 5s of delay time.
Coolant condition (before this run)			Coolant condition (before this run)		
All Insert			All Insert	Insert	Facility condition
Temperature	~ 4.5 K	~ 6.5 K	Power Supply	~ 4.5 K	Resistor
Mass Flow Rate	~ 10 g/s	~ 10 g/s	CSMC	31.4 mohm	31.4 mohm
Pressure	~ 0.7 MPa	~ 0.7 MPa	TFI	50 kA	50 kA
Data Acquisition System (DAS)			Data Acquisition System (DAS)		
ADC384L ADC384H ADC64L ADC64H ADC32H			ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s	5 ms	Sampling	1 s	5 ms
Pre-trigger	60	2 k	Pre-trigger	60	2 k
Current pattern Heater pulse			Current pattern Heater pulse		
CSMC $I_m = 41.5$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/s $dB/dt_2 =$ T/s			CSMC $I_m = 41.5$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 =$ kA/s $dB/dt_2 =$ T/s		
TFI $I_m = 46$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ kA/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ kA/s Cyclic Test cycles			TFI $I_m = 46$ kA $I_1 =$ kA $dI/dt_1 =$ kA/m $dB/dt_1 =$ kA/s $dI/dt_2 =$ kA/m $dB/dt_2 =$ kA/s Cyclic Test cycles		
Time <u>T₁ 18:31</u>	<u>T₂</u>	<u>T₃</u>	Time <u>T₁ 18:40</u>	<u>T₂</u>	<u>T₃</u>
Heater			Heater	W	$T_d = 0.02$ s
Results			Remarks		
Inductive heater voltage : 143V Inductive heater current : 347A I^2 integral : 973A ² s			Inductive heater voltage : 148V Inductive heater current : 359A I^2 integral : 1038A ² s		

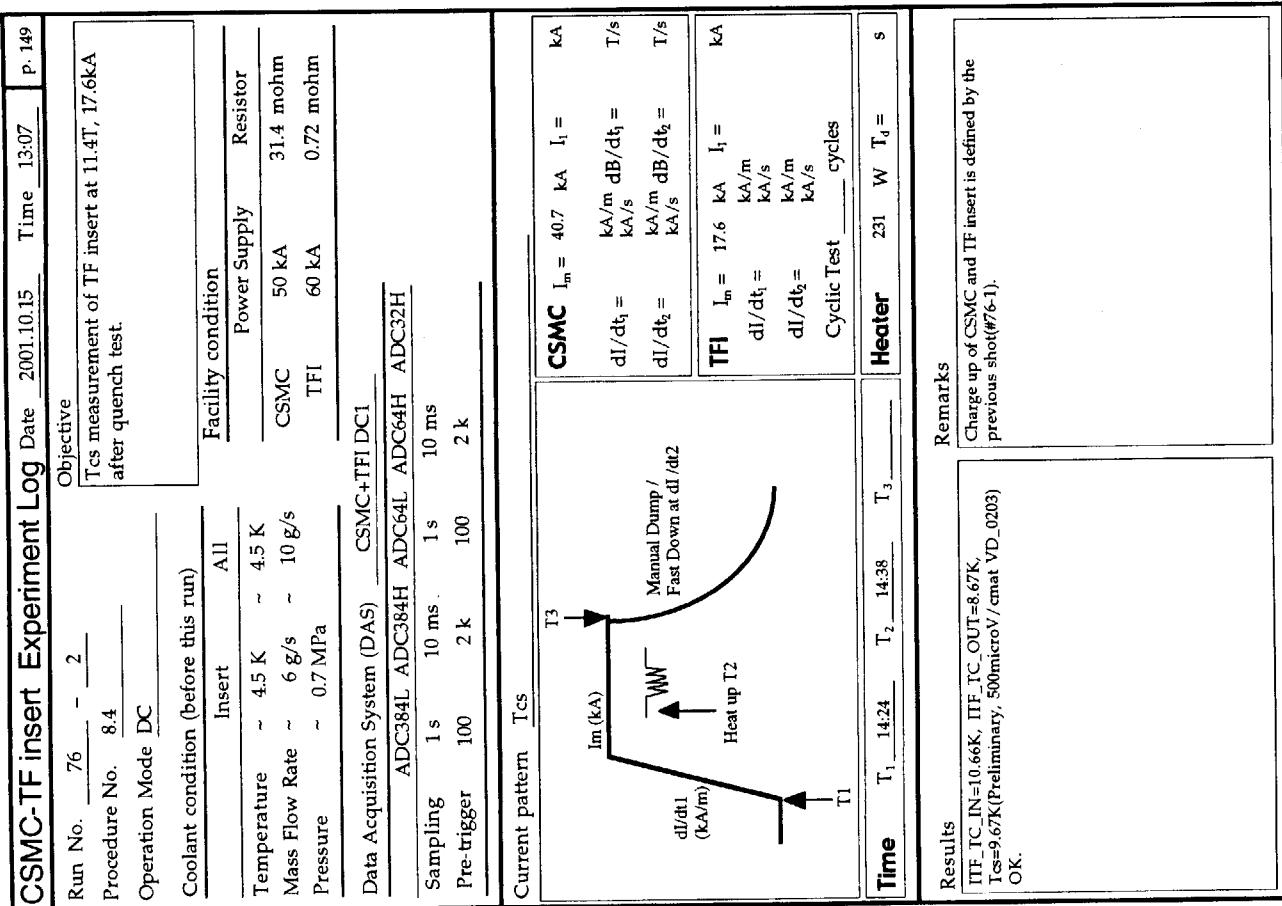
CSMC-TF insert Experiment Log				Date 2001.10.15	Time 9:30	P. 146
Run No. 74	-	1				Objective Daily check.
Procedure No. 4.0						
Operation Mode DC						
Coolant condition (before this run)						
All Insert		Facility condition				
Temperature ~ 4.5 K	~ 6.5 K	Power Supply CSMC	50 kA	31.4 mohm	Temperature ~ 4.5 K	K
Mass Flow Rate ~ 10 g/s	~ 10 g/s	TFI	60 kA	0.72 mohm	Mass Flow Rate ~ 10 g/s	g/s
Pressure ~ 0.7 MPa					Pressure ~ 0.7 MPa	MPa
Data Acquisition System (DAS) ADC384L ADC384H ADC64L ADC32H		Facility condition				
Sampling 1 s	5 ms	1 s	10 ms	1 s	10 ms	
Pre-trigger 60	2 k	60	2 k	100	2 k	
Simultaneous daily check						
Current pattern		Simultaneous daily check				
<p>CSMC $I_m = 41.5$ kA $I_i =$ kA $dI/dt_i =$ kA/m $dB/dt_i =$ T/s $dI/dt_e =$ kA/s $dB/dt_e =$ T/s</p> <p>TFI $I_m = 46$ kA $I_i =$ kA $dI/dt_i =$ kA/m $dB/dt_i =$ T/s $dI/dt_e =$ kA/s $dB/dt_e =$ T/s</p>						
<p>Cyclic Test cycles</p>						
Time T_1 18:48	T_2	T_3	T_4 = 0.02 s	Heater	W	$T_d =$ s
Remarks						
<p>$V_i=128 V$, $V_o=161V$, $V_{ins}=6.7V$, $T_{aumc}=19.7s$, $T_{aums}=0.04s/19.7s$, OK</p>						
Results						
<p>Inductive heater voltage : 157V Inductive heater current : 382A I^2 integral : $1172A^2s^2$</p>						
Remarks						
<p>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</p>						

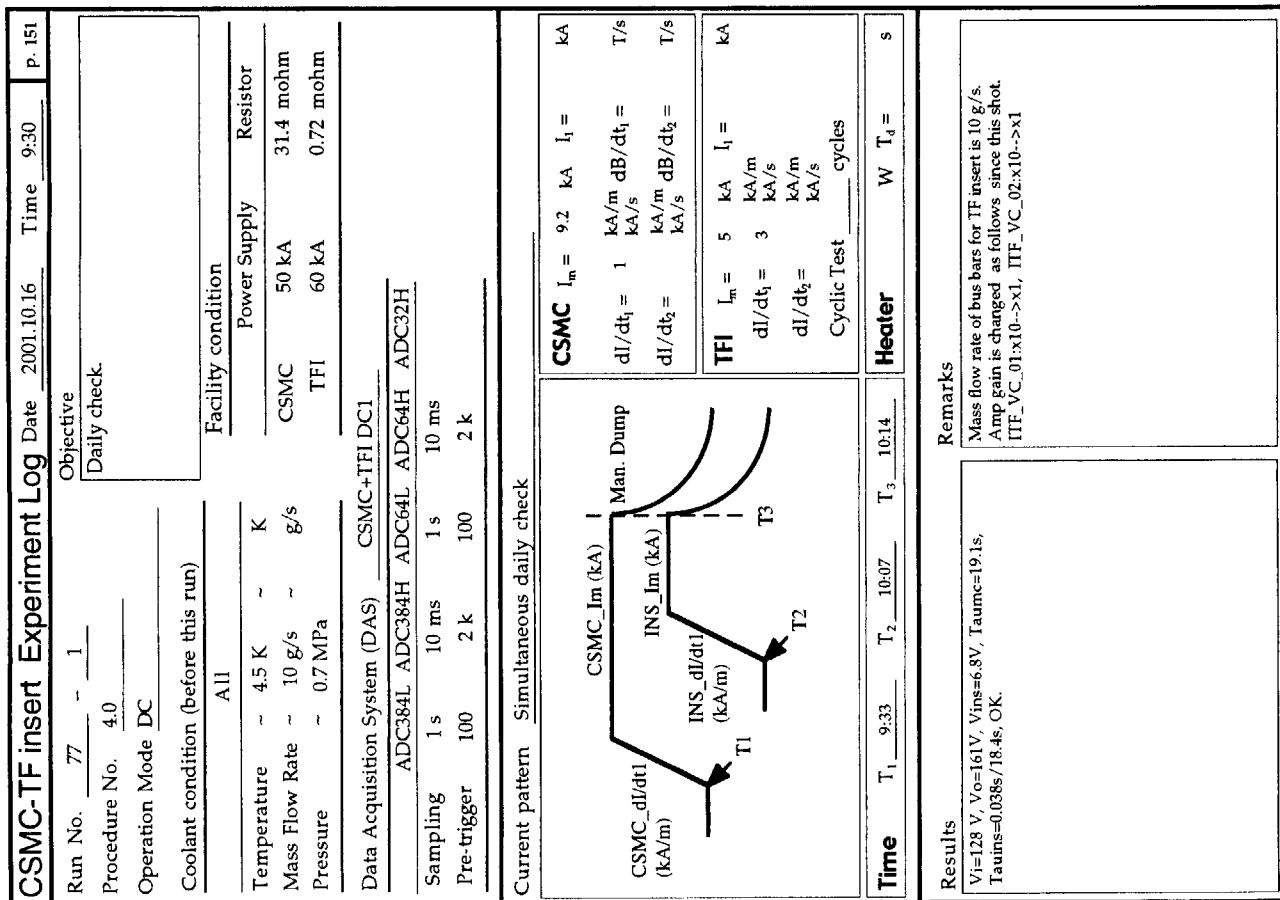
CSMC-TF insert Experiment Log				Date 2001.10.12	Time 17:10	P. 145
Objective Stability and quench test at 12T, 46kA, 65K, 5s of delay time.						
Run No. 73	-	4				
Procedure No. 7.5						
Operation Mode DC						
Coolant condition (before this run)						
All Insert		Facility condition				
Temperature ~ 4.5 K	~ 6.5 K	Power Supply CSMC	50 kA	31.4 mohm	Temperature ~ 4.5 K	K
Mass Flow Rate ~ 10 g/s	~ 10 g/s	TFI	60 kA	0.72 mohm	Mass Flow Rate ~ 10 g/s	g/s
Pressure ~ 0.7 MPa					Pressure ~ 0.7 MPa	MPa
Data Acquisition System (DAS) ADC384L ADC384H ADC64H ADC32H		Facility condition				
Sampling 1 s	5 ms	1 s	10 ms	1 s	10 ms	
Pre-trigger 60	2 k	60	2 k	100	2 k	
Simultaneous daily check						
Current pattern		Simultaneous daily check				
<p>CSMC $I_m = 41.5$ kA $I_i =$ kA $dI/dt_i =$ kA/m $dB/dt_i =$ T/s $dI/dt_e =$ kA/s $dB/dt_e =$ T/s</p> <p>TFI $I_m = 46$ kA $I_i =$ kA $dI/dt_i =$ kA/m $dB/dt_i =$ T/s $dI/dt_e =$ kA/s $dB/dt_e =$ T/s</p>						
<p>Cyclic Test cycles</p>						
Time T_1 9:42	T_2	T_3	T_4 = 10:23	Heater	W	$T_d =$ s
Remarks						
<p>$V_i=128 V$, $V_o=161V$, $V_{ins}=6.7V$, $T_{aumc}=19.7s$, $T_{aums}=0.04s/19.7s$, OK</p>						
Results						
<p>Inductive heater voltage : 157V Inductive heater current : 382A I^2 integral : $1172A^2s^2$</p>						
Remarks						

CSMC-TF insert Experiment Log Date 2001.10.15 Time 11:00				CSMC-TF insert Experiment Log Date 2001.10.15 Time 13:07			
Run No. 76 - 1				Run No. 76 - 1			
Objective Hysteresis loss measurement of TF insert at 3T after quench test.				Objective Tes measurement of TF insert at 11.4T, 17.6kA after quench test.			
Procedure No. 8.1				Procedure No. 8.4			
Operation Mode DC				Operation Mode DC			
Coolant condition (before this run)				Coolant condition (before this run)			
Facility condition		Facility condition		Facility condition		Facility condition	
All	Power Supply	All	Power Supply	Insert	All	Power Supply	Resistor
Temperature ~ 4.5 K	~ K	Temperature ~ 4.5 K	~ 4.5 K	Temperature ~ 4.5 K	~ 4.5 K	CSMC 50 kA	31.4 mohm
Mass Flow Rate ~ 10 g/s	~ g/s	Mass Flow Rate ~ 6 g/s	~ 10 g/s	Pressure ~ 0.7 MPa	~ 0.7 MPa	TFI 60 kA	0.72 mohm
Pressure ~ 0.7 MPa							
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	CSMC+TFI DC1	Sampling 1 s	10 ms	1 s	10 ms
ADC384L ADC384H ADC64L ADC64H ADC32H		ADC384L ADC384H ADC64L ADC64H ADC32H		Pre-trigger 100	2 k	100	2 k
Sampling 1 s	10 ms	1 s	10 ms				
Pre-trigger 100	2 k	100	2 k				
Current pattern	Triple Triangular	Current pattern	Double charge up	CSMC $I_m = 40.7$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	CSMC $I_m = 40.7$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	CSMC $I_m = 17.6$ kA $I_1 =$ kA $dI/dt_1 = 3$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 3$ kA/m $dB/dt_2 =$ T/s Cyclic Test cycles	CSMC $I_m = 17.6$ kA $I_1 =$ kA $dI/dt_1 = 3$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 3$ kA/m $dB/dt_2 =$ T/s Cyclic Test cycles
T ₂	Im (kA)	T ₁	T ₂	CSMC $I_m = 10.6$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	CSMC $I_m = 10.6$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	CSMC $I_m = 10.6$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s	CSMC $I_m = 10.6$ kA $I_1 =$ kA $dI/dt_1 = 1$ kA/m $dB/dt_1 =$ T/s $dI/dt_2 = 1$ kA/m $dB/dt_2 =$ T/s
dl/dt (kA/m)		T ₁	Im (kA)	T ₁	T ₂	T ₁	T ₂
Results	Remarks	Results	Remarks	Time T ₁ 11:02 T ₂ 11:14 T ₃ 12:34 Heater W T _d = s	Time T ₁ 13:17 T ₂ 14:24 T ₃ Heater W T _d = s	Time T ₁ 13:17 T ₂ 14:24 T ₃ Heater W T _d = s	Time T ₁ 13:17 T ₂ 14:24 T ₃ Heater W T _d = s
Remarks	Remarks	Remarks	Remarks	Value for mandrel of TF insert is closed at 13:00. Mass flow rate of bushbars for TF insert is 8g/s each.	Remarks	Remarks	Remarks



CSMC-TF insert Experiment Log				Date	2001.10.15	Time	13:07	P. 149
				Objective				
Run No.	76	-	2	Tcs measurement of TF insert at 11.4T, 17.6kA after quench test.				
Procedure No.	8.4							
Operation Mode	DC							
Coolant condition (before this run)				Facility condition (before this run)				
Insert	All		Insert	All		Insert		
Temperature	~ 4.5 K	~ 4.5 K	Power Supply	Resistor	Temperature	~ 4.5 K	~ 10 K	
Mass Flow Rate	~ 6 g/s	~ 10 g/s	CSMC	50 kA	Mass Flow Rate	~ 10 g/s	~ 5 g/s	
Pressure	~ 0.7 MPa		TFI	60 kA	Pressure	~ 0.7 MPa		
Data Acquisition System (DAS)	CSMC+TFI DC1		Data Acquisition System (DAS)				CSMC+TFI DC1	
ADC384L	ADC384H	ADC64L	ADC64H	ADC32H	ADC384L	ADC384H	ADC64L	ADC64H
Sampling	1 s	10 ms	10 ms	10 ms	Sampling	1 s	10 ms	
Pre-trigger	100	2 k	2 k	2 k	Pre-trigger	100	2 k	100
Current pattern Tcs				Discharge with steps				
CSMC	$I_m = 40.7$ kA	$I_i =$ kA	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s	CSMC	$I_m = 40.7$ kA	$I_i =$ 0 kA	
TFI	$I_m = 17.6$ kA	$I_i =$ kA	$dI/dt_1 =$ kA/m	$dB/dt_1 =$ T/s	TFI	$I_m = 0$ kA	$I_i =$ 0 kA	
	$dI/dt_2 =$ kA/s	$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/s	$dI/dt_2 =$ kA/m		$dI/dt_1 =$ kA/m	$dI/dt_1 =$ kA/s	
	$dI/dt_3 =$ kA/s	$dI/dt_3 =$ kA/m	$dI/dt_3 =$ kA/s	$dI/dt_3 =$ kA/m		$dI/dt_2 =$ kA/m	$dI/dt_2 =$ kA/s	
	Cyclic Test	cycles	Cyclic Test	cycles		Cyclic Test	cycles	
Time	$T_1 = 14:24$	$T_2 = 14:38$	$T_3 =$ s	Heater	231 W	$T_d =$ s	Heater	243 W
Remarks				Remarks				
Results				Results				
ITF_TC_IN=10.66K, ITF_TC_OUT=8.67K, Tcs=9.67K(Preliminary, 500microV/cm at VD_0203) OK.				Charge up of CSMC and TF insert is defined by the previous shot(#76-1).				
Remarks				Remarks				
Current of CSMC is held at 30kA, 20kA, 10kA. Heater off at 18:12.				Current of CSMC is held at 30kA, 20kA, 10kA. Heater off at 18:12.				





CSMC-TF insert Experiment Log Date 2001.10.16 Time 13:07				P. 153	
Objective Tcs measurement of TF insert at 12T, 46kA after quench test.					
Run No.	79	-	1	Run No. 79 - 1	
Procedure No.	8.2	-	8.4	Procedure No. 8.4	
Operation Mode	DC	-	DC	Operation Mode DC	
Coolant condition (before this run)				Coolant condition (before this run)	
Insert	All	Facility condition	All	Facility condition	
Temperature	~ 4.5 K	~ 4.5 K	Temperature	~ 6 K	~ 4.5 K
Mass Flow Rate	~ 6 g/s	~ 10 g/s	Mass Flow Rate	~ 6 g/s	~ 10 g/s
Pressure	~ 0.7 MPa		Pressure	~ 0.7 MPa	
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC32H	CSMC+TFI DC1	Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC32H	CSMC+TFI DC1
Sampling	1 s	10 ms	Sampling	1 s	10 ms
Pre-trigger	100	2 k	Pre-trigger	100	100
Current pattern	Tcs		Current pattern	Tcs	
CSMC	$I_m = 41.5$ kA	$I_1 =$ kA	CSMC	$I_m = 41.5$ kA	$I_1 =$ kA
dI/dt_1	1 kA/m	$dB/dt_1 =$ T/s	dI/dt_1	1 kA/m	$dB/dt_1 =$ T/s
INS	$I_m (kA)$	$dB/dt_1 =$ T/s	INS	$I_m (kA)$	$dB/dt_1 =$ T/s
INS	dI/dt_1 (kA/m)	$dI/dt_2 =$ kA/s	INS	dI/dt_1 (kA/m)	$dI/dt_2 =$ kA/s
TFI	$I_m = 46$ kA	$I_1 =$ kA	TFI	$I_m = 46$ kA	$I_1 =$ kA
dI/dt_1	3 kA/m	$dI/dt_2 =$ kA/s	dI/dt_1	3 kA/m	$dI/dt_2 =$ kA/s
dI/dt_2			dI/dt_2		
Cyclic Test	cycles		Cyclic Test	cycles	
Time	T ₁ 14:05	T ₂ 14:29	T ₃ 15:56	Heater	152 W T ₄ = s
Results	TIF_TC_IN=7.6K, TIF_TC_OUT=7.49K Tcs=7.55K (Preliminary, 200microV at VD_2003) OK.				
Remarks	Value 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 13:23.				
Results	OK.				
Remarks					

CSMC-TF insert Experiment Log Date 2001.10.16 Time 13:07				P. 153	
Objective Tcs measurement of TF insert at 12T, 46kA after quench test.					
Run No.	79	-	1	Run No. 79 - 1	
Procedure No.	8.2	-	8.4	Procedure No. 8.4	
Operation Mode	DC	-	DC	Operation Mode DC	
Coolant condition (before this run)				Coolant condition (before this run)	
Insert	All	Facility condition	All	Facility condition	
Temperature	~ 4.5 K	~ 4.5 K	Temperature	~ 6 K	~ 4.5 K
Mass Flow Rate	~ 6 g/s	~ 10 g/s	Mass Flow Rate	~ 6 g/s	~ 10 g/s
Pressure	~ 0.7 MPa		Pressure	~ 0.7 MPa	
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC32H	CSMC+TFI DC1	Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC32H	CSMC+TFI DC1
Sampling	1 s	10 ms	Sampling	1 s	10 ms
Pre-trigger	100	2 k	Pre-trigger	100	2 k
Current pattern	Double charge up		Current pattern	Tcs	
CSMC	$I_m = 41.5$ kA	$I_1 =$ kA	CSMC	$I_m = 41.5$ kA	$I_1 =$ kA
dI/dt_1	1 kA/m	$dB/dt_1 =$ T/s	dI/dt_1	1 kA/m	$dB/dt_1 =$ T/s
INS	$I_m (kA)$	$dB/dt_1 =$ T/s	INS	$I_m (kA)$	$dB/dt_1 =$ T/s
INS	dI/dt_1 (kA/m)	$dI/dt_2 =$ kA/s	INS	dI/dt_1 (kA/m)	$dI/dt_2 =$ kA/s
TFI	$I_m = 46$ kA	$I_1 =$ kA	TFI	$I_m = 46$ kA	$I_1 =$ kA
dI/dt_1	3 kA/m	$dI/dt_2 =$ kA/s	dI/dt_1	3 kA/m	$dI/dt_2 =$ kA/s
dI/dt_2			dI/dt_2		
Cyclic Test	cycles		Cyclic Test	cycles	
Time	T ₁ 13:10	T ₂ 14:05	T ₃	Heater	
Results	OK.				
Remarks	Value 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 13:23.				

CSMC-TF insert Experiment Log		Date 2001.10.16	Time 13:07	P. 155
Objective				
Tcs measurement of TF insert at 12T, 46kA after quench test.				
Run No. 79 - 2				
Procedure No. 8.4				
Operation Mode DC				
Coolant condition (before this run)				
All		Facility condition		
Temperature	~ 4.5 K	Power Supply	Resistor	
Mass Flow Rate	~ 10 g/s	~ 5 g/s	CSMC	~ 4.5 K
Pressure	~ 0.7 MPa		TFI	~ 10 g/s
Data Acquisition System (DAS)		Facility condition (before this run)		
ADC384L ADC384H ADC64L ADC64H ADC32H		All		
Sampling	1 s	5 ms	CSMC	~ 31.4 mohm
Pre-trigger	100	2 k	TFI	~ 0.72 mohm
Data Acquisition System (DAS) CSMC+TFI DC1				
Sampling 1 s 5 ms 1 s 5 ms				
Pre-trigger 100 2 k 100 2 k				
Current pattern Simultaneous daily check				
Time $T_1 = 17:06$ $T_2 = 18:30$ $T_3 =$ s				
Heater W $T_d =$ s Results OK. Remarks Heater power is increased at 16:05. Current of CSMC is held at 30kA, 20kA, 10kA.				
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, Taume=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:x10000, 100Hz-->x10, 500Hz ITF_VD_0809:x10000, 100Hz-->x10, 500Hz ITF_VD_0910:x10000, 100Hz-->x10, 500Hz ITF_VD_1011:x1000, 100Hz-->x10, 500Hz				

CSMC-TF insert Experiment Log		Date 2001.10.17	Time 10:23	P. 157
Run No.	81 - 1			Objective
Procedure No.	7.7			Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.
Operation Mode	DC			
Coolant condition (before this run)				
All				Facility condition
Temperature	~ 4.5 K	~ K	Power Supply	Resistor
Mass Flow Rate	~ 10 g/s	~ g/s	CSMC	50 kA 31.4 mohm
Pressure	~ 0.7 MPa		TFI	60 kA 0.72 mohm
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H		Data Acquisition System (DAS)	CSMC+TFIDC1 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		Current pattern	Heater pulse
CSMC dI/dt_1 (kA/m)	CSMC I_m (kA)		CSMC $I_m = 41.5$ kA	$I_i = kA$
T_1	T_1		$dI/dt_1 = 1$ kA/m	$dB/dt_1 = kA/s$
I_1 (kA)	I_1 (kA)		$dI/dt_2 = 1$ kA/m	$dB/dt_2 = kA/s$
T_2	T_2		T_1	T_1
Time	T_1 10:38	T_2 11:23	T_3	Heater 116 W T_d s
Results			Remarks	Inductive heater voltage 142V Inductive heater current 344A I^2 integral 959 A ² s No quench.

CSMC-TF insert Experiment Log		Date 2001.10.17	Time 10:23	P. 158
Run No.	81 - 2			Objective
Procedure No.	7.7			Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.
Operation Mode	DC			
Coolant condition (before this run)				
All				Facility condition
Temperature	~ 4.5 K	~ 6.5 K	Power Supply	Resistor
Mass Flow Rate	~ 10 g/s	~ 10 g/s	CSMC	50 kA 31.4 mohm
Pressure	~ 0.7 MPa	~ 0.7 MPa	TFI	60 kA 0.72 mohm
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H		Data Acquisition System (DAS)	CSMC+TFIDC1 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			Current pattern	Heater pulse
CSMC $I_m = 41.5$ kA			CSMC $I_m = 41.5$ kA	$I_i = kA$
$dI/dt_1 = 1$ kA/m	$dB/dt_1 = kA/s$		$dI/dt_1 = 1$ kA/m	$dB/dt_1 = kA/s$
$dI/dt_2 = 1$ kA/m	$dB/dt_2 = kA/s$		$dI/dt_2 = 1$ kA/m	$dB/dt_2 = kA/s$
T_1	T_1		T_1	T_1
I_1 (kA)	I_1 (kA)		I_1 (kA)	I_1 (kA)
T_2	T_2		T_2	T_2
Time	T_1 11:55	T_2	T_3	Heater 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. 159
Run No. 81		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)		Coolant condition (before this run)		
All	Insert	All	Insert	Facility condition
Temperature	~ 4.5 K	~ 6.5 K	Temperature	~ 4.5 K ~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s	Mass Flow Rate	~ 10 g/s ~ 10 g/s
Pressure	~ 0.7 MPa	~ 0.7 MPa	Pressure	~ 0.7 MPa
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	Facility condition
Sampling	1 s	5 ms	1 s	Power Supply
Pre-trigger	100	2 k	2 k	Resistor
			100	50 kA 31.4 mohm
				TFI 60 kA 0.72 mohm
Current pattern	Heater pulse	Current pattern	Heater pulse	CSMC I _m = 41.5 kA I ₁ = kA dI/dt ₁ = kA/m dB/dt ₁ = T/s dI/dt ₂ = kA/m dB/dt ₂ = T/s
CSMC	I _m = 41.5 kA I ₁ = kA dI/dt ₁ = kA/m dB/dt ₁ = T/s dI/dt ₂ = kA/m dB/dt ₂ = T/s	TFI	I _m = 46 kA I ₁ = kA dI/dt ₁ = kA/m dB/dt ₁ = T/s dI/dt ₂ = kA/m dB/dt ₂ = T/s	Cyclic Test cycles
Time	T ₁ 12:03	T ₂	T ₃	Heater W T _d = 0.02 s
Results	Remarks			
	Inductive heater voltage : 156V Inductive heater current : 379A I ² integral : 1236A ² s No quench.			
	1s delay by QD action.			
Time	T ₁ 12:14	T ₂	T ₃	Heater W T _d = 0.02 s
Results	Remarks			
	Inductive heater voltage : 162 V Inductive heater current : 353A I ² integral : 1162A ² s No quench.			

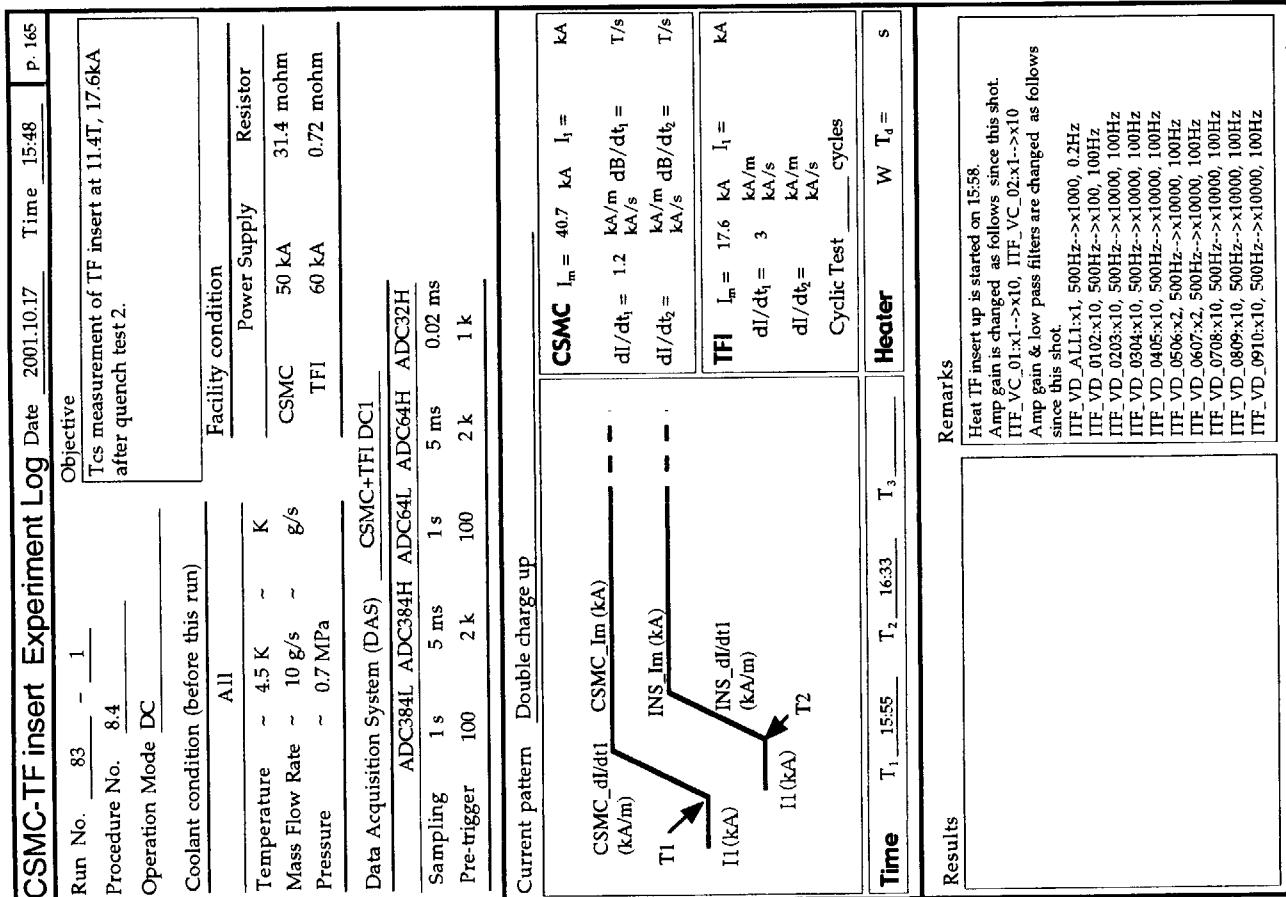
CSMC-TF insert Experiment Log		Date 2001.10.17	Time 10:23	P. 159
Run No. 81		Procedure No. 7.7	Operation Mode DC	Objective Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.
Coolant condition (before this run)		Coolant condition (before this run)		
All	Insert	All	Insert	Facility condition
Temperature	~ 4.5 K	~ 6.5 K	Temperature	~ 4.5 K ~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s	Mass Flow Rate	~ 10 g/s ~ 10 g/s
Pressure	~ 0.7 MPa	~ 0.7 MPa	Pressure	~ 0.7 MPa
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	Facility condition
Sampling	1 s	5 ms	1 s	Power Supply
Pre-trigger	100	2 k	2 k	Resistor
			100	50 kA 31.4 mohm
				TFI 60 kA 0.72 mohm
Current pattern	Heater pulse	Current pattern	Heater pulse	CSMC I _m = 41.5 kA I ₁ = kA dI/dt ₁ = kA/m dB/dt ₁ = T/s dI/dt ₂ = kA/m dB/dt ₂ = T/s
CSMC	I _m = 41.5 kA I ₁ = kA dI/dt ₁ = kA/m dB/dt ₁ = T/s dI/dt ₂ = kA/m dB/dt ₂ = T/s	TFI	I _m = 46 kA I ₁ = kA dI/dt ₁ = kA/m dB/dt ₁ = T/s dI/dt ₂ = kA/m dB/dt ₂ = T/s	Cyclic Test cycles
Time	T ₁	T ₂	T ₃	Heater W T _d = 0.02 s
Results	Remarks			
	Inductive heater voltage : 156V Inductive heater current : 379A I ² integral : 1236A ² s No quench.			
	1s delay by QD action.			
Time	T ₁ 12:14	T ₂	T ₃	Heater W T _d = 0.02 s
Results	Remarks			
	Inductive heater voltage : 162 V Inductive heater current : 353A I ² integral : 1162A ² s No quench.			

CSMC-TF insert Experiment Log				Date	2001.10.17	Time	13:08	P. 162
Run No.	82	-	1	Procedure No.	82	-	2	Objective
Operation Mode	DC	DC		Procedure No.	7.7			Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.
Coolant condition (before this run)	All	Facility condition	Insert	Temperature	~ 4.5 K	~ 6.5 K		
		Power Supply	Resistor	Mass Flow Rate	~ 10 g/s	~ 10 g/s		
		CSMC	50 kA	Pressure	~ 0.7 MPa			
		TFI	60 kA					
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	CSMC+TFI DC1		Sampling	1 s	5 ms	1 s	5 ms
Sampling	1 s	5 ms	0.02 ms	Pre-trigger	100	2 k	100	2 k
Pre-trigger	2 k	100	1 k					
Current pattern	Heater pulse			CSMC	$I_m = 41.5$ kA	$I_1 =$		
					$\frac{dI}{dt}_1 =$	$\frac{kA}{s}$		
					$\frac{dI}{dt}_2 =$	$\frac{kA}{s}$		
				TFI	$I_m = 46$ kA	$I_1 =$		
					$\frac{dI}{dt}_1 =$	$\frac{kA/m}{s}$		
					$\frac{dI}{dt}_2 =$	$\frac{kA/m}{s}$		
					Cyclic Test	cycles		
Time	T ₁ 13:15	T ₂ 14:01	T ₃	Heater	W	T _d =	W	T _d = 0.02 s
Results	Remarks							
	Heat TF insert up is started on 13:26.							
	Inductive heater voltage : 143V Inductive heater current : 346.5A I^2 integral : 967 A ² s No quench.							

CSMC-TF insert Experiment Log				Date	2001.10.17	Time	13:08	P. 161
Run No.	82	-	1	Procedure No.	7.7			Objective
Operation Mode	DC			Coolant condition (before this run)	All	Facility condition	Insert	Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.
				Temperature	~ 4.5 K	~ 6.5 K		
				Mass Flow Rate	~ 10 g/s	~ 10 g/s		
				Pressure	~ 0.7 MPa			
Data Acquisition System (DAS)	ADC384L ADC384H ADC64L ADC64H ADC32H	CSMC+TFI DC1		Sampling	1 s	5 ms	1 s	5 ms
Sampling	1 s	5 ms	0.02 ms	Pre-trigger	100	2 k	100	2 k
Pre-trigger	2 k	100	1 k					
Current pattern	Double charge up			CSMC	$I_m = 41.5$ kA	$I_1 =$		
					$\frac{dI}{dt}_1 =$	$\frac{kA}{s}$		
					$\frac{dI}{dt}_2 =$	$\frac{kA}{s}$		
				TFI	$I_m = 46$ kA	$I_1 =$		
					$\frac{dI}{dt}_1 =$	$\frac{kA/m}{s}$		
					$\frac{dI}{dt}_2 =$	$\frac{kA/m}{s}$		
					Cyclic Test	cycles		
Time	T ₁	T ₂	T ₃	Heater	W	T _d =	W	T _d = 0.02 s
Results	Remarks							
	Heat TF insert up is started on 13:26.							
	Inductive heater voltage : 143V Inductive heater current : 346.5A I^2 integral : 967 A ² s No quench.							

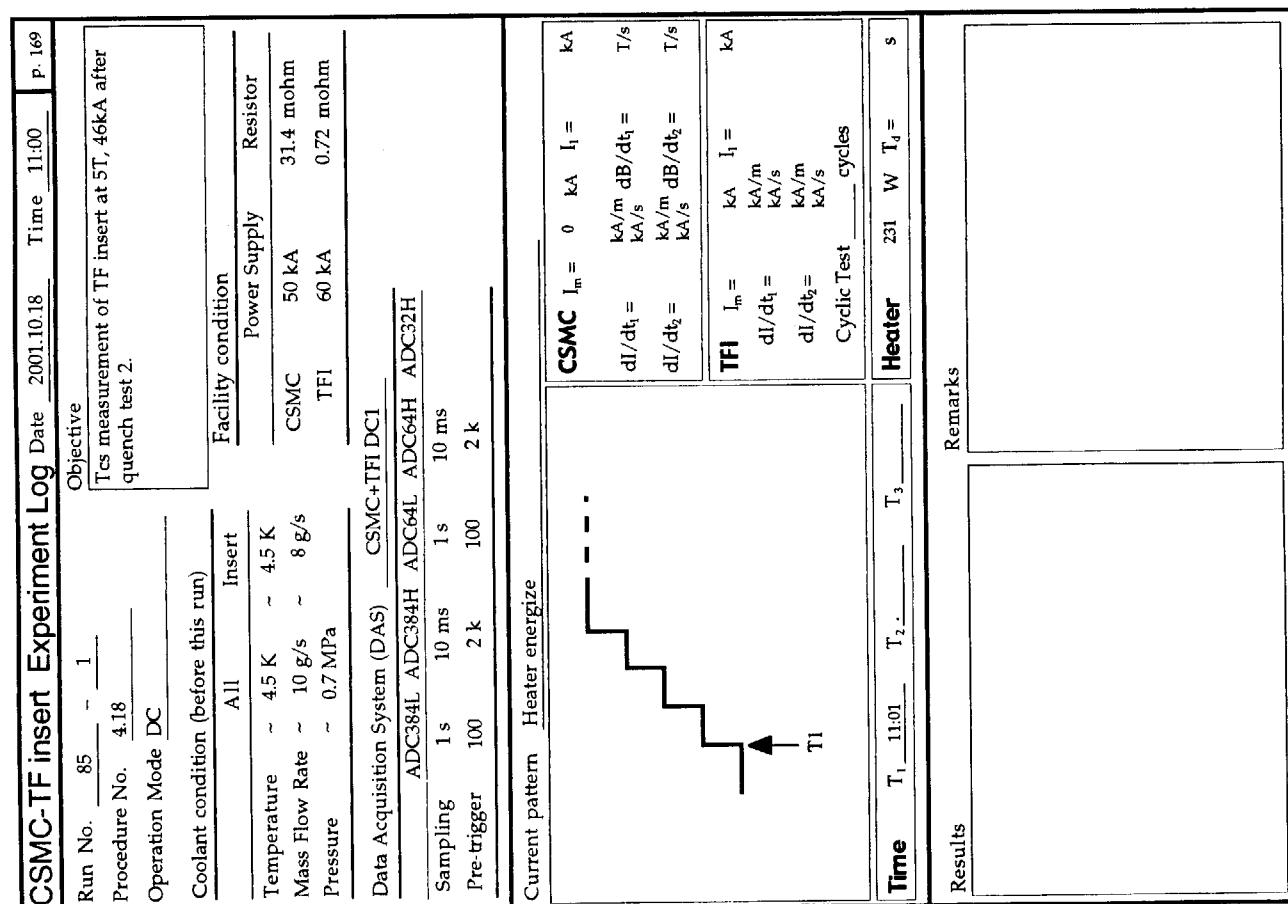
CSMC-TF insert Experiment Log		Date 2001.10.17	Time 13:08	P. 163
Run No.	82 - 3	Objective		
Procedure No.	7.7	Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.		
Operation Mode	DC	Facility condition (before this run)		
All	Insert	All	Insert	
Temperature	~ 4.5 K	~ 6.5 K	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	~ 10 g/s	Mass Flow Rate	~ 10 g/s
Pressure	~ 0.7 MPa	TFI	Pressure	~ 0.7 MPa
Data Acquisition System (DAS)	CSMC+TFI DC1	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	Heater pulse	Current pattern	Heater pulse	
CSMC	$I_m = 41.5 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = \text{T/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{T/s}$	CSMC	$I_m = 41.5 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = \text{T/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{T/s}$	
TFI	$I_m = 46 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = \text{kA/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{kA/s}$ Cyclic Test _____ cycles	TFI	$I_m = 46 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = \text{kA/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{kA/s}$ Cyclic Test _____ cycles	
Time	$T_1 = 14:37$	T_2	T_3	Heater
				W $T_d = 0.02 \text{ s}$
Results	Remarks	Results	Remarks	
Inductive heater voltage : 157V Inductive heater current : 381A I^2 integral : 1134A \cdot s ² No quench.		Inductive heater voltage : 161V Inductive heater current : 352A I^2 integral : 1199A \cdot s ² Quench.		

CSMC-TF insert Experiment Log		Date 2001.10.17	Time 13:08	P. 164
Run No.	82 - 4	Objective		
Procedure No.	7.7	Stability and quench test at 12T, 46kA, 6.5K, 7s of delay time.		
Operation Mode	DC	Facility condition (before this run)		
All	Insert	All	Insert	
Temperature	~ 4.5 K	~ 6.5 K	~ 4.5 K	~ 6.5 K
Mass Flow Rate	~ 10 g/s	CSMC	50 kA	31.4 mohm
Pressure	~ 0.7 MPa	TFI	60 kA	0.72 mohm
Data Acquisition System (DAS)	CSMC+TFI DC1	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	Heater pulse	Current pattern	Heater pulse	
CSMC	$I_m = 41.5 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = \text{T/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{T/s}$	CSMC	$I_m = 41.5 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = \text{T/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{T/s}$	
TFI	$I_m = 46 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = \text{kA/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{kA/s}$ Cyclic Test _____ cycles	TFI	$I_m = 46 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = \text{kA/s}$ $dI/dt_2 = \text{kA/m dB/dt}_2 = \text{kA/s}$ Cyclic Test _____ cycles	
Time	$T_1 = 14:45$	T_2	T_3	Heater
				W $T_d = 0.02 \text{ s}$
Results	Remarks	Results	Remarks	
Inductive heater voltage : 157V Inductive heater current : 381A I^2 integral : 1134A \cdot s ² No quench.		Inductive heater voltage : 161V Inductive heater current : 352A I^2 integral : 1199A \cdot s ² Quench.		

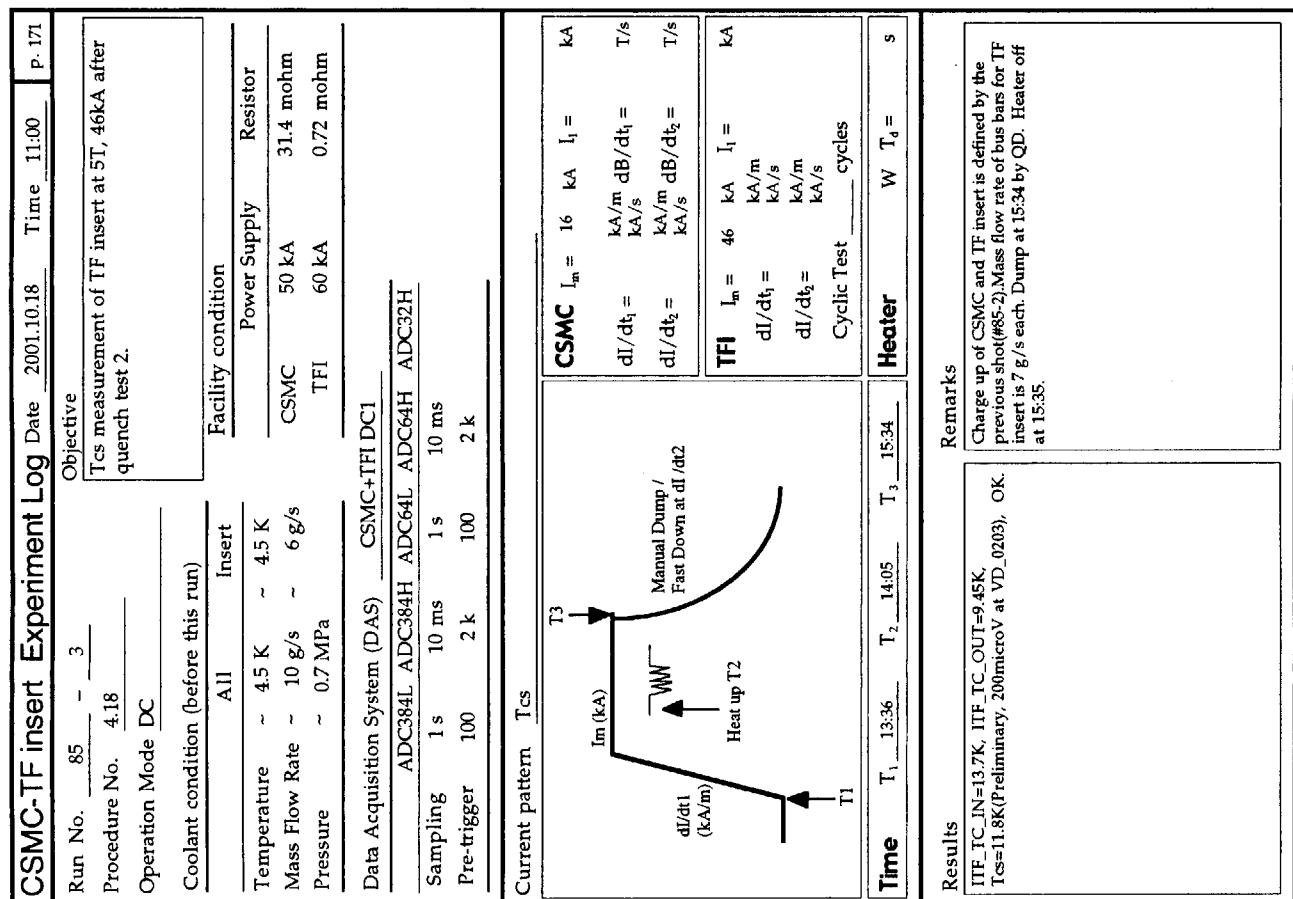


CSMC-TF insert Experiment Log				Date 2001.10.17	Time 15:48	p. 167
				Objective		
Run No. 83 - 3				Tcs measurement of TF insert at 11.4T, 17.6kA after quench test 2.		
Procedure No. 8.4						
Operation Mode DC						
Coolant condition (before this run)				Facility condition (before this run)		
Insert		All	Insert		All	
Temperature		~ 6 K	Power Supply		Power Supply	
Mass Flow Rate		~ 6 g/s	Resistor		Resistor	
Pressure		~ 0.7 MPa	CSMC		CSMC	
			50 kA		50 kA	
			TFI		TFI	
			60 kA		60 kA	
Data Acquisition System (DAS) CSMC+TFI DC1				Facility condition		
ADC384L ADC384H ADC64L ADC64H ADC32H				All	Insert	
Sampling		1 s	Temperature		~ 4.5 K	~ 4.5 K
Pre-trigger		100	Mass Flow Rate		~ 10 g/s	~ 8 g/s
		2 k	Pressure		~ 0.7 MPa	0.72 mohm
Sampling 10 ms 1 s 10 ms				Power Supply		
Pre-trigger 100 2 k 100 2 k				CSMC	50 kA	31.4 mohm
				TFI	60 kA	0.72 mohm
Current pattern Simultaneous daily check				Resistor		
				CSMC	$I_m = 9.2 \text{ kA}$	$I_i = \text{kA}$
					$dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = \text{T/s}$	
					$dI/dt_2 = \text{kA/m dB/dt}_2 = \text{T/s}$	
				TFI	$I_m = 5 \text{ kA}$	$I_i = \text{kA}$
					$dI/dt_1 = 3 \text{ kA/m}$	
					$dI/dt_2 = \text{kA/m}$	
				Cyclic Test cycles		
				Time	$T_1 = 9:39$	$T_2 = 10:11$
					$T_3 = 10:19$	Heater
						$W = \text{~s}$
Results				Remarks		
$V_i=567V, V_o=707V, V_{ins}=7.6V, T_{aumc}=17.1s, \text{OK.}$				Heater off at 18:00.		
				Mass flow rate of bus bars for TF insert is 8 g/s each.		

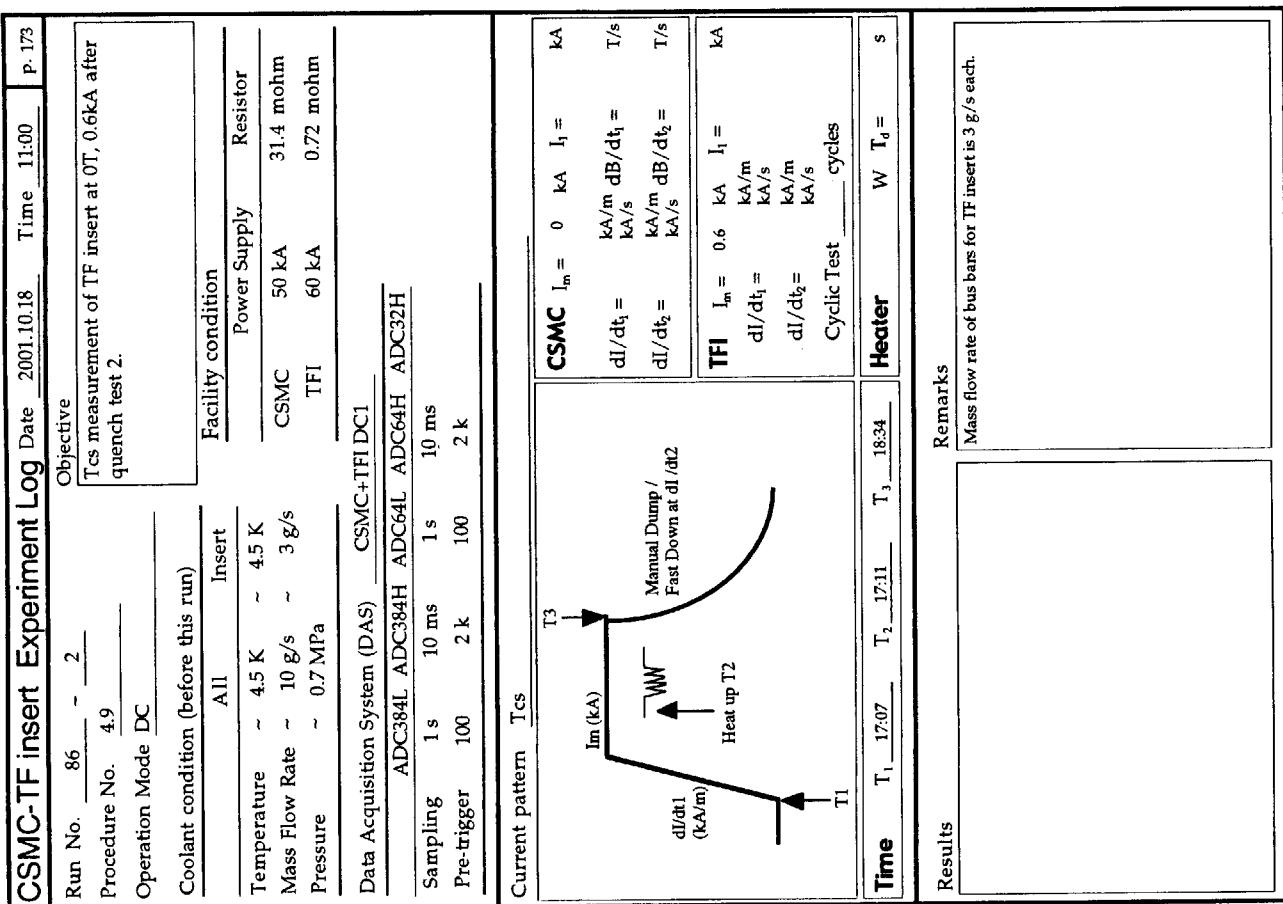
CSMC-TF insert Experiment Log				Date 2001.10.18	Time 11:00	P. 169
Run No. 85 - 1				Objective		
Procedure No. 4.18				Tcs measurement of TF insert at 5T, 46kA after quench test 2.		
Operation Mode DC						
Coolant condition (before this run)				Facility condition		
All	Insert	Facility condition		All	Insert	
Temperature	~ 4.5 K	Power Supply		Temperature	~ 4.5 K	Resistor
Mass Flow Rate	~ 10 g/s	CSMC		Mass Flow Rate	~ 10 g/s	31.4 mohm
Pressure	~ 0.7 MPa	TFI		Pressure	~ 0.7 MPa	0.72 mohm
Data Acquisition System (DAS) CSMC+TFI DC1				Power Supply		
ADC384L	ADC384H	ADC64L	ADC64H	ADC32H	CSMC	50 kA
Sampling	1 s	10 ms	1 s	25 ms	TFI	60 kA
Pre-trigger	100	2 k	100	2 k		
Current pattern Double charge up				Facility condition		
CSMC	$I_m = 16$	kA	$I_1 =$	CSMC	$I_m = 16$	kA
	$dI/dt_1 = 1$	kA/m	$dI/dt_1 =$		$dI/dt_1 = 1$	kA/m
TFI	$I_m = 46$	kA	$I_1 =$	TFI	$I_m = 46$	kA
	$dI/dt_1 = 3$	kA/m	$dI/dt_1 =$		$dI/dt_2 = 3$	kA/m
	$dI/dt_2 =$	kA/s	$dI/dt_2 =$		$dI/dt_2 =$	kA/s
	Cyclic Test	cycles	Cyclic Test	Cyclic Test	Cyclic Test	cycles
Time	$T_1 = 11:01$	$T_2 =$	$T_3 =$	Heater	$T_{31} =$	$T_o =$
Remarks				Remarks		
Results						



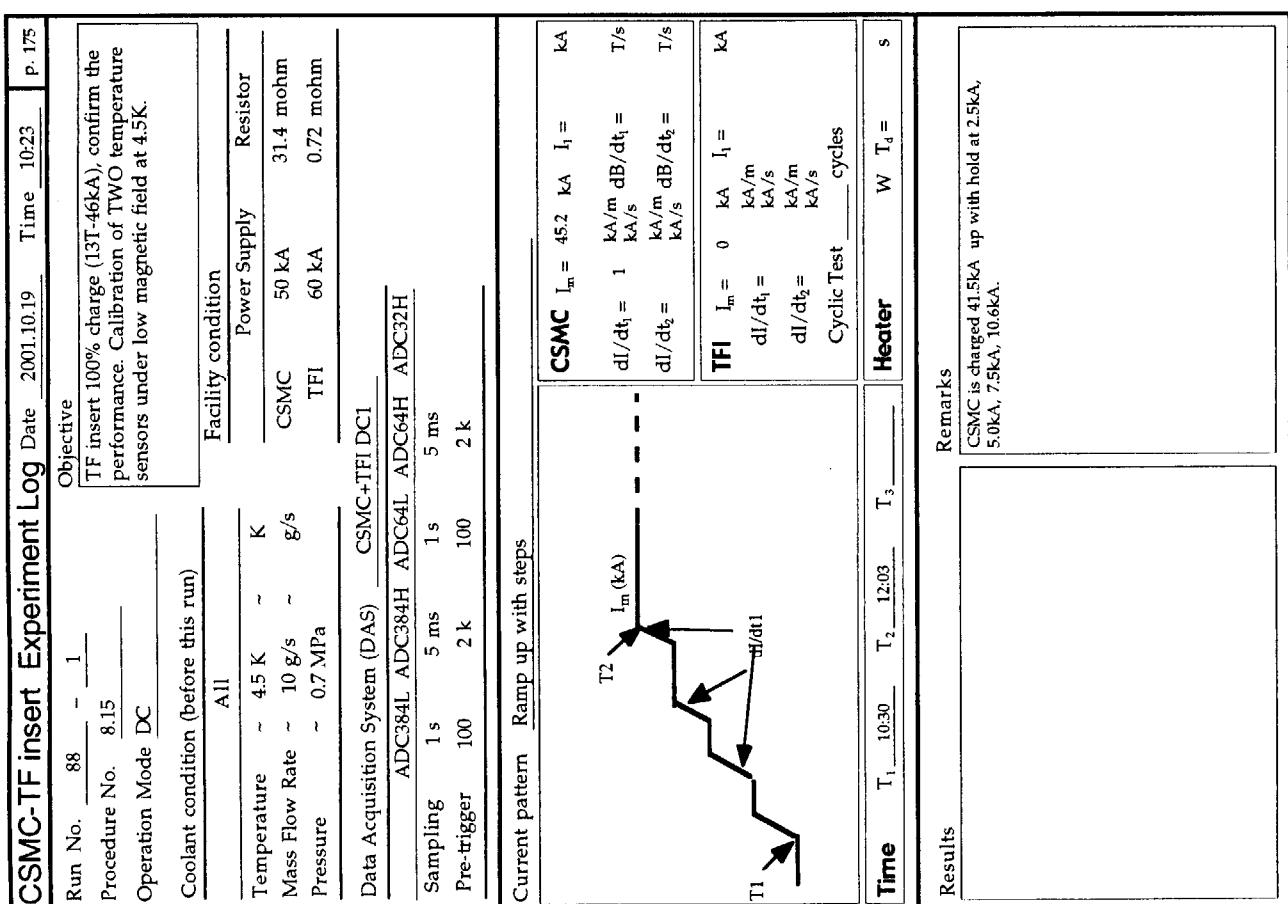
CSMC-TF insert Experiment Log		Date	2001.10.18	Time	11:00	P. 171
Run No.		85	-	3	Objective	
Procedure No.		4.18	-		Tcs measurement of TF insert at 5T, 46kA after quench test 2.	
Operation Mode		DC	-		DC	
Coolant condition (before this run)						
Facility condition		All	Insert			
Temperature		~ 4.5 K	~ 4.5 K	~ 4.5 K	~ 4.5 K	Resistor
Mass Flow Rate		~ 10 g/s	~ 6 g/s	CSMC	31.4 mohm	31.4 mohm
Pressure		~ 0.7 MPa		TFI	0.72 mohm	0.72 mohm
Data Acquisition System (DAS)		CSMC+TFI DC1		Data Acquisition System (DAS)	CSMC+TFI DC1	
ADC384L ADC384H ADC64L ADC64H ADC32H				ADC384L ADC384H ADC64L ADC64H ADC32H		
Sampling	1 s	10 ms	1 s	10 ms	1 s	10 ms
Pre-trigger	100	2 k	100	2 k	100	2 k
Current pattern Tcs				Current pattern	Heater energize	
T3		CSMC	$I_m = 16 \text{ kA}$	$I_i = \text{kA}$	CSMC	$I_m = 0 \text{ kA}$
dI/dt_1 (kA/m)			kA/m	$dB/dt_1 = \text{T/s}$		$dI/dt_1 = \text{kA}/\text{s}$
dI/dt_2 (kA/s)			kA/s	$dB/dt_2 = \text{T/s}$		$dI/dt_2 = \text{kA}/\text{m}$
T1		TFI	$I_m = 46 \text{ kA}$	$I_i = \text{kA}$	TFI	$I_m = 0 \text{ kA}$
dI/dt_1 (kA/m)			kA/m	$dB/dt_1 = \text{T/s}$		$dI/dt_1 = \text{kA}/\text{m}$
dI/dt_2 (kA/s)			kA/s	$dB/dt_2 = \text{T/s}$		$dI/dt_2 = \text{kA}/\text{m}$
Cyclic Test			cycles	Cyclic Test	cycles	
Time	T ₁ 13:36	T ₂ 14:05	T ₃ 15:34	Heater	W T _d = s	Time
Results	Remarks					Remarks
ITF_TC_IN=13.7K, ITF_TC_OUT=9.45K, Tcs=11.8K(Preliminary, 200microV at VD_0203), OK.	Tcs measurement of TF insert at 0T, 0.6kA after quench test 2.					
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	2001.10.19	Time	9:30	P. 174
Run No.				Run No.	87	-	1	Objective Daily check.
Procedure No.				Procedure No.	4.0	-	-	
Operation Mode				Operation Mode	DC	-	-	
Coolant condition (before this run)				Coolant condition (before this run)				
All	Insert	Facility condition		All	Facility condition			
Temperature	~ 4.5 K	~ 4.5 K	Power Supply	Resistor	Temperature	~ 4.5 K	~	
Mass Flow Rate	~ 10 g/s	~ 3 g/s	CSMC	50 kA	Mass Flow Rate	~ 10 g/s	K	
Pressure	~ 0.7 MPa		TFI	60 kA	Pressure	~ 0.7 MPa	g/s	
							TFI	CSMC 50 kA 31.4 mohm
							TFI	60 kA 0.72 mohm
Data Acquisition System (DAS)				Data Acquisition System (DAS) CSMC+TFI DC1				
ADC384L	ADC384H	ADC64L	ADC64H	ADC32H	Sampling	1 s	10 ms	
Sampling	1 s	10 ms	1 s	10 ms	Pre-trigger	100	2 k	1 s
Pre-trigger	100	2 k	100	2 k		100	2 k	100
Current pattern Tes				Simultaneous daily check				
CSMC				CSMC	I _m = 9.2 kA	I _i = kA		
dI/dt ₁ = kA/m dB/dt ₁ = kA/s				CSMC	dI/dt ₁ = 1 kA/m dB/dt ₁ = kA/s			
dI/dt ₂ = kA/m dB/dt ₂ = kA/s				CSMC	dI/dt ₂ = 1 kA/m dB/dt ₂ = kA/s			
TFI				TFI	I _m = 5 kA	I _i = kA		
dI/dt ₁ = kA/m dB/dt ₁ = kA/s				TFI	dI/dt ₁ = 3 kA/m dB/dt ₁ = kA/s			
dI/dt ₂ = kA/m dB/dt ₂ = kA/s				TFI	dI/dt ₂ = 3 kA/m dB/dt ₂ = kA/s			
Cyclic Test cycles				Cyclic Test	Cyclic Test cycles			
Time	T ₁ 9:40	T ₂ 9:55	T ₃ 10:02	Heater	W	T _d = s	W	T _d = s
Results				Remarks				
Results				Remarks				
Mass flow rate of bus bars for TFI insert is 3 g/s each.				Check the electric performance only.				



CSMC-TF insert Experiment Log Date 2001.10.19 Time 10:23		CSMC-TF insert Experiment Log Date 2001.10.19 Time 10:23		CSMC-TF insert Experiment Log Date 2001.10.19 Time 10:23	
Run No.	88	Run No.	88	Run No.	88
Procedure No.	8.15	Procedure No.	8.15	Procedure No.	8.15
Operation Mode	DC	Operation Mode	DC	Operation Mode	DC
Coolant condition (before this run)		Coolant condition (before this run)		Coolant condition (before this run)	
All		All		All	
Temperature	~ 4.5 K	Power Supply	Resistor	Temperature	~ 4.5 K
Mass Flow Rate	~ 10 g/s	CSMC	31.4 mohm	Mass Flow Rate	~ 10 g/s
Pressure	~ 0.7 MPa	TFI	0.72 mohm	Pressure	~ 0.7 MPa
Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	CSMC+TFI DC1	Data Acquisition System (DAS)	CSMC+TFI DC1
ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384L ADC384H ADC64L ADC64H ADC32H	ADC384L ADC384H ADC64L ADC64H ADC32H
Sampling	1 s	Sampling	1 s	Sampling	1 s
Pre-trigger	2 k	Pre-trigger	100	Pre-trigger	2 k
Current pattern	Ramp up with steps	Current pattern	Trapezoidal with four steps	Current pattern	Trapezoidal with four steps
CSMC	$I_m = 45.2 \text{ kA}$ $dI/dt_1 = 1 \text{ kA/m dB/dt}_1 = T/s$ $dI/dt_2 = \text{kA/m dB/dt}_2 = T/s$	CSMC	$I_m = 45.2 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = T/s$ $dI/dt_2 = \text{kA/m dB/dt}_2 = T/s$	CSMC	$I_m = 45.2 \text{ kA}$ $dI/dt_1 = \text{kA/m dB/dt}_1 = T/s$ $dI/dt_2 = \text{kA/m dB/dt}_2 = T/s$
TFI	$I_m = 0 \text{ kA}$ $dI/dt_1 = \text{kA/m}$ $dI/dt_2 = \text{kA/m}$ Cyclic Test cycles	TFI	$I_m = 46 \text{ kA}$ $dI/dt_1 = 3 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$ Cyclic Test cycles	TFI	$I_m = 46 \text{ kA}$ $dI/dt_1 = 3 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$ Cyclic Test cycles
Time	$T_1 = 10:30$	Time	$T_1 = 12:10$	Time	$T_1 = 12:10$
Time	$T_2 = 12:03$	Time	$T_2 = 13:11$	Time	$T_2 = 13:11$
Time	$T_3 =$	Time	$T_3 =$	Time	$T_3 =$
Heater		W	$T_d =$	Heater	
Results	Remarks	Results	Remarks	Results	Remarks
	CSMC is charged 41.5kA up with hold at 2.5kA, 5.0kA, 7.5kA, 10.6kA.		TF insert is charged 46kA up with hold at 10kA, 20kA, 30kA, 40kA.		



CSMC-TF insert Experiment Log				Date	2001.10.19	Time	13:37	P. 177	
Run No.				Run No.	89	-	2	Objective	
Procedure No.				Procedure No.	1.12	-	1.12	Test measurement for 1st layer of CSMC.	
Operation Mode				Operation Mode	DC	-	DC		
Coolant condition (before this run)				Coolant condition (before this run)				Facility condition	
All	All	1A&B	Power Supply	CSMC	50 kA	-	4.5 K	Power Supply	Resistor
Temperature	~ 4.5 K	~ K	Resistor	Temperature	~ 4.5 K	~	4.5 K	CSMC	50 kA
Mass Flow Rate	~ 10 g/s	~ g/s	Power Supply	Mass Flow Rate	~ 10 g/s	~	4 g/s	TFI	60 kA
Pressure	~ 0.7 MPa	~	Resistor	Pressure	~ 0.7 MPa	~	0.72 mohm		
Data Acquisition System (DAS)				Data Acquisition System (DAS)	CSMC+TFI DC1	-	CSMC+TFI DC1		
ADC384L ADC384H ADC64L ADC64H ADC32H				ADC384L	ADC384H	ADC64L	ADC64H	ADC32H	
Sampling	1 s	5 ms	5 ms	Sampling	1 s	5 ms	1 s	5 ms	
Pre-trigger	100	2 k	100	Pre-trigger	100	2 k	100	2 k	
Current pattern Tcs				Current pattern Tcs					
				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/s}$ $dI/dt_2 = \text{kA/s}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	
$dI/dt_1 = 1 \text{ kA/m}$ $dI/dt_2 = \text{kA/m}$				CSMC	$I_m = 46$	kA	$I_1 =$	kA	

Acknowledgement

The authors would like to acknowledge to Drs. S. Matsuda, M.Seki, S. Seki, and H.Takatsu for their continuous support and encouragement in this experiment. The experiment of TF insert and CS model coil was carried out by all members of Superconducting Magnet Laboratory, CS model coil test group. The authors also would like to thank to Drs. I. Rodin (Efremov institute, Russia), N.Martovetsky (Lawrence Livermore National Laboratory, US), M.Takayasu (Massachusetts Institute of Technology, US), R.Zanino (Politecnico di Torino, Italy), and L.Savoldi (Politecnico di Torino, Italy) for the contribution of experiment.

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
上率、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	ファラード	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	°C	
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

$$1 \text{ eV} = 1.60218 \times 10^{-19} \text{ J}$$

$$1 \text{ u} = 1.66054 \times 10^{-27} \text{ kg}$$

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

(注)

- 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。
- 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。
- 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。
- EC開催理事会指令では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。

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	Ci
レントゲン	R
ラド	rad
レム	rem

$$1 \text{ Å} = 0.1 \text{ nm} = 10^{-10} \text{ m}$$

$$1 \text{ b} = 100 \text{ fm}^2 = 10^{-28} \text{ m}^2$$

$$1 \text{ bar} = 0.1 \text{ MPa} = 10^5 \text{ Pa}$$

$$1 \text{ Gal} = 1 \text{ cm/s}^2 = 10^{-2} \text{ m/s}^2$$

$$1 \text{ Ci} = 3.7 \times 10^{10} \text{ Bq}$$

$$1 \text{ R} = 2.58 \times 10^{-4} \text{ C/kg}$$

$$1 \text{ rad} = 1 \text{ cGy} = 10^{-2} \text{ Gy}$$

$$1 \text{ rem} = 1 \text{ cSv} = 10^{-2} \text{ Sv}$$

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/m²) = 10 P(ポアズ)(g/(cm·s))

動粘度 1 m²/s = 10⁴ St(ストークス)(cm²/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
力	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 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)
	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	仕事率 1 PS(仮馬力)	
1055.06	107.586	2.93072 × 10 ⁻⁴	252.042	1	778.172	6.58515 × 10 ²¹	= 75 kgf·m/s	
1.35582	0.138255	3.76616 × 10 ⁻⁷	0.323890	1.28506 × 10 ⁻³	1	8.46233 × 10 ¹⁸	= 735.499 W	
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		

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-

R100
古紙配合率100%
白色度70%再生紙を使用しています。