## **I.2 DCS Basic Operation**

In the **fig.10** you see the current EMU-DCS tree: the CMS\_CSC node contains folders:

CSC\_GAS CSC\_LV CSC\_HV CSC\_WTH (environment conditions folder) CSC\_ME\_P1 (ME+1) CSC\_ME\_P2 (ME+2) CSC\_ME\_P3 (ME+3) CSC\_ME\_P4 (ME+4)

Basically you can operate in the following main ways:

- you can switch the whole EMU-DCS or any brunch of it to another state
- you can browse the tree
- you can exclude (disable) or include (enable) a node in the tree so that the node not to affect or affect the state of other nodes in the tree.
- you can detect and cure alarms

CMS_CSC: CSC_MTCC	:Manager1			- • ×	
	System	State	 24/08/2006 18:	16:16	Fig.10
	CMS_CSC		root		
Sub-System	State				
CSC_GAS	ON				
CSC_LV	ON				
CSC_HV	ON				
CSC_WTH	ON				
CSC_ME_P1	ON				
CSC_ME_P2	ON				
CSC_ME_P3	ON				
CSC_ME_P4	ON				
Messages					
			C	lose	

## I.2.1 Switching ON the whole EMU-DCS and some browsing:

			0			
CERNY	System CMS_CSC	State OFF		15/10/2006 root	17:56:47	
Sub-System	panel State	ON STANDBY OFF		,		Fig.11
CSC_GAS	ON		-		l	
CSC_LV						
CSC_HV	OFF					
CSC_WTH	ON					
CSC_ME_P1	OFF					
CSC_ME_P2	0/F					
CSC_ME_P3	OFF					
CSC_ME_P4	ON					
Messages						
	/					
	/				Close	

You may switch on the whole EMU-DCS as shown in the **figure.11** :

Click the "State" button opposite the "CMS\_CSC" to see the list of possible commands: Select "ON" to switch ON the whole EMU-DCS.

If you do that you will see the **fig.12**, i.e. the nodes CSC\_ME\_P1, CSC\_ME\_P2, CSC\_ME\_P3 still stay in the "OFF" state (until HV ramping is over).

<b>KERN</b>	System CMS_CSC	State OFF		15/10/2006 root	17:59:37	
Sub-System	panel State					Fig.12
CSC_GAS	ON		/ /			8
CSC_LV	ON					
CSC_HV	ON					
CSC_WTH	ON					
CSC_ME_P1	OFF					
CSC_ME_P2	OFF					
CSC_ME_P3	OFF					
CSC_ME_P4	ON	9				
Messages						
				0	Close	

When the HV ramping is over (in a few minutes) we will see the fig.13

	System	State	15/10/2000	6 17:32:05	
CERN	CMS_CSC	ON	root		
Evel Sustam	panel				Fig 13
CSC_GAS	ON	A			1'lg.1.
CSC_LV	ON	A			
CSC_HV	ON	8			
CSC_WTH	ON				
CSC_ME_P1	ON				
CSC_ME_P2	ON				
CSC_ME_P3	ON	<b>A</b>			
CSC_ME_P4		<u>A</u>			
Messages					
	$\backslash$			Close	

To look at details of what is happening "inside" the tree during the HV ramping you can brows the tree for example as follows:

a) double click the "CSC\_ME\_P3"

The new window is displayed (fig.14) In particular it contains the chamber nodes of ME+3

(FRNN	System	State	alal	15/10/2006 18:02:04				
M	CSC_ME_P3	OFF		root		Fig.14		
Sub-System	State							
CSC_ME_P3_LV_CRB	ON	×						
CSC_ME_P3_ALNM	ON	×						
CSC_ME_P31_C14	OFF	1						
CSC_ME_P31_C15	OFF	1						
CSC_ME_P31_C16	OFF	1						
CSC_ME_P32_C27	OFF	1						
CSC_ME_P32_C28	OFF	1						
CSC_ME_P32_C29	OFF	1						
CSC_ME_P32_C30	OFF	1						
CSC_ME_P32_C31	OFF	1						
CSC_ME_P32_C32	OFF	1						
Mossagos								
					Close			

b) double click the "CSC\_ME\_P31\_C14"

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The new window is displayed (fig.15) In particular it contains the devices of the chamber ME+3/1/14

	Object CSC_ME_P31_C14	Sta OFF	e 02/87/2006 II ▼ ▲ root	B:49:48	
Sub-System CSC_ME_P31_C14_LV CSC_ME_P31_C14_LHU CSC_ME_P31_C14_HV CSC_ME_P31_C14_HV	CSC_ME_P31_C14	v v v v v v v v v v v v v v v v v v v	GBrowser Additional Operation  BACK ME+3/1/14 CHIP_1 HV_1 LV_1 LV_1 TEMP_1		Fig.15
Messages				Close	

c) double click the "CSC\_ME\_P31\_C14\_HV" to see details of HV ramping for the selected chamber (**fig.16**)

(CER)	X		<b>⇒vice</b> ©_me_	9 P31_C14	_HV	S F	<b>tate</b> RAMP			∕ ▲						02/07/20 root	06 18:50:10	
gBrow	ser																	Fig.16
ch#	vmon	imon v	/set	vcur	rmpUp	rmpDi	vmax	imax	vTrip	iTrip	tripCn	tripDl	relay	fuse	state	status		
1	1105	0.6363 3	3599	1106	13	133	4000	10	0	0	0	500	0	0	ON	Ramp_U		
2	1106	0.6363 3	3598	1112	13	133	4000	10	0	0	0	500	0	0	ON	Ramp_U		
3	1120	0.6363 3	3598	1131	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
4	1112	0.6363 3	3599	1122	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
5	1124	0.6363 3	3598	1129	13	135	4000	10	0	0	0	500	0	0	ON	Ramp_U		
6	1110	0.6363 3	3598	1116	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
7	1117	0.6363 3	3598	1126	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
8	1115	0.6363 3	3599	1106	13	133	4000	10	0	0	0	500	0	0	ON	Ramp_U		
9	1122	0.6363 3	3599	1128	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
10	1109	0.6363 3	3599	1119	13	133	4000	10	0	0	0	500	0	0	ON	Ramp_U		
11	1107	0.6363 3	3599	1113	13	133	4000	10	0	0	0	500	0	0	ON	Ramp_U _		
12	1118	0.6363 3	3599	1122	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
13	1112	0.6363 3	3598	1112	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
14	1116	0.9090 3	3599	1129	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
15	1101	0.8181 3	3599	1111	13	133	4000	10	0	0	0	500	0	0	ON	Ramp_U		
16	1117	0.9090 3	3598	1121	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
17	1128	0.9090 3	3599	1137	13	135	4000	10	0	0	0	500	0	0	ON	Ramp_U		
18	1118	0.9090 3	3598	1117	13	134	4000	10	0	0	0	500	0	0	ON	Ramp_U		
5	•			•	•			•		•	•	•	•	•				
Ī	:h#	VS	et	ran	aUar	rar	npDn	Vn	nax	lim	ax	sta	ate	Trip	DI	exclude		
T T		Y		Y	<u></u>	Y	<u></u>	Y		Y		Y		Y		Y		
								1.										
				TO	SWIT	CH (	OFF	re	fre	sh da	ita	TT	rend	ME	+3/	1/14		
									- 14						_	•		
2						ms	tdlv	ms	id						upo	date time		
Mess	ages	E																
																	Close	

Switching OFF the whole EMU-DCS is not recommended as some Sub-Systems should stay ON to detect the alarms (gas, weather parameters). See below how to switch OFF particular Sub-Systems (HV, LV).I.2.2 Switching ON/OFF the particular Sub-Systems (HV, LV, ME stations)

1) Switching ON/OFF the general LV (maratons):

Use the window shown in **fig.17** to switch ON/OFF the node CSC\_LV: (click the "State" button opposite the "CSC\_LV" node to display list of possible commands: Select ON or OFF depending on what you are going to do.)

2) Switching ON/OFF the chambers HV.

At the moment the following is recommended: Use the window shown in **fig.17** to switch ON/OFF the nodes "CSC\_HV", "CSC\_ME\_P1", "CSC\_ME\_P2", "CSC\_ME\_P3"

	System	State	100	15/10/2006 17:56:47	-
CERN	CMS_CSC	OFF		root 🔍	Fig.17
ub-System	State				
CSC_GAS	ØN .				
CSC_LV	OFF				
CSC_HV	UFF	<u>a</u>			
CSC_WTH	ON				
CSC_ME_P1	OFF 🕈				
CSC_ME_P2	OFF 🕈				
CSC_ME_P3	OFF				
CSC_ME_P4	ON				
Messages					
				Close	

## I.2.3 Detecting Alarms during the DCS operation

During the DCS operation the status of the DCS should be watched.

I.2.3.1 If you detect an SX5 Weather Alarm (display shown in the fig.18)

	System	State	14/10/2006 15	:12:58	Fig.18a	
	CMS_CSC	ERROR	root			
	panel					
Sub-System	State					
CSC_GAS	ON					
CSC_LV	ON					
CSC_HV	ON					
CSC_WTH	ERROR					
CSC_ME_P1	ON					
CSC_ME_P2	ON					Fig.18h
CSC_ME_P3	ON				CSC_WTH::CSC_WTH	- ig.105
CSC_ME_P4	ON				is included	
Messages					_0 Exclude	
		$\backslash$				
		$\backslash$		Close	×	
*,				and the second se		

do the following: (see **fig.18a**) Click a "lock" icon of the CSC\_WTH (weather station node) You will see a new popped-up window (**fig.18b**) Click "Exclude" button to have a display shown in **fig.19** 

CERN	System CMS_CSC	State	14/10/200	6 15:12:20	Fig.19
M	panel		1 root		
Sub-System	State	01			
COC_GMS	UN				
CSC_LV	ON				
CSC_HV	ON	<b>A</b>			
CSC_WTH	ERROR	2			
CSC_ME_P1	ON				
CSC_ME_P2	ON	8			
CSC_ME_P3	ON	8			
CSC_ME_P4	ON	8			
Messages					
				Close	

## I.2.3.2 If you detect an alarm in CSC\_LV node

or in one of the ME station nodes: CSC\_ME\_P1, CSC\_ME\_P2, CSC\_ME\_P3 like shown in **fig.20** please do a power cycling (switching OFF then ON ) the alarmed node. If that does not help (i.e. the alarm is still ON) use the DCS\_MTCC\_PHASE2\_A\_HOW\_TO\_USE\_DOCS.doc which should be used by experts only) or call the DCS expert

CMS_CSC: CSC_MTC	CC:Manager1			- O X	Fig.20
(FRN)	System cms_csc	State N	24/08/2006	18:16:16	
Sub-System	panel State		J		
CSC_GAS	ON				
CSC_LV	ON	2			
CSC_HV	ON	2			
CSC_WTH	ON	<b>a</b>			
CSC_ME_P1	ON				
CSC_ME_P2	ERROR				
CSC_ME_P3	ON	<b>A</b>			
CSC_ME_P4	ON				
Messages					
				Close	