

4.6.2.20. SCCP Local Subsystem State Data Display

Function to display State related to Local Exchange Sub-system defined at Local Exchange Signaling Point

Command DIS-SCCP-LSS:BSC_ID =a;

a = BSC Number (00 ~ 16)

Input DIS-SCCP-LSS:BSC_ID = 0;

Output

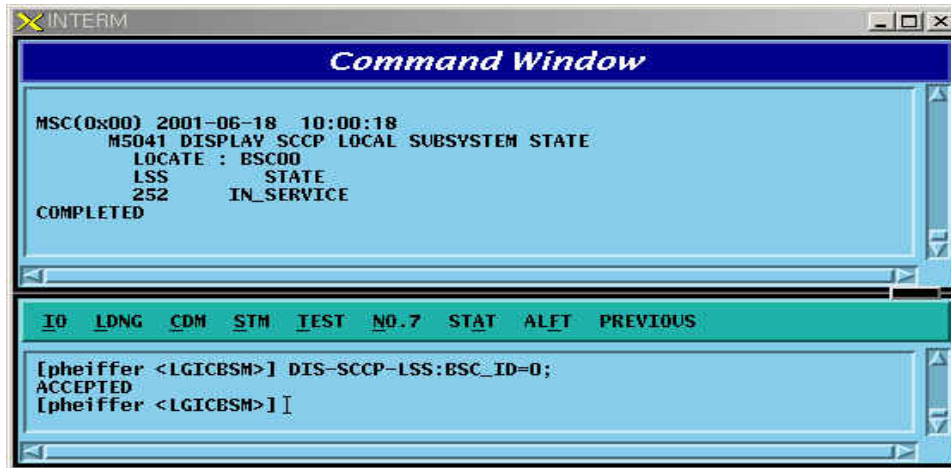


Fig. 4.6-20 SCCP Local Subsystem State Data Display

4.6.2.21. Signaling Link Status Display

Function to display a designated Signaling Link Status, Activate Status of Signaling Link, Inhibit Status of Intra switching office Signaling Link, and Inhibit Status of local Switching Office.

Command DIS-SLK-STS:BSC_ID = a, SLC = b;

a = BSC Number (00 ~ 11)

b = Signalling Number Code (00 ~ 16)

Input DIS-SLK-STS:BSC_ID = 0, SLC=0;

Output

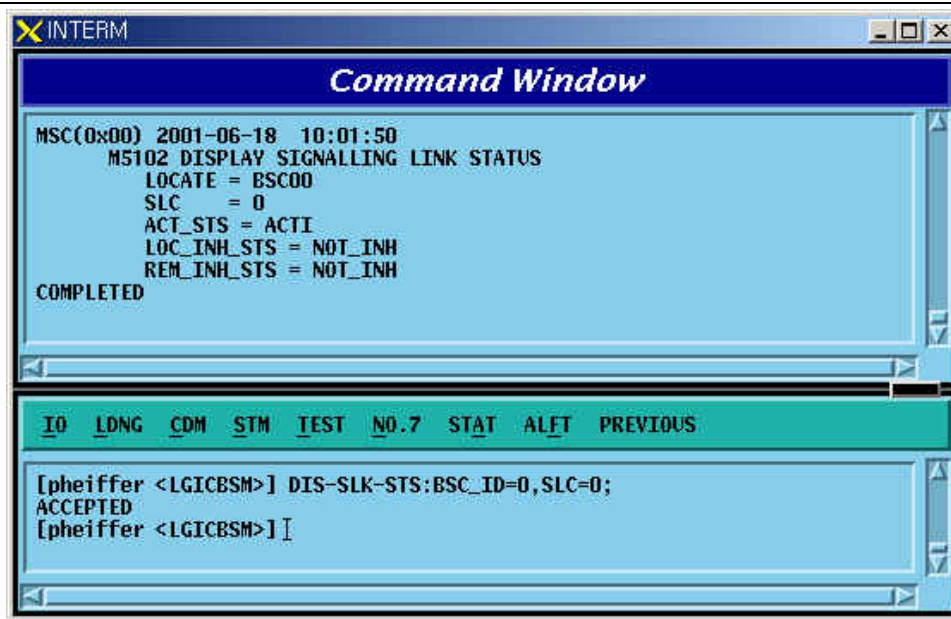


Fig. 4.6-21 Signaling Link Status Display

4.6.2.22. Signaling Terminal Status Display

Function to display Status Information for a specific signaling Tunnel, including the types of data such as SLC, Trunk Number, Signaling Data Link Number, and present Status.

Command DIS-ST-STS:BSC_ID=0;

a = BSC Number (00 ~ 15)

Input DIS-ST-STS:BSC_ID=0;

Output

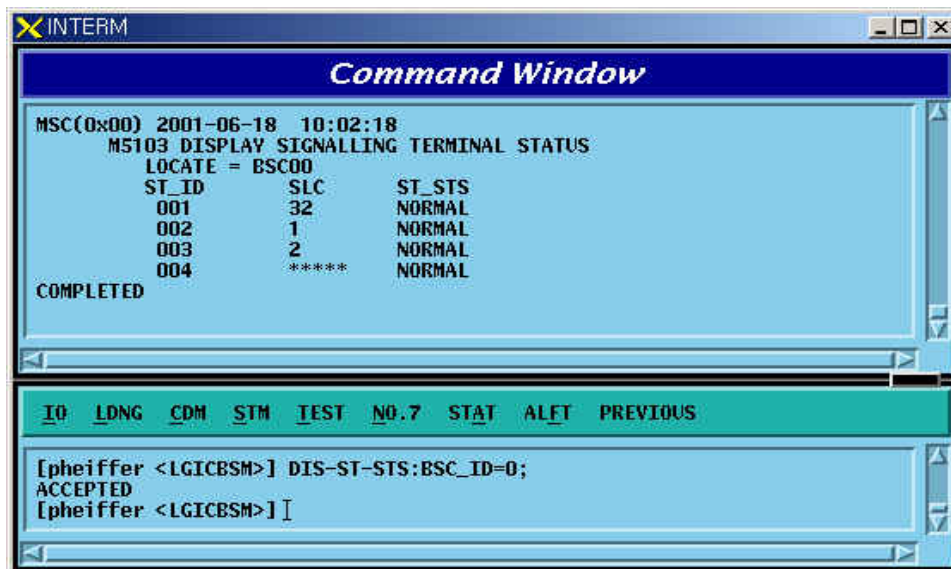


Fig. 4.6-22 Signaling Terminal Status Display

4.6.2.23. Signaling Link Set Status Display

Function to display all the Signaling Link Status connected to ASS-W to include the status of SLC(Signaling Link Code), sl_avail(Signaling Link Availability/Non-availability), loc_inh(Local Exchange Management Inhibit), rem_inh(Remote Management Inhibit).

Command DIS-LKS-STTS:BSC_ID=a;

a = BSC Number (00 ~ 11)

Input DIS-LKS-STTS:BSC_ID = 0;

Output

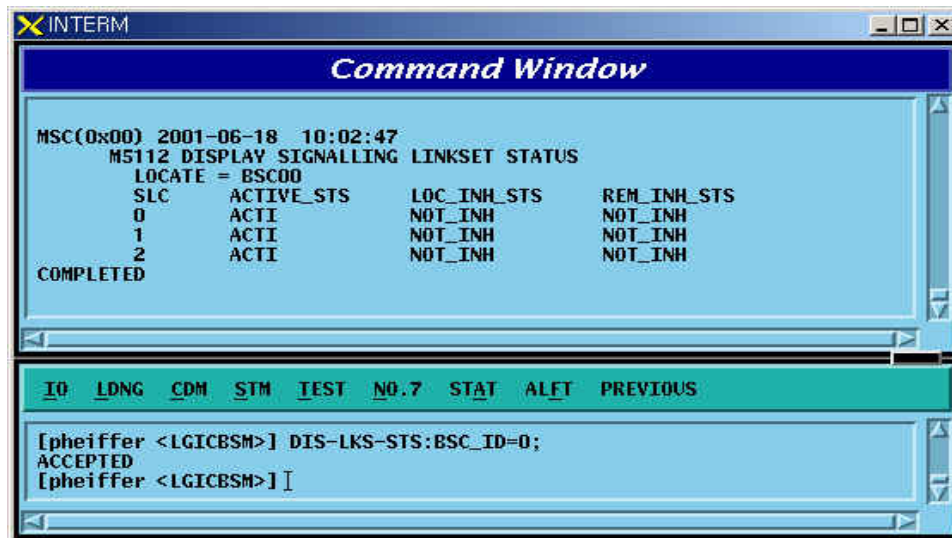


Fig. 4.6-23 Signaling Link Set Status Display

4.6.2.24. MTP Level 2 Timer Display

It displays Timer Value used for MTP L2 which is presently in operation.

Command DIS-MTP2-TMR:BSC_ID = a;

a = BSC Number (00 ~ 15)

Input DIS-MTP2-TMR:BSC_ID = 0;

Output

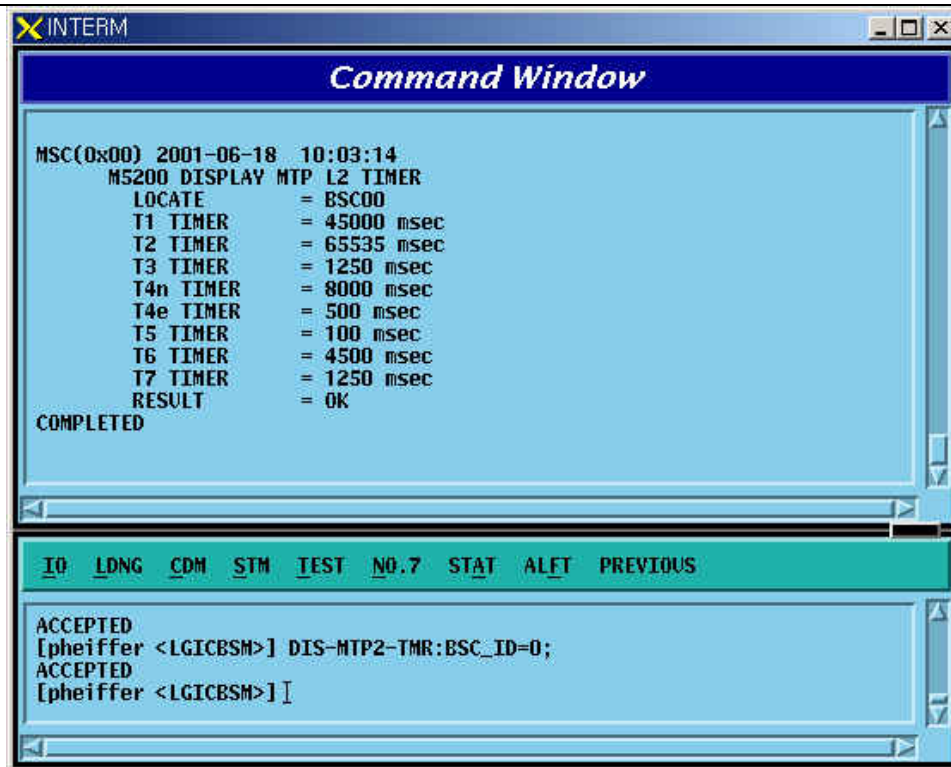


Fig. 4.6-24 MTP Level2 Timer Display

4.6.2.25. MTP Level 2 Timer Change

It changes Timer Value used for MTP L2 which is presently in operation.

Command CHG-MTP2-TMR:BSC_ID=a, T1=b, T2 =c, T3=d, T4N = e, T4E = f,
T5 =g, T6 = h, T7= i;

- a = BSC Number (00 ~ 15)
- b = T1 Timer (40000 ~ 50000)
- c = T2 Timer (5000 ~ 150000)
- d = T3 Timer (1000 ~ 2000)
- e = T4N Timer (7500 ~ 9500)
- f = T4E Timer (00 ~ 600)
- g = T5 Timer (80 ~ 120)
- h = T6 Timer (3000 ~ 5000)
- I = T7 Timer (500 ~ 2000)

Input CHG-MTP2-TMR:BSC_ID=0, T5 = 100;

Output

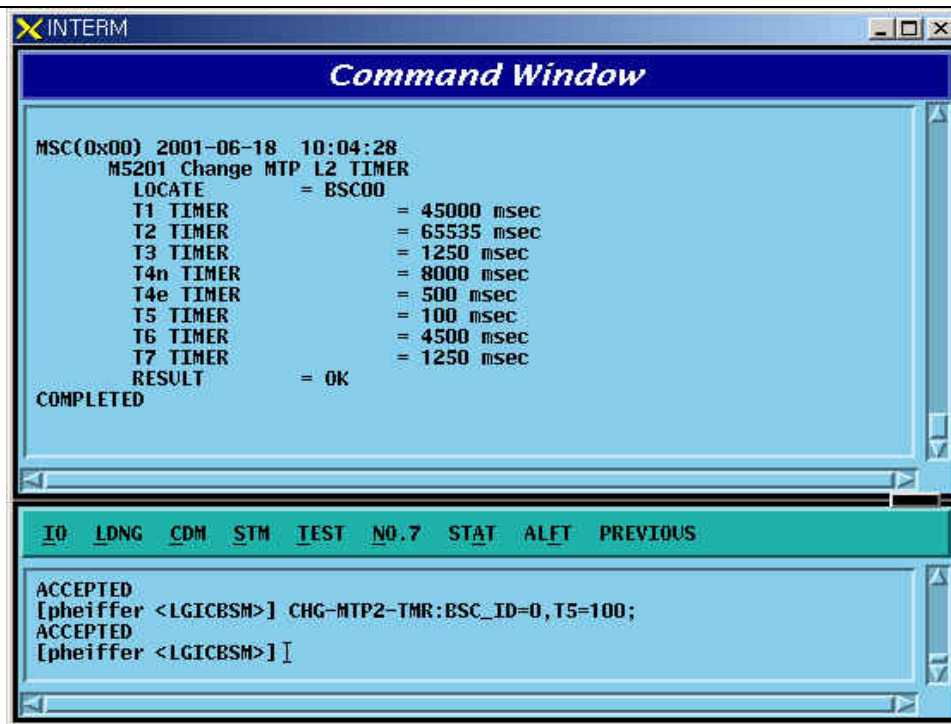


Fig. 4.6-25 MTP Level2 Timer Change

4.6.2.26. MTP Level 3 Timer Display

It displays Timer Value used for MTP L3 which is presently in operation.

Command DIS-MTP3-TMR:BSC_ID =a;

a = BSC Number (00 ~ 15)

Input DIS-MTP3-TMR:BSC_ID = 0;

Output

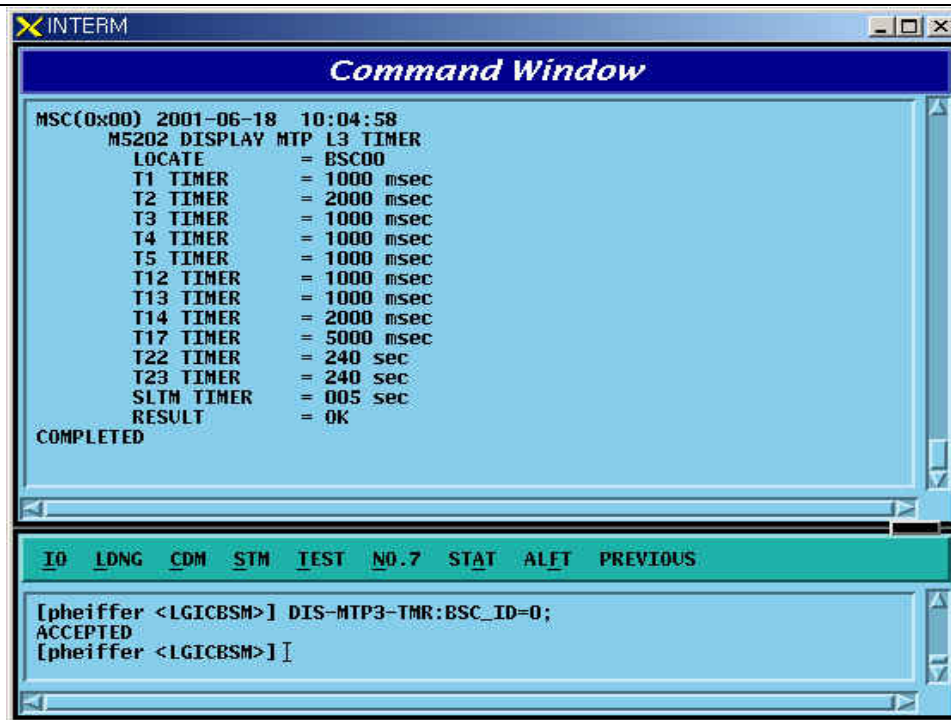


Fig. 4.6-26 MTP Level3 Timer Display

4.6.2.27. MTP Level 3 Timer Change

It changes Timer Value used for MTP L3 which is presently in operation.

Command CHG-MTP3-TMR:BSC_ID = a, T1 = b, T2 = c, T3 = d, T4 = e, T5 = f, T12 = g, T13= h, T14 = i, T17 = j, T22 = k, T23 = l, SLTM = m;

a = BSC Number (00 ~ 11)

b = T1 Timer (500 ~ 1200)

c = T2 Timer (700 ~ 2000)

d = T3 Timer (500 ~ 1200)

e = T4 Timer (500 ~ 1200)

f = T5 Timer (500 ~ 1200)

g = T12 Timer (800 ~ 1500)

h = T13 Timer (800 ~ 1500)

I = T14 Timer (2000 ~ 3000)

j = T17 Timer (800 ~ 5000)

l = T22 Timer (180 ~ 360)

l = T23 Timer (180 ~ 360)

m = SLTM Timer (4 ~ 12)

Input CHG-MTP3-TIMER:BSC_ID=0, SLTM=10;

Output

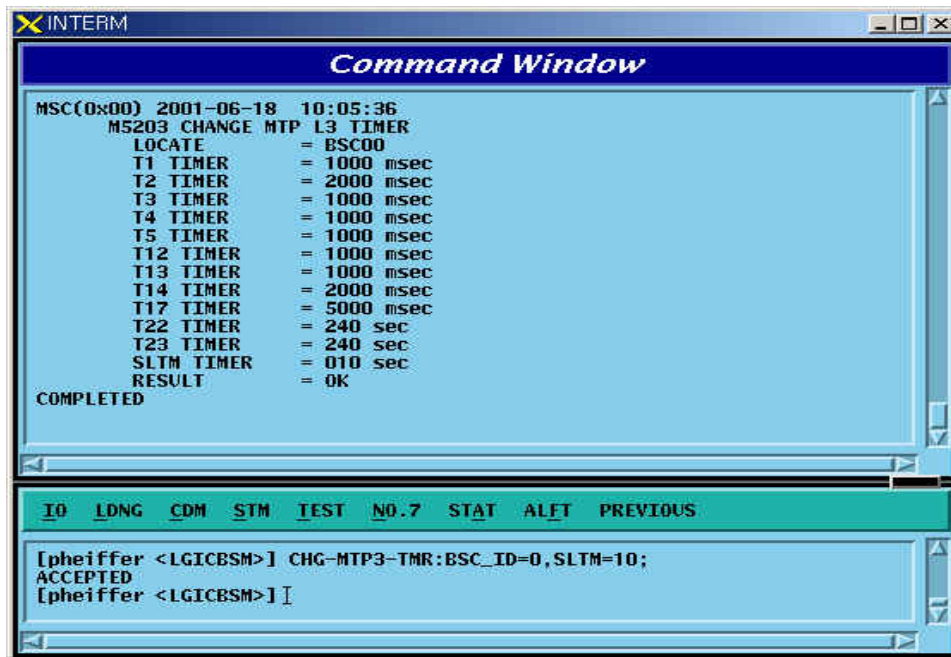


Fig. 4.6-27 MTP Level e 3 Timer Change

4.6.2.28. SCCP Timer Display

It changes Timer Value used for SCCP which is presently in operation.

Command CHG-SCCP-TMR:BSC_ID=a, T_CONNE_EST = b, T_IAS = c, T_IAR = d, T_REL = e, T_INT = f, T_STAT_INFO = g;

- a = BSC Number (00 ~ 11)
- b = T_CONNE_EST (20 ~ 120)
- c = T_IAS (300 ~ 600)
- d = T_IAR (660 ~ 1320)
- e = T_REL (1 ~ 20)
- f = T_INT (10 - 60)
- g = T_STAT_INFO (5 ~ 1200)

Input CHG-SCCP-TMR:BSC_ID=0, T_STAT_INFO=40;

Output

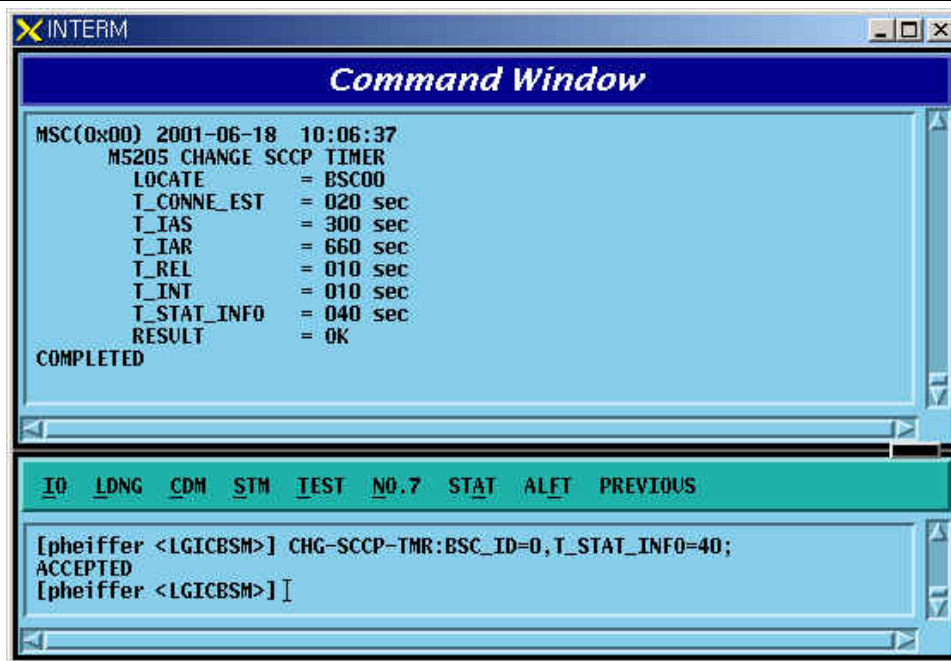


Fig. 4.6-28 SCCP Timer Change

4.6.3. Maintenance Function Command

4.6.3.1. Signaling Link Test

Signaling Link Test is performed while Signaling Link is in service when Signaling Link becomes activated or restored and is used to check if both ends of Signaling Link process messages correctly. The status of Signaling Link to be tested should be in the Activate Status.

Command TEST-SLK:BSC_ID=a, SLC =b;

a = BSC Number (0 ~ 11)

b = Signalling Link Code (0 ~ 15)

Input TEST-SLK:BSC_ID= 0, SLC = 1;

Output

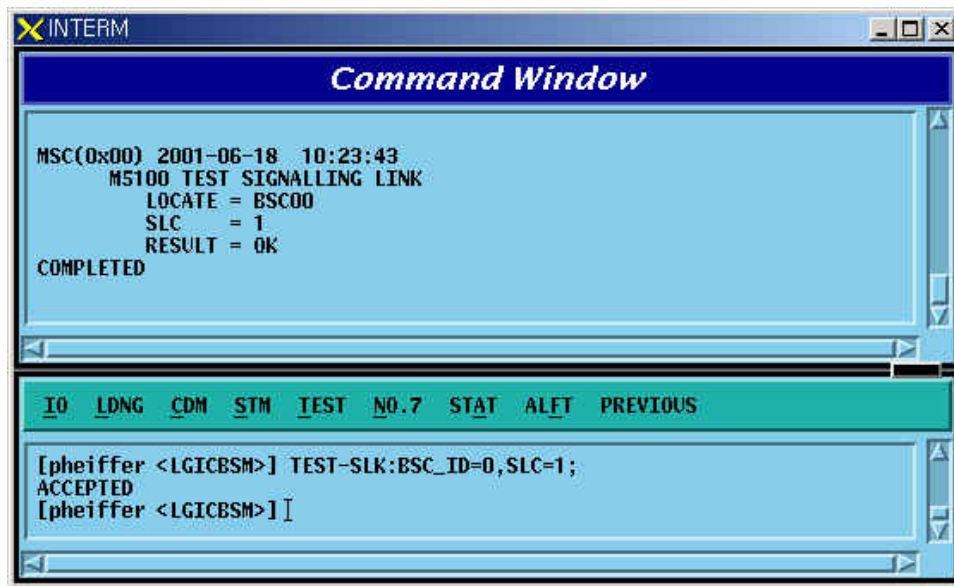


Fig. 4.6-29 Signaling Link Test

4.6.3.2. Signaling Terminal Test

Signaling Terminal Test consists of RA Loopback and SELF Loopback, and RA Loopback performs Loopback in Rate Adaptation function, performing an activation of Signaling Link. Depending upon the result, it performs inspection function on the Signaling Terminal and Lookback performs Lookback to STPA receiving terminal, providing inspection function of Status. A test should be successfully conducted to Signaling Terminal where corresponding Signaling Terminal is not allocated to Signaling Link before testing Signaling Terminal, so that normal test result can be reported.

Command TEST-ST:BSC_ID=a, STID =b, TYPE=c;

a = BSC Number (00 ~ 11)

b = Signalling Terminal (1 ~ 16)

c = TYPE (SELF, RA)

Input TEST-ST:BSC_ID = 1, STID =2, TYPE=SELF;

Output

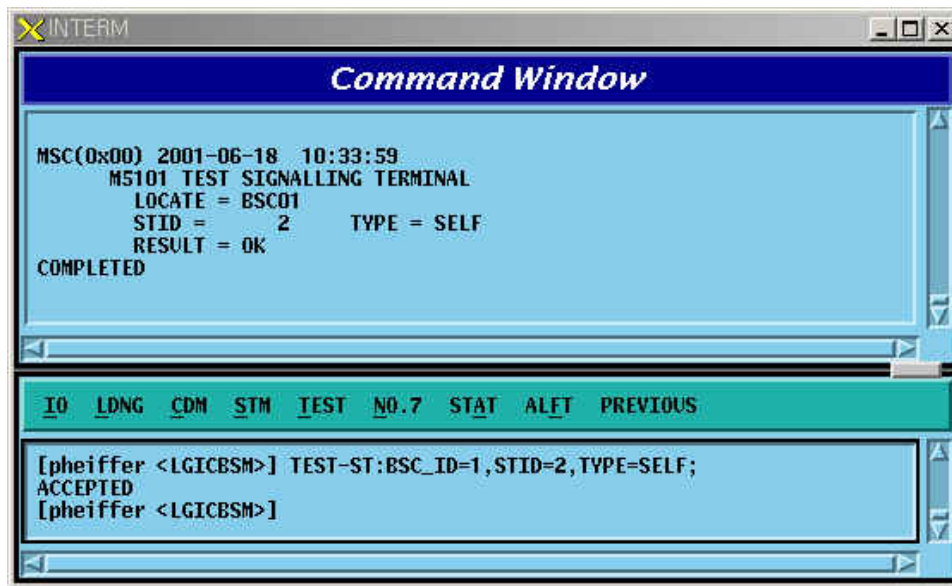


Fig. 4.6-30 Signaling Terminal Test

4.6.3.3. Test Cycle Display

Signaling Terminal Automatic Test is not a test on the request from the operator to Signaling Terminal allocated to Signaling Link, but the test is performed on Signaling Terminal by the Processor cyclically, which displays Test Cycle (default: 30sec) .

Command DIS-NO7-CYC:BSC_ID=a;

a = BSC Number (00 ~ 11)

Input DIS-NO7-CYC:BSC_ID = 0;

Output

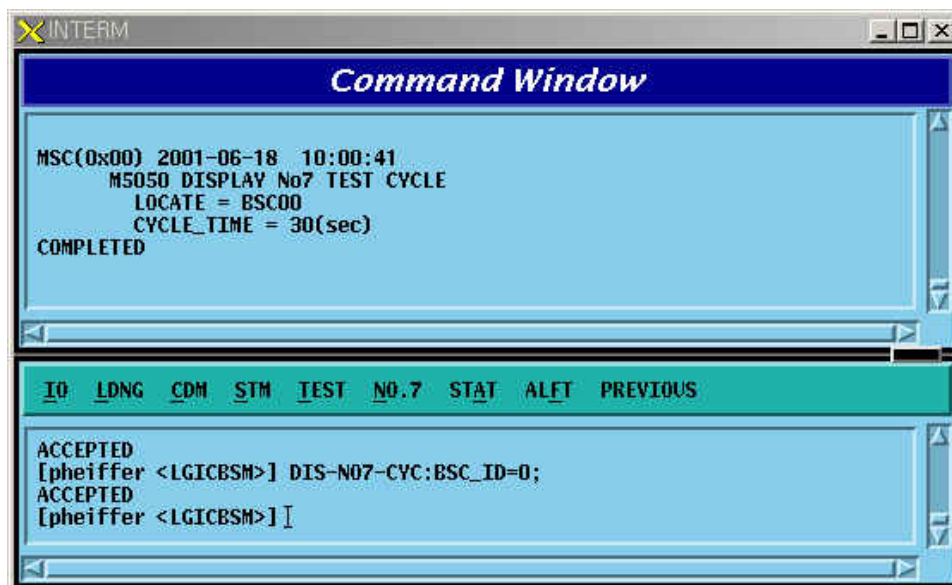


Fig. 4.6-31 Test Cycle Display

4.6.3.4. Test Cycle Change

It is used to change Test Cycle which is performed by Processor (SCP).

Command CHG- NO7-CYC:BSC_ID=a, CYC=b;

a = BSC Number (00 ~ 11)

b = Cycle (00 ~ 120)

Input CHG-NO7-CYC:BSC_ID=0, CYC=35;

Display

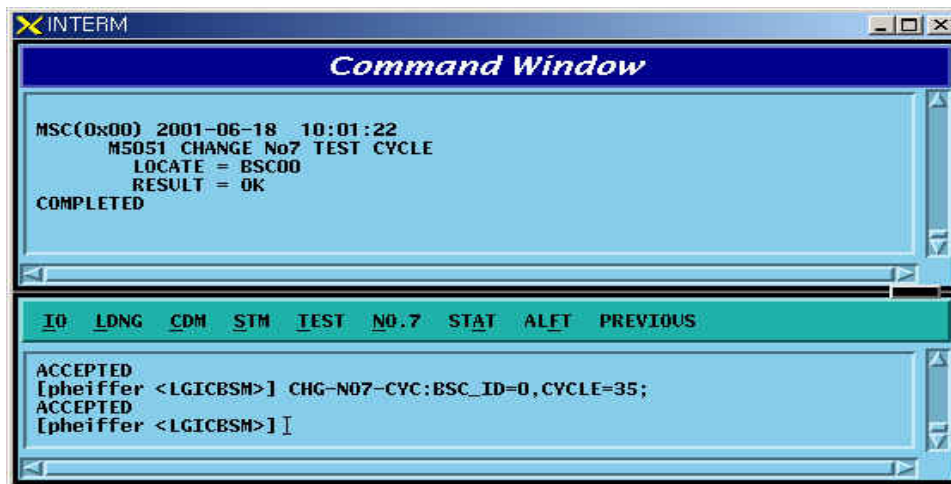


Fig. 4.6-32 Test Cycle Change

4.6.3.5. Inhibited Status Message Display

It displays Status Message that can be displayed at present.

Command DIS-INH-NO7;

Input DIS-INH-NO7;

Output

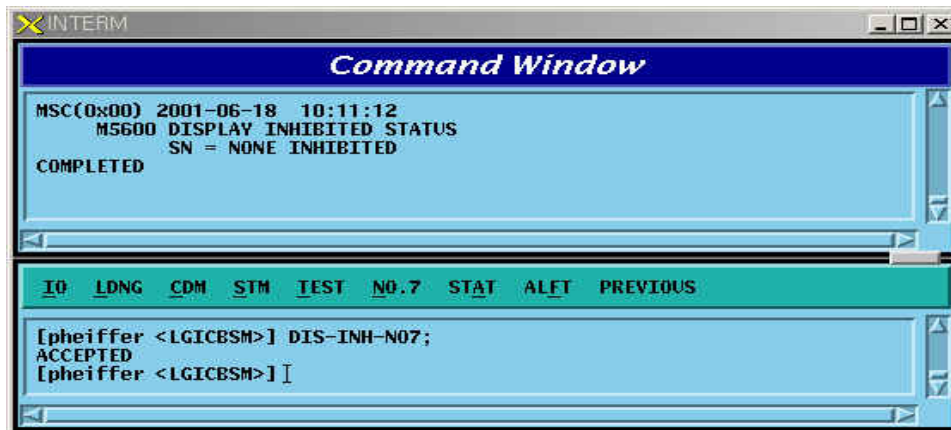


Fig. 4.6-33 Output possible Status Message Display

4.6.3.6. Status Message Display Allow

It allows to display Status Message on Outterm.

Command ALW-NO7-MSG:SN=a;

a = Status Number (ALL, S5000, S5001, S5010, S5011, S5012, S5013, S5020, S5021, S5022, S5023, S5024, S5025, S5026, S5027, S5028, S5030, S5031, S5032)

Input ALW-NO7-MSG:SN=S5000;

Output

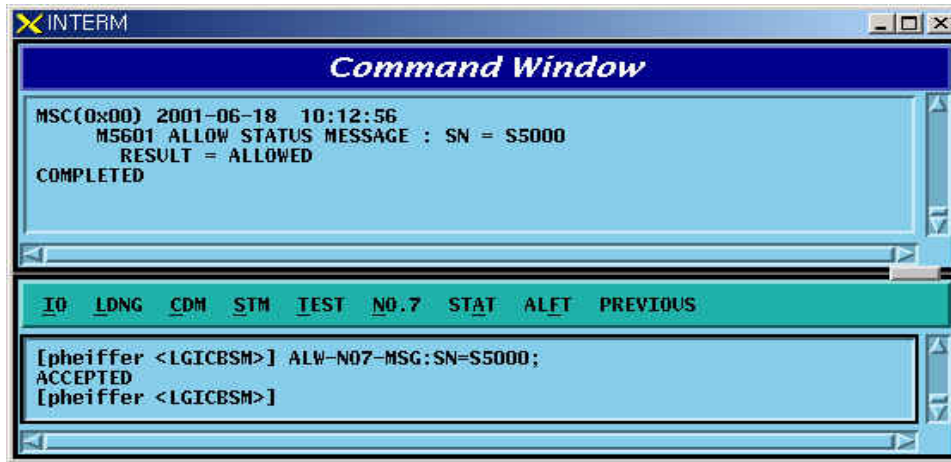


Fig. 4.6-34 Status Message Display Allowed

4.6.3.7. Status Message Display Inhibit

It inhibits to display Status Message on Outterm

Command INH-NO7-MSG:SN= a

a = Status Number (ALL, S5000, S5001, S5010, S5011, S5012, S5013, S5020, S5021, S5022, S5023, S5024, S5025, S5026, S5027, S5028, S5030, S5031, S5032)

Input INH-NO7-MSG:SN=S5000;

Output

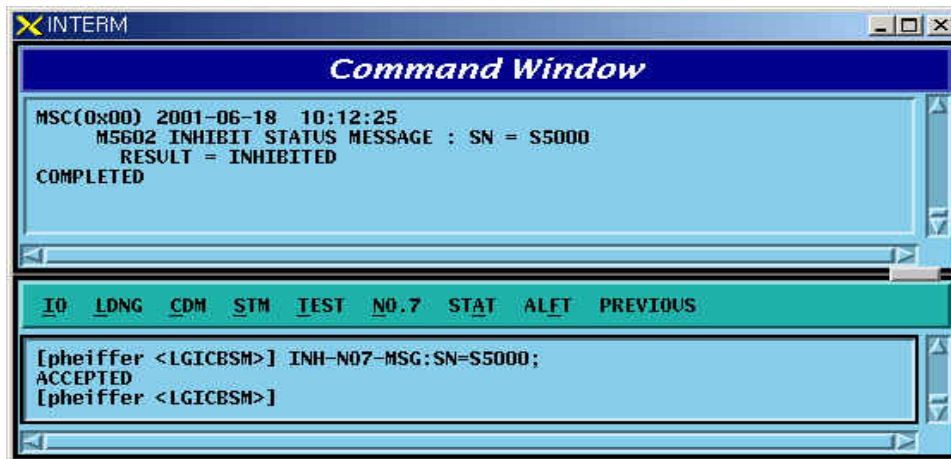


Fig. 4.6-35 Status Message Display Inhibit

4.7. Statistics Command

Apart from switching system, statistics Function in BSM measures performance and load and reports them to NMS(Network Management System), a center for self-reporting and network management. The function of statistics is divided logically into three. The first one is that On Demand statistics items that the user measures designated statistics item and BTS on the arbitrary time for the specific cycles.

And additionally to be included is Hourly Statistic that collects, without complying with the user's request, all the statistics always on time for reporting to NMS. Lastly, it is divided into On Line Statistics that collects and sends statistics every 5 minutes so that NMS can confirm on a real time basis. The following commands in series are mainly related to On Demand Statistics, and Hourly Statistics function was configured, in consideration of BMS performance to display on request only from user.

On Demand Statistics function is used only when the user wants to check performance related data with specific BSC or BTS. For Hourly Statistics function, once statistics report is requested to CCP, BSP, PCP, NCP and CNP that are major processors at every fixed time, all kinds of statistics collected are gathered at the corresponding processor and transferred. Section between BSM and BSS are connected to STM-1, but because the volumes of the collected statistics are so huge that they are executed for 15 minutes.

That is, the report of statistics data to NMS is made at 15 minutes after the every hour. BSM becomes to keep hourly statistics data. Storages are made on an hourly basis for a week and are stored in binary in PKG/DATA/STAT/HOURLY. Reports to NMS are made by the reporting method of ASCII and the method providing Binary and Library at the user's request.

Table 4.7-1 Statistics Command List

Division	Content	Statistics Commands
Traffic Related	Traffic	STAT-TRAF:DIR=a,OPTION=b,BSC=c,BTS=d [,MPRD=e, MTIM=f];
	Hourly Traffic	DIS-HLY-TRAF:HOUR=a,OPTION=b,BSC=c,BTS=d;
	Daily Traffic	DIS-DLY-TRAF:WEEK=a,HOUR=b,OPTION=c,BSC=d,BTS=e;
Hand off Related	Hand off (all)	STAT-HOFF:BSC=a,BTS=b[,MPRD=c, MTIM=d];
	Softer Handoff	STAT-HOFF-SOFTER:BSC=a[,BTS=b,MPRD=c, MTIM=d];

	Soft Handoff	STAT-HOFF-SOFT:BSC=a[,BTS=b,MPRD=c, MTIM=d];
	Hard Handoff	STAT-HOFF-HARD:BSC=a[,BTS=b,MPRD=c, MTIM=d];
Call Related	Channel Element	STAT-CE:BSC=a[,BTS=b,MPRD=c, MTIM=d];
	Vocoder	STAT-VOC:BSC=a,VMP=b[,VCP=c,MPRD=d, MTIM=e];
	Network	STAT- NET:CAN=a,BSC=b[,BTS=c,ITEM=d,MPRD=d,MTIM=e];
	Radio Channel	STAT-CH:BSC=a[,BTS=b,MPRD=c,MTIM=e];
	Processor	STAT-PRC:CAN=a,BSC=b[,BTS=c,MPRD=d,MTIM=e];
	Selector	STAT-SLT:BSC=a,SMP=b[,SLP=c,MPRD=d,MTIM=e];
	BTS Performance	STAT-PERF:BSC=a[,BTS=b,MPRD=c,MTIM=d];
	Paging	STAT-PAGE:BSC=a[,BTS=b,MPRD=c,MTIM=d];
	CAI Signaling	STAT-CAI:ITEM=a,BSC=b[,BTS=c,MPRD=d, MTIM=e];
	N07	STAT-N07:ITEM=a,SCP=b[,MPRD=c,MTIM=d];
	Round Trip Delay	STAT-RTD:BSC=a,BTS=b[,MPRD=c,MTIM=d];
	RF Min/Max	STAT-RF:BSC=a,BTS=b,ITEM=c[,MPRD=d,MTIM=e];
	Packet Related	Packet Data
Packet Control		STAT-PKC:PCP=a[,MPRD=b, MTIM=c];
Packet Handoff		STAT-PCP:PCP=a[,MPRD=b, MTIM=c];
Others	Statistic List	DIS-STAT-ITEM;
	Statistics Job	DIS-STAT-JOB;
	Statistics Stop	CAN-STAT:[BSC=a,]JOB=b;
	Hourly Statistic Display	DIS-HLY-DATA:HOURL=a,ITEM=b,BSC=c[,BTS=d];
	Daily Statistics Display	DIS-DLY-DATA:WEEK=a,HOURL=b,ITEM=c,BSC=d[,BTS=e];
	Online Cycle Change	CHG=ONLINE-MPRD[:MPRD=a];

Display of Hourly/Daily Statistics for the same item of statistics is identical to On Demand Statistics. It is not related to Processor or Device that measures and reports statistics, but is related only to equip of PLD.

This function of statistics is consisted of 5 Categories to include Traffic, Handoff, Call related, Packet related and others, and in the window of user's command the following is displayed.

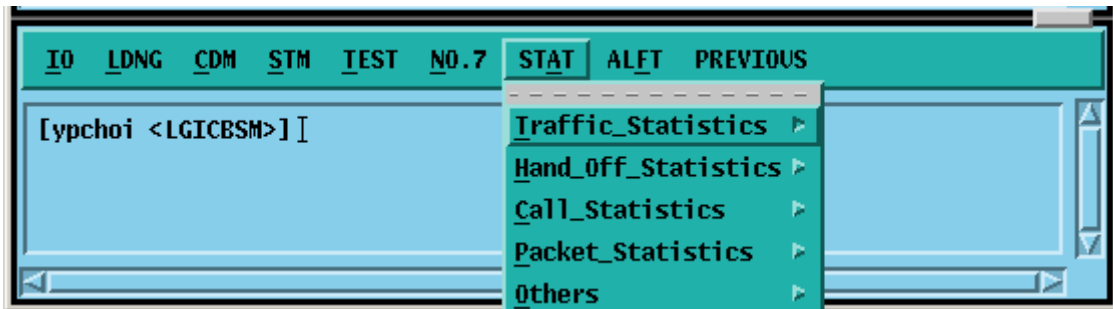


Fig. 4.7-1 Configuration of Statistics Command

4.7.1. Traffic related Statistics Command

Traffic Statistics is differentiated as follows:

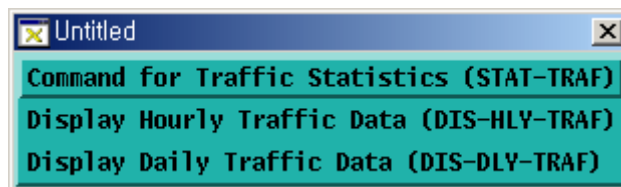


Fig. 4.7-2 Traffic Statistics Function

4.7.1.1. Traffic Statistics by Service Option

This is a function which for originating call and terminating call, reports and displays the number of attempt by service option, number of success, number of failure and the collected content by reason of a failure by CCP to BSM, and for Statistics Data, collection is made by the separated each item of Service Option/Direction/BSC/BTS/FA/SECTOR..

- Command : STAT-TRAF:DIR=a,OPTION=b,BSC=c,BTS=d[,MPRD=e,MTIM=f];
 - a : DIR :
 - ALL – Measuring all of originating calls and terminating calls
 - ORG – Measuring originating only
 - TRM – Measuring terminating call only
 - b: OPTION :

VOICE	8K voice
VARL_VOICE	8K EVRC
ASYNC	Asynchronous Data(9.6 kbps)
G3FAX	Group 3 FAX(9.6 Kbps)
SMS	Short Message Service

PPP_PKT	Packet Data
ASYNC_13K	Asynchronous Data(14.4 kbps)
G3FAX_13K	Group 3 FAX(14.4 kbps)
SMS_13K	Short Message(Rate Set 2)
PPP_PKT_13K	Packet Data 13kbps
VOICE_13K	13K voice (IS-96)
PKT_TYPE1_22	High Speed Packet Data Services
PKT_TYPE2_25	High Speed Packet Data Services
PACKET_144K	144kbps Packet Data

c: BSC : BSC number (0 ~ 11)

d: BTS : BTS number (0 ~ 47)

e: MPRD : Cycle (min) (default : 30min)

f : MTIM : Repeat frequency(default : 4times)

- Display result

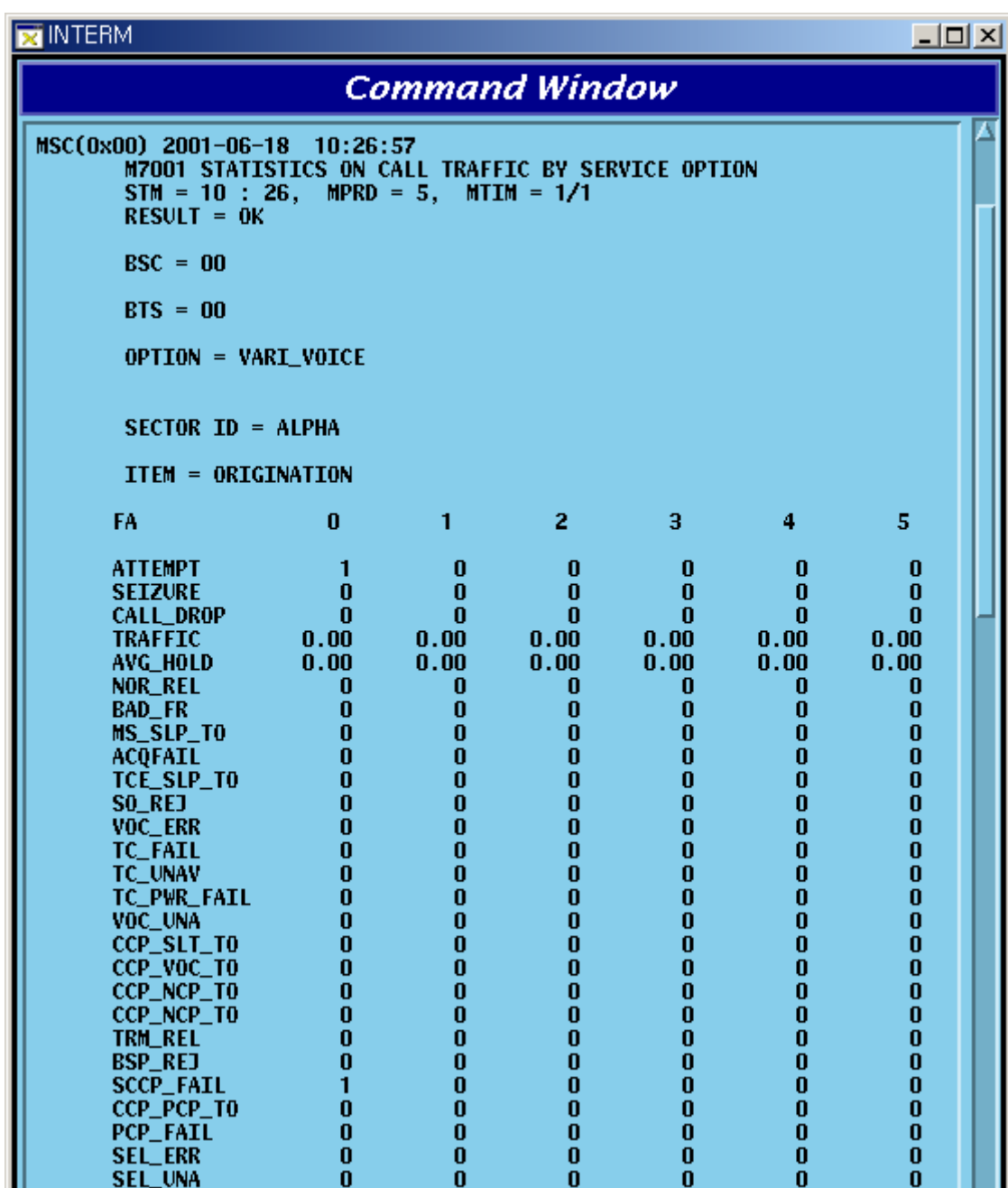


Fig. 4.7-3 Traffic Statistics Data Display Result

(*) Reference to Appendix for description of each item in the above Fig..

4.7.1.2. Hourly Traffic Statistic DISPLAY

Function that inquires about the traffic statistics collected on hourly basis by BSC, BTS and service option by every hour.

- Command : DIS-HLY-TRAF:HOURLY=a, OPTION=b, BSC=c, BTS=d;
 - a: HOUR : Time
 - b: OPTION : Service option
 - c: BSC : BSC number
 - d : BTS : BTS number

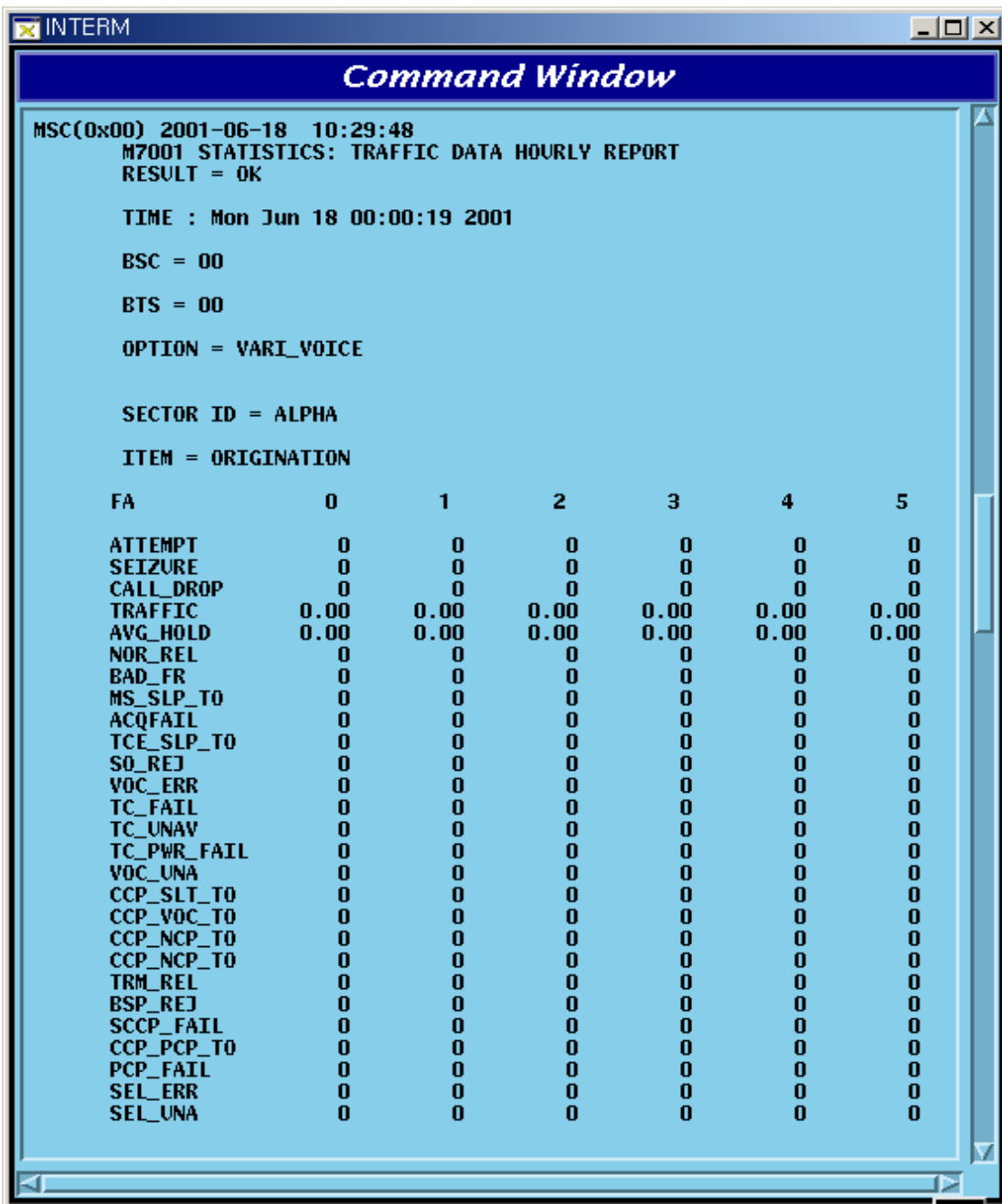


Fig. 4.7-4 Hourly Traffic Statistics Display Result

(*)Reference made to Annex for description of each item in the above Figure

4.7.1.3. Daily Traffic Statistic DISPLAY

Function that inquires about the Hourly Traffic Statistics collected in a week by BSC by hour, by BTS and by service option.

- Command : DIS-DLY-TRAF:WEEK=a,HOUR=b, OPTION=c, BSC=d, BTS=e;
 - a. WEEK : Day of the Week (MON/TUE/WED/THU/FRI/SAT/SUN)
 - b: HOUR : Time (24hour system)
 - c: OPTION : Service Option
 - d: BSC : BSC number (0 ~ 11)
 - e : BTS : BTS number (0 ~ 47)
- Display : Result is same as the content of 4.6.1.2.

4.7.2. Handoff Related Statistics Function

Handoff Statistics function appears as follows:.

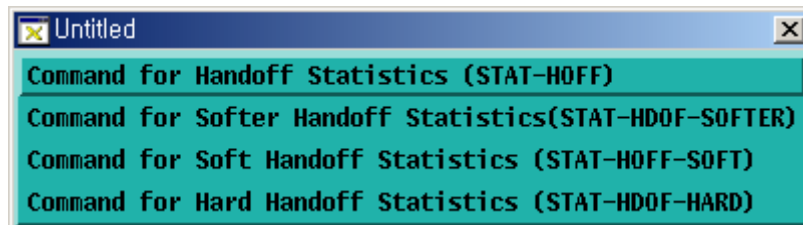


Fig. 4.7-5 Handoff related Statistics Function

4.7.2.1. Handoff Statistics

Function that CCP conducts measurement of Handoffs generated in each BSC in reference to the kind of Handoff(softer, soft, hard) and its direction and then reports to BSM. Handoffs are divided into the kinds as follows:

Softer Handoff

Softer Handoff generated between sectors in the same BTS

Soft Hand off

- Intra BTS soft Handoff : Soft Handoff generated between sectors in the same Base

Station

- Intra BSC Soft Handoff : Soft Handoff generated between the same BSCs
- Inter MSC Soft Handoff : Soft Handoff generated between other BSCs

Hard Hand off

- Intra Cell Hard Handoff : Hard Handoff generated by frequency change in the same BTS

- Intra BSC FR Hard Handoff : Hard Handoff generated by frequency change between BTSs of the same BSC

- Intra BSC FO Hard Handoff : Hard Handoff generated by Frame offset between BTSs of the same BSC

- Inter BSC FR Hard Handoff : Hard Handoff by frequency change generated between BTSs of other BSCs

- Inter BSC FO Hard Handoff : Hard Handoff by the change of Frame offset generated between BTSs of other BSCs

- Hard Hand off between RCs : Handoff generated between RCs

- Command : STAT-HOFFF:BSC=a, BTS=b[,MPRD=c,MTIM=d];

a : BSC : BSC number (0 ~ 11)

b : BTS : BTS number (0 ~ 47)

c : Cycle(minute) : Default 30min

d : Repetition Frequency : Default 4 times

- Display :

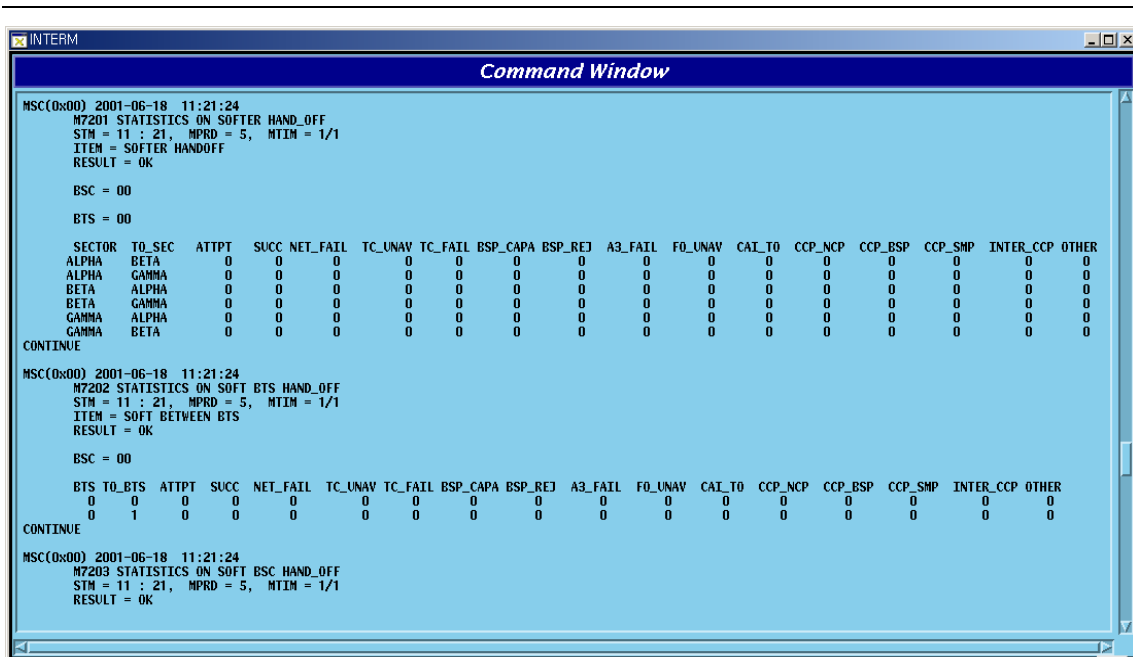


Fig. 4.7-6 Handoff Statistics

(*)This Command(STAT-HOFF) displays all kinds of Handoff. Refer to Appendix for each item.

4.7.2.2. Softer Handoff Statistics

It collects by collected item (refer to Appendix) the soft Handoff generated between sectors in the same BTS and displays.

- Command : STAT-HOFF-SOFTER:BSC=a, BTS=b[,MPRD=d, MTIM=d];
 - a : BSC : BSC number (0 ~ 11)
 - b : BTS : BTS number (0 ~ 47)
 - c : MPRD : Cycle(min) : Default 30min
 - d : MTIM : Repetition number : Default 4times
- Display

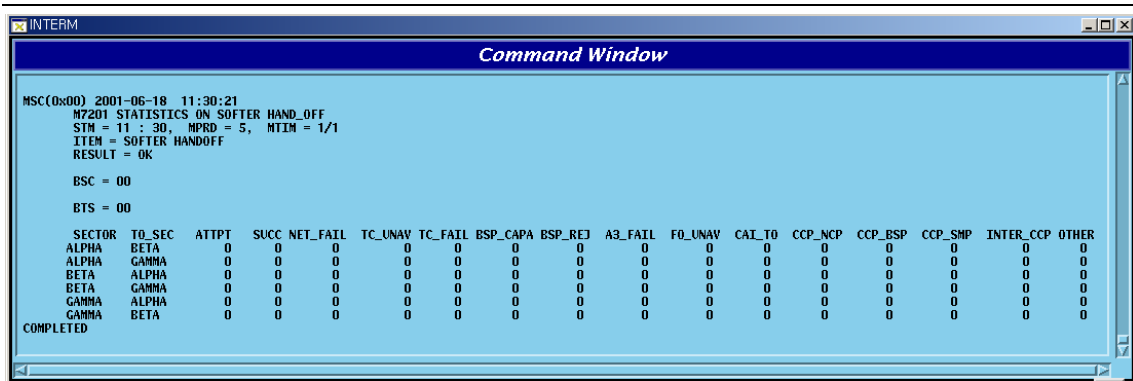


Fig. 4.7-7 Softer Handoff Statistics Display

(*)Refer to Appendix for each item described above.

4.7.2.3. Soft Handoff Statistics

It measures for display the soft Handoff generated between sectors of the same BTS, in the internal part of the same BSC, or in other BSC.

- Command : STAT-HOFF-SOFT:BSC=a[,BTS=b, MPRD=c, MTIM=d];
 - a : BSC : BSC number (0 ~ 11)
 - b : BTS : BTS number (0 ~ 47)
 - c : Cycle(min) : Default 30min
 - d : Repetition Frequency : Default 4times

- Display

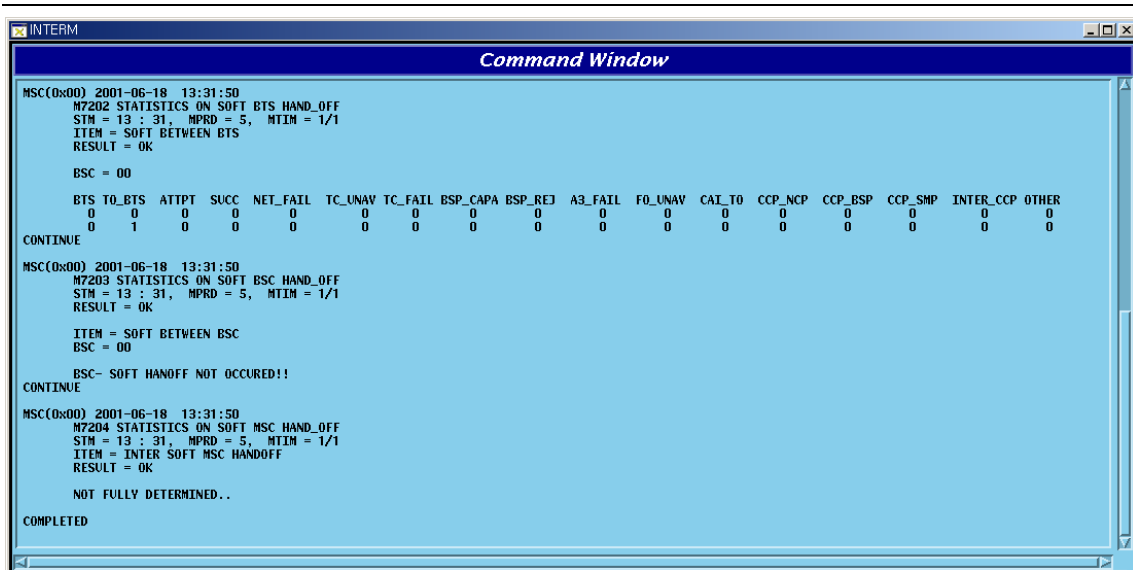


Fig. 4.7-8 Soft Handoff Display Result

(*) Refer to Appendix for description of the items above.

4.7.2.4. Hard Handoff Statistics

It is statistics to be measured in CCP for Hard Handoff between BSCs, such as Handoff followed by frequency change between the same BTSs and Handoff generated in the same BSC, and Hard Handoff generated between RCs.

- Command : STAT-HOFF-HARD:BSC=a,BTS=b[,MPRD=c,MTIM=d];
 - a : BSC : BSC (0 ~ 11)
 - b : BTS : BTS (0 ~ 47)
 - c : MPRD : Cycle(min) : Default 30min
 - d : MTIM : Number of Frequency : Default 4times

```

INTERM
Command Window

MSC(0x00) 2001-06-18 13:42:38
M7205 STATISTICS ON HARD BTS HAND_OFF
STM = 13 : 42, MPRD = 5, NTIM = 1/1
ITEM = HARD HANDOFF
RESULT = OK

BSC = 00

INTRA CELL HARD HANDOFF
BTS SECTOR  ATTPT  SUCC  NET_FAIL  TC_UNAV  TC_FAIL  BSP_CAPA  BSP_REJ  A3_FAIL  FO_UNAV  CAI_TO  CCP_NCP  CCP_BSP  CCP_SMP  INTER_CCP  OTHER
0 ALPHA      0      0      0          0          0          0          0          0          0          0          0          0          0          0          0
0 BETA      0      0      0          0          0          0          0          0          0          0          0          0          0          0          0
0 GAMMA     0      0      0          0          0          0          0          0          0          0          0          0          0          0          0

INTRA BTS  FO HARD HANDOFF
BTS  TO_BTS  ATTPT  SUCC  NET_FAIL  TC_UNAV  TC_FAIL  BSP_CAPA  BSP_REJ  A3_FAIL  FO_UNAV  CAI_TO  CCP_NCP  CCP_BSP  CCP_SMP  INTER_CCP  OTHER
0    1      0      0      0          0          0          0          0          0          0          0          0          0          0          0

INTRA BTS  FR HARD HANDOFF
BTS  TO_BTS  ATTPT  SUCC  NET_FAIL  TC_UNAV  TC_FAIL  BSP_CAPA  BSP_REJ  A3_FAIL  FO_UNAV  CAI_TO  CCP_NCP  CCP_BSP  CCP_SMP  INTER_CCP  OTHER
0    1      0      0      0          0          0          0          0          0          0          0          0          0          0          0

CONTINUE

MSC(0x00) 2001-06-18 13:42:38
M7206 STATISTICS ON HARD BSC HAND_OFF
STM = 13 : 42, MPRD = 5, NTIM = 1/1
ITEM = HARD HANDOFF BETWEEN BSC
RESULT = OK

BSC = 00

INTER BSC FR HARD HANDOFF

BSC-HARD FO HANOFF NOT OCCURED!!

INTER BSC FO HARD HANDOFF

BSC-HARD FR HANOFF NOT OCCURED!!

CONTINUE

MSC(0x00) 2001-06-18 13:42:38
M7207 STATISTICS ON HARD MSC HAND_OFF
STM = 13 : 42, MPRD = 5, NTIM = 1/1
ITEM = HARD HANDOFF BETWEEN MSC
RESULT = OK

BSC = 00

NOT FULLY DETERMINED..

CONTINUE

MSC(0x00) 2001-06-18 13:42:38
M7208 STATISTICS ON HARD RC HAND_OFF
STM = 13 : 42, MPRD = 5, NTIM = 1/1
ITEM = RC HARD HANDOFF
RESULT = OK

BSC = 00

RC-HANDOFF NOT OCCURED!!

COMPLETED
    
```

Fig. 4.7-9 Hard Handoff Statistics Display

(*Refer to Appendix for description of the each item described above.

4.7.3. Call Related Statistics Function

Statistics function related to call is as followed.

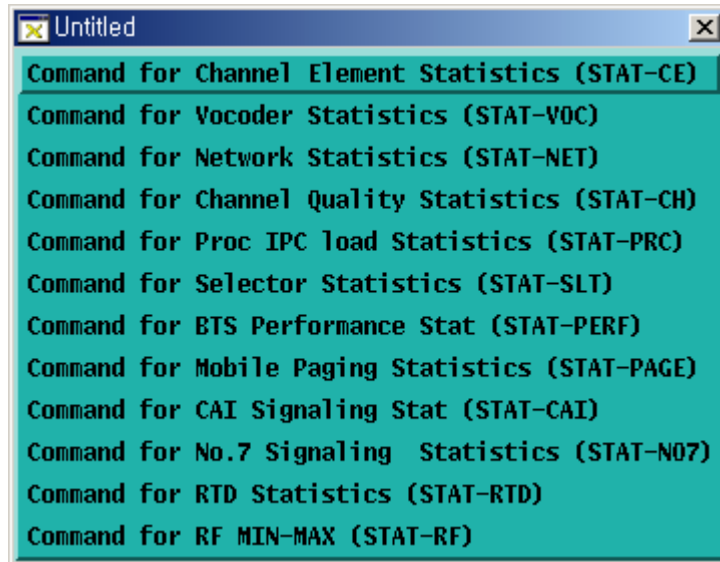


Fig. 4.7-10 Statistics Function Related to Call

4.7.3.1. Channel Element Statistics Function

The system reports the used counts that the traffic channel is occupied by the traffic element for the call to the BSM by BSP and channel card.

- Command : STAT-CE:BSC=a[,BTS=b,MPRD=c,MTIM=d];
a : BSC : BSC number (0 ~ 11)
b : BTS : BTS number (0 ~ 47)
c : MPRD : Cycle(min) : Default 30min
d : MTIM : Repeat Count : Default 4times
- Display.

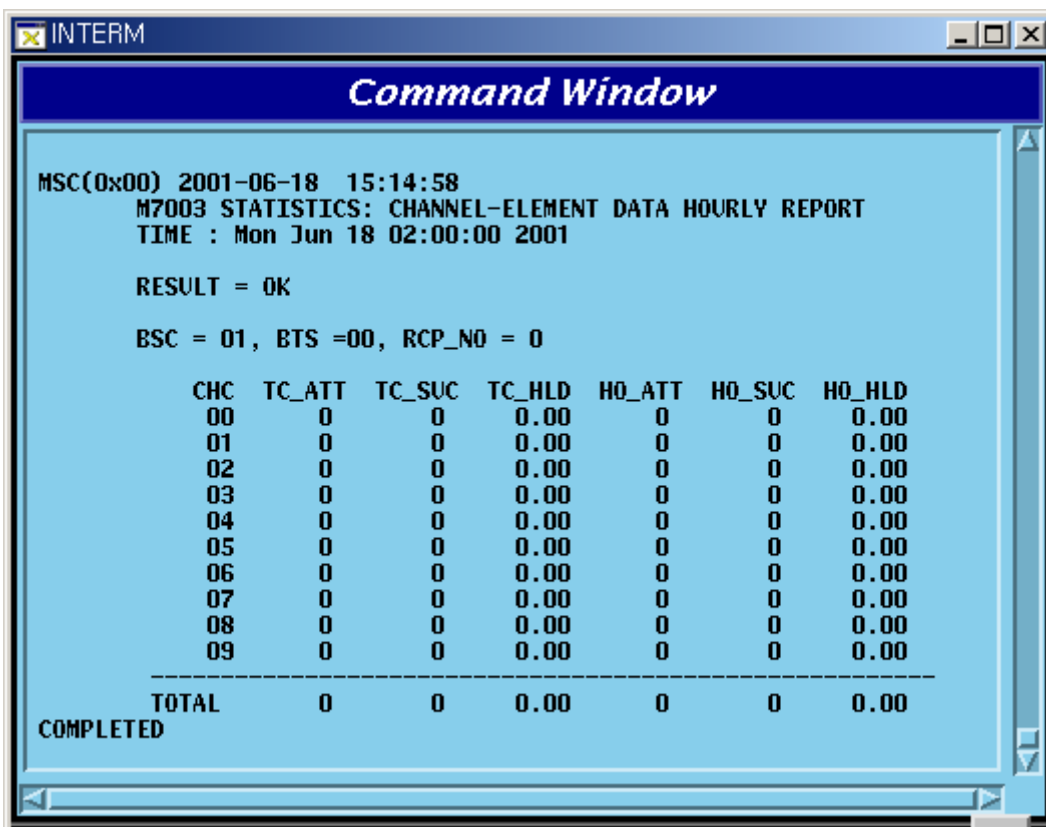


Fig. 4.7-11 Channel Statistics Function

(*)Refer to the appendix for the description of each items in the figure above.

4.7.3.2. Vocoder Statistics Function

It is the function that measures and reports the occupancy count and time to vocoder which decodes/encodes voice corresponded to channel element by 1:1. The data is collected in VCP by VCE.

- Command : STAT-VOC:BSC=a,VMP=b[,VCP=c,MPRd=d,MTIM=e];
 - a : BSC : BSC number (0 ~ 11)
 - b : BTS : BTS number (0 ~ 47)
 - c : VMP : Vocoder Master Processor number(0 ~ 7)
 - d : VCP : VCP number (0 ~ 15)
 - e : MPRD : Cycle(min) : Default 30min
 - f : MTIM : Repeat Count : Default 4times
- Display

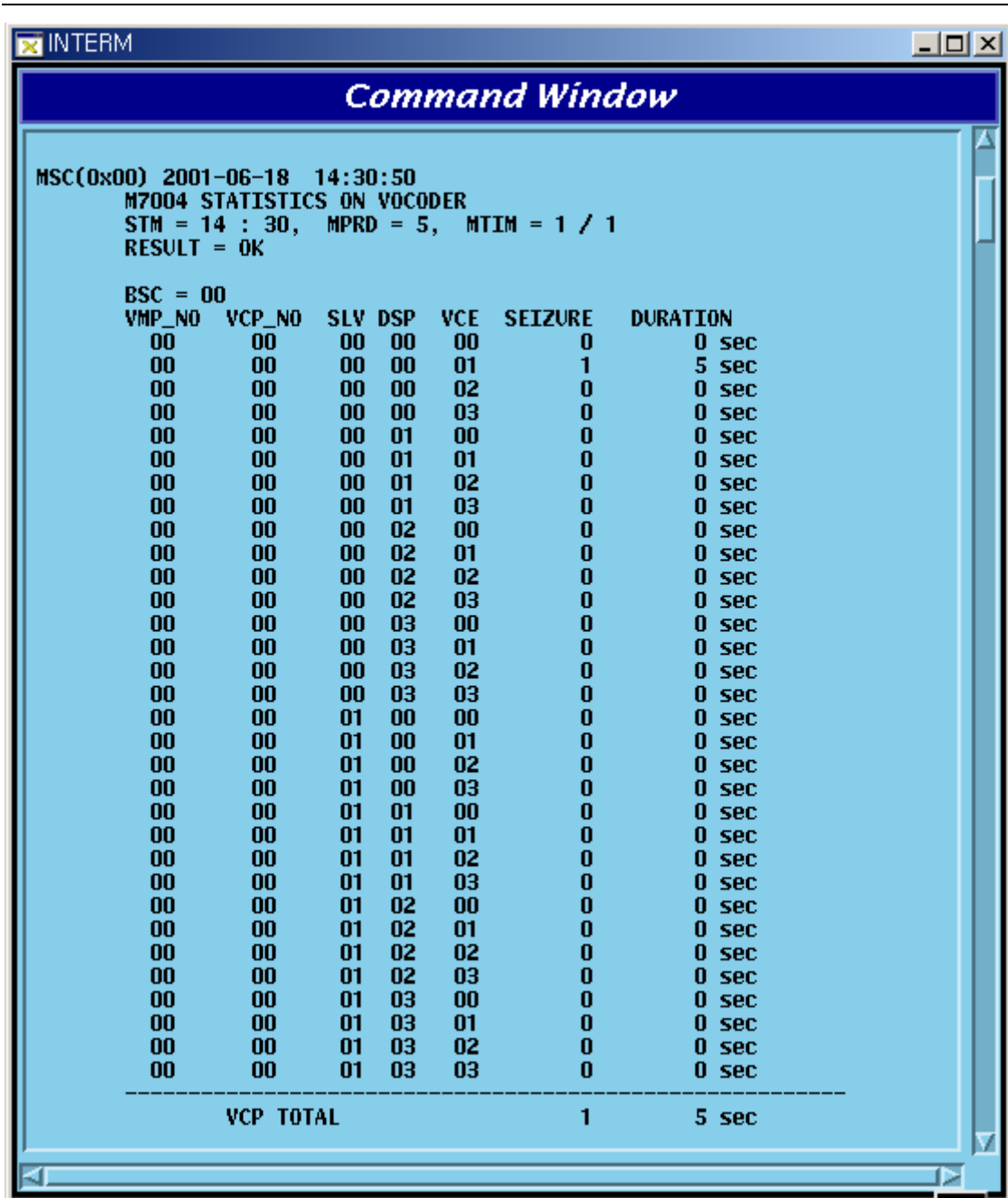


Fig. 4.7-12 Vocoder Statistics Output

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.3. Network Statistics Function

VLIA measures and reports the use rate and error rate of T1 (or E1)'s trunk between BSC and the switching system. ASIA and ASCA collect and report the port statistics between BSC and CAN. LICA and ALPA are the function collecting link statistics to

report between BSC and BTS.

- Command : STAT-NET:CAN=a,BSC=b[,BTS=c,ITEM=d,MPRD=e,MTIM=f];
 - a : CAN : the participation matter of the CAN equipment processor
 - b : BSC : BSC number (0 ~ 11)
 - c : BTS : BTS number (0 ~ 47)
 - d : ITEM : Trunk(BSC↔Switching system) / Link(BSC↔BTS) / Port(BSC↔CAN)
 - e : MPRD : Cycle(min) : Default 30min
 - d : MTIM : Repeat Count : Default 4times
- Display Results

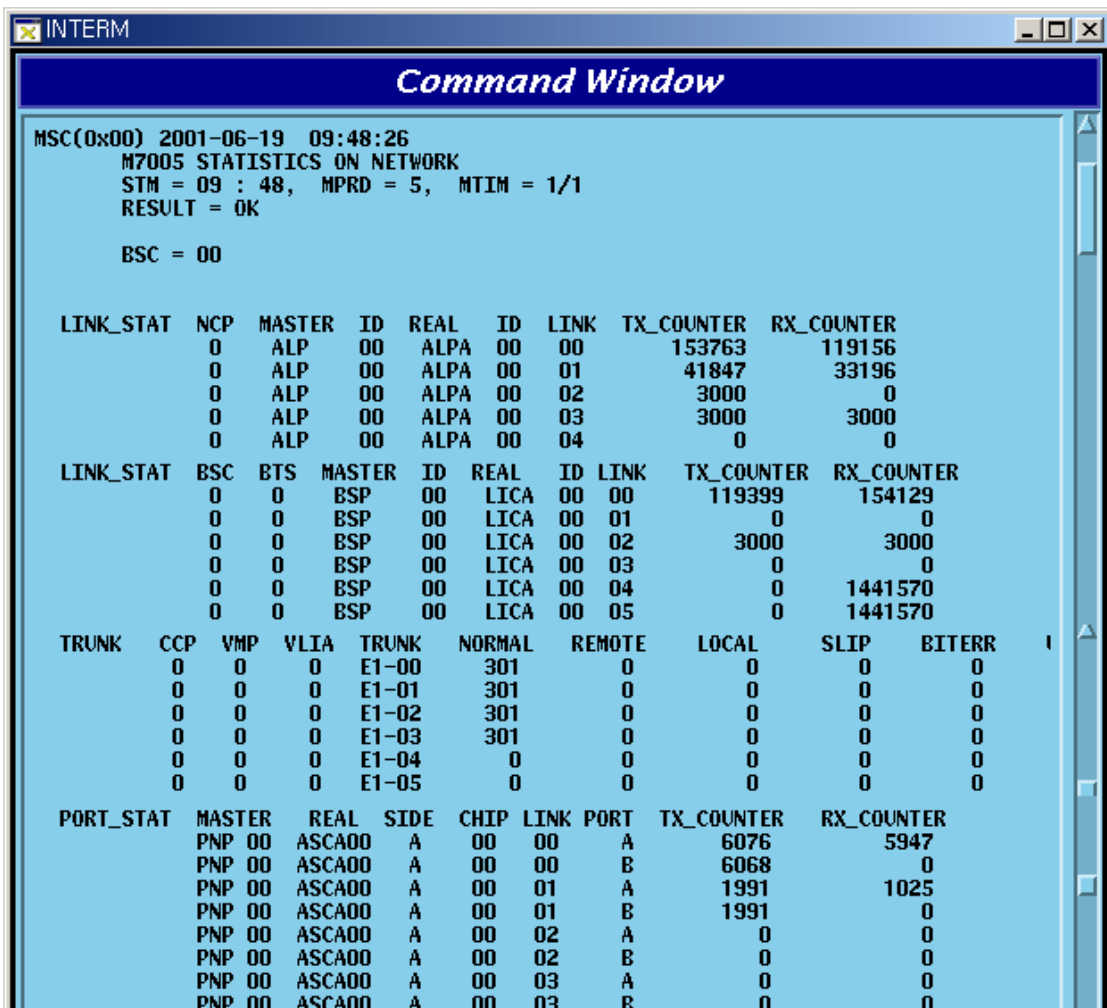


Fig. 4.7-13 Network Statistics Output Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.4. Radio Channel Quality Statistics Function

This function measures (Channel Element) and reports error rate and other things on radio channel between mobile subscriber and BTS.

- Command : STAT-CH:BSC=a[,BTS=b,MPRD=c,MTIM=d];
 - a : BSC : BSC number (0 ~ 11)
 - b : BTS : BTS number (0 ~ 47)
 - c : MPRD : Cycle(min) : Default 30min
 - d : Measuring Count : Default 4times
- Display Results

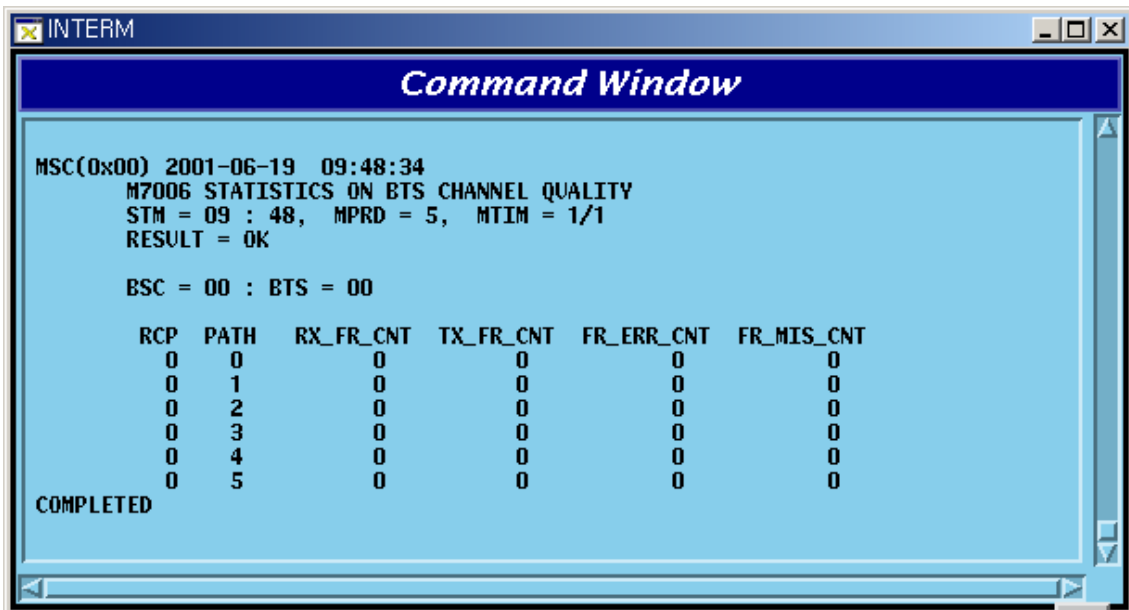


Fig. 4.7-14 Radio Channel Statistics Output Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.5. Processor Statistics Function

This is the function that each processor measures CPU and IPC load of each main processor at a given time to report to the BSM.

- Command : STAT-PRC:CAN=a,BSC=b[,BTS=c,MPRD=d,MTIM=e];
 - a : CAN : CAN equipment processor inclusion matter
 - b : BSC : BSC number (0 ~ 11)
 - c : BTS : BTS number (0 ~ 47)
 - d : MPRD : Cycle(min) : Default 30min

e : MTIM : Repeat Count : Default 4times

- Display Results

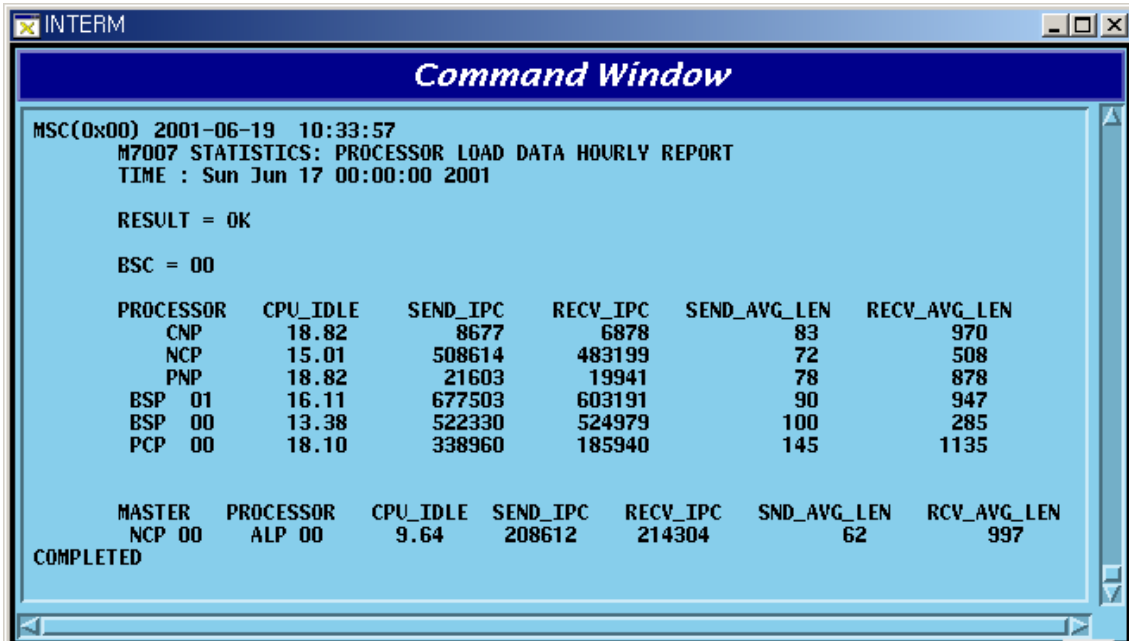


Fig. 4.7-15 Processor Statistics Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.6. Selector Statistics Function

It is the statistics function that measures the occupying call, time, speed and bad frame counts of the selector.

- Commands : STAT-SLT:BSC=a,SMP=b[,SLP=c,MPRD=d,MTIM=e];
 - a : BSC : BSC number (0 ~ 11)
 - b : SMP : Selector Master Processor number (0 ~ 4)
 - c : SLP : Selector Processor number (0 ~ 19)
 - d : MPRD : Cycle(min) : Default 30min
 - e : MTIM : Count : Default 4times
- Display Results

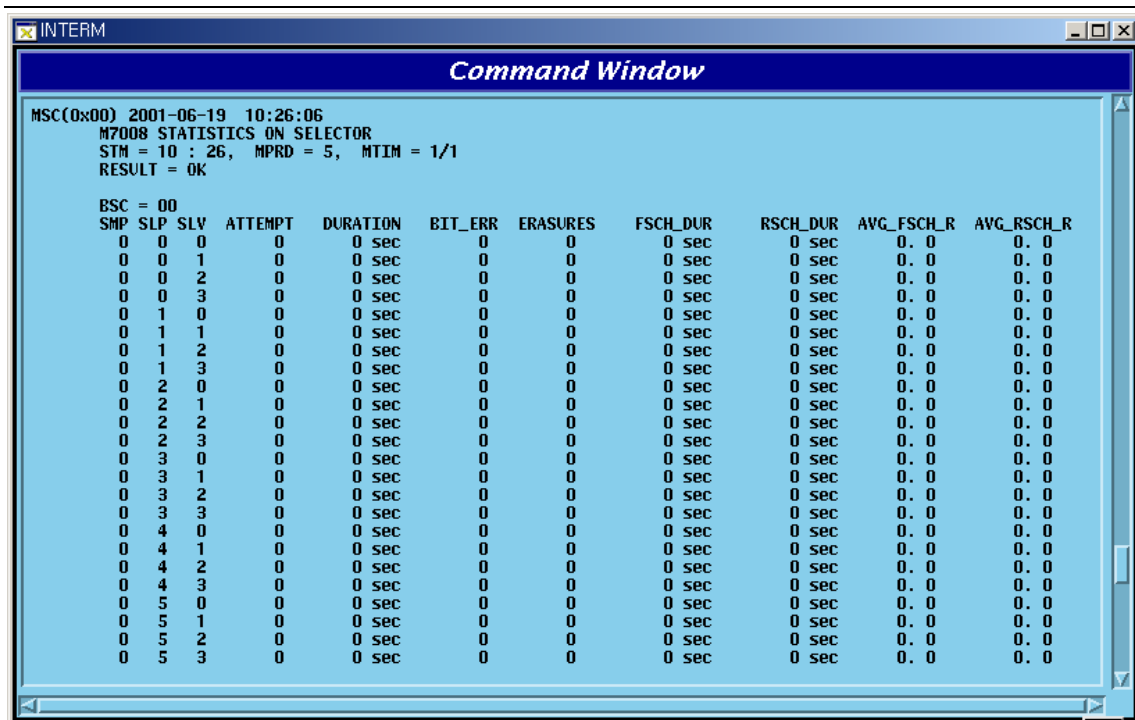


Fig. 4.7-16 Selector Statistics Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.7. Performance (Call Delay) Statistics Function

This is the function of BSP that measures and reports the setup delay (Time to Traffic, Channel Assign) of originating/terminating signal to mobile subscribers.

- Command : STAT-PERF:ITEM=a, BSC=b[,BTS=c,MPRD=d,MTIM=e];
 - a : ITEM : ALL-Measure originating and terminating,
 - ORG – Originating,
 - TRM- Terminating
 - b : BSC : BSC number (0 ~ 11)
 - c : BTS : BTS number (0 ~ 47)
 - d : MPRD : Cycle(min) : Default 30min
 - e : MTIM : Repeat Count : Default 4times
- Display Results

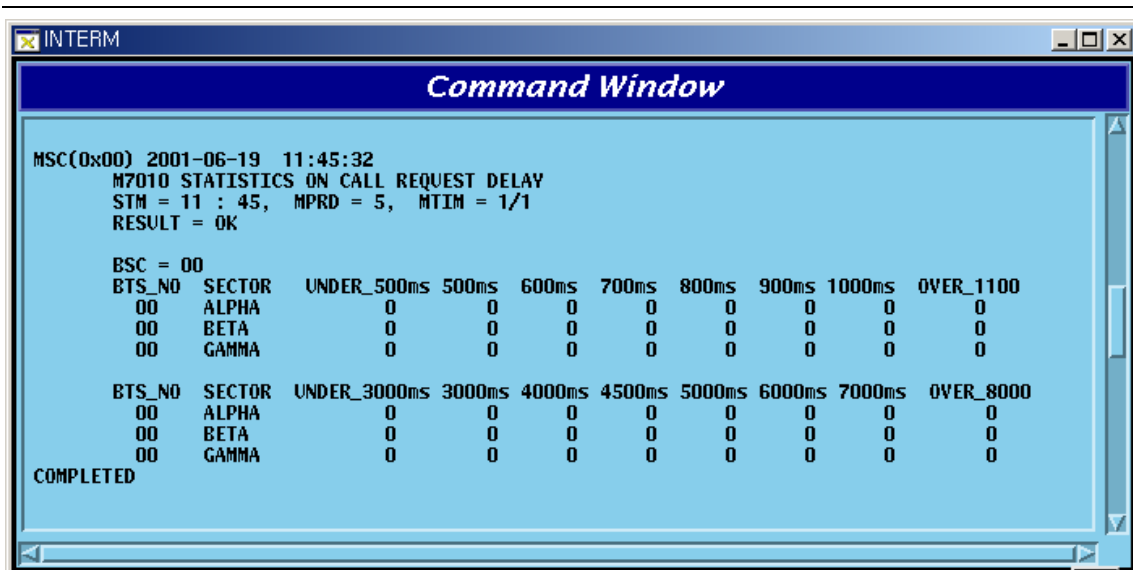


Fig. 4.7-17 Call Delay Performance Statistics Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.8. Paging Statistics Function

This is the function of BSP to measure and report the attempt, success and failure counts of paging to the mobile subscriber.

- Command : STAT-PAGE:BSC=a[,BTS=b, MPRD=c, MTIM=d];
 - a: BSC : BSC number(0 ~ 11)
 - b: BTS : BTS number(0 ~ 47)
 - c: MPRD : Cycle(min) : Default 30min
 - d: MTIM : Repeat Count : Default 4times

- Display Results

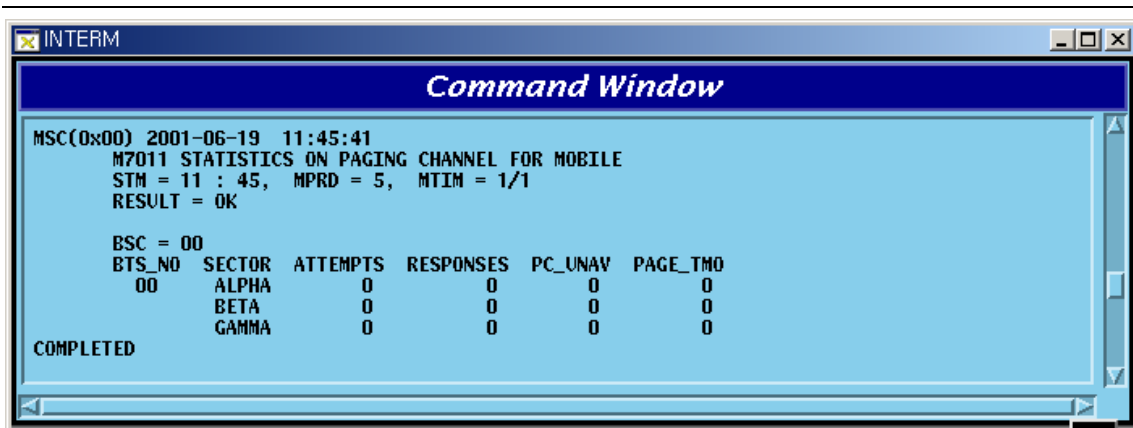


Fig. 4.7-18 Paging Statistics Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.9. CAI Statistics Function

This is the function of BSP to measure and report the CAI signaling message at a given time which is transmitted and received by access channel and paging channel.

- Command : STAT-CAI:ITEM=a,BSC=b[,BTS=c,MPRD=d,MTIM=e];
 - a : ITEM : ALL – Access, Paging channel both to be measured
 - PC – Paging channel only to be measured
 - AC – Access channel only to be measured
 - b : BSC : BSC number (0 ~ 11)
 - c : BTS : BTS number (0 ~ 47)
 - d : MPRD : Cycle(min) : Default 30min
 - e : MTIM : Repeat Count : Default 4times
- Display Count

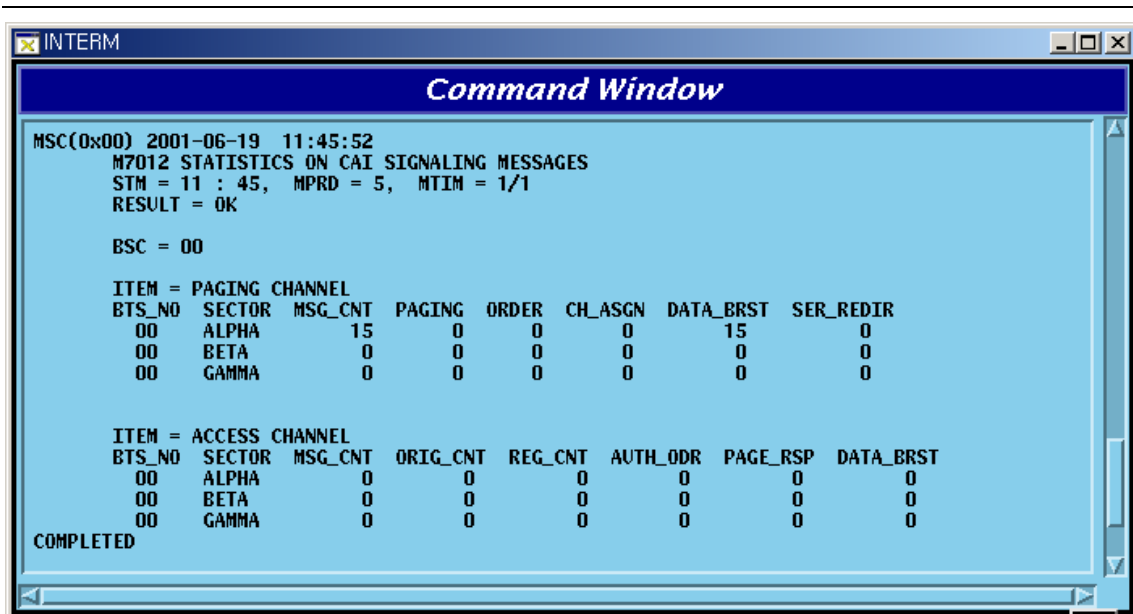


Fig. 4.7-19 CAI Statistics Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.10. No.7 Signaling Statistics

No.7 signaling is the function of SCP to collect by sorting into MTP and SCCP, and report it to the BSM.

- Command : STAT-NO7:ITEM=a,SCP=b[,MPRD=c,MTIM=d];
 - a : ITEM : MTP, SCCP or ALL
 - b : SCP : SCP(BSC) Number(0~11)
 - c : MPRD : execution cycle(5~60min, default:30min)
 - d : MTIM : execution count(1~100, default:4)
- Display Results

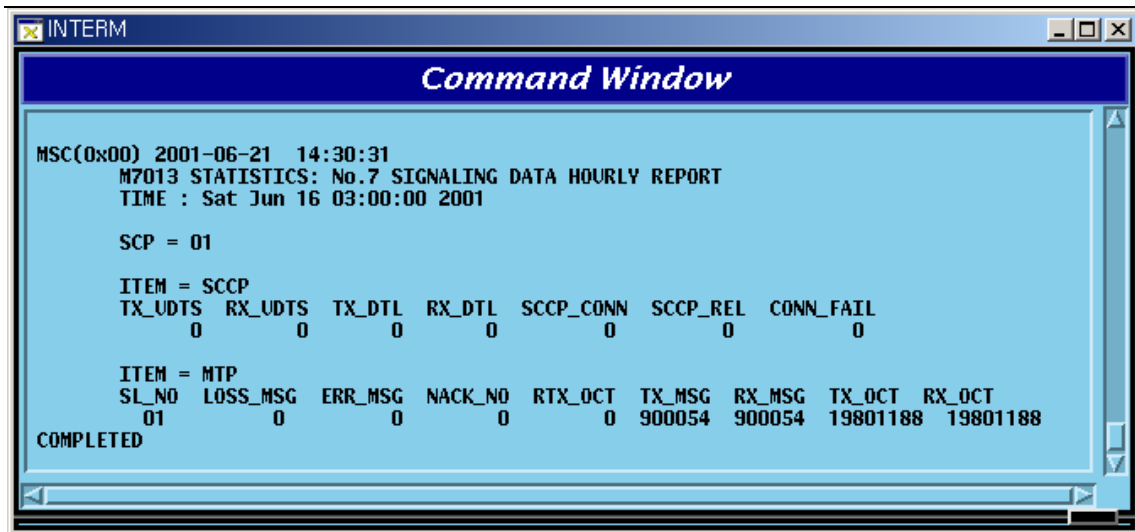


Fig. 4.7-20 No.7 Signaling Statistics Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.11. RTD Statistics

Round Trip Delay Statistics: BSP collects and reports the converted time from BTS antenna to BTS antenna via MS into distance.

- Command : STAT-RTD:BSC=a,BTS=b[,MPRD=c,MTIM=d];
 - a : BSC : BSC number (0 ~ 11)
 - b : BTS : BTS number (0 ~ 47)
 - c : MPRD : Cycle(min) : Default 30min
 - d : MTIM : Repeat Count : Default 4times
- Display Results

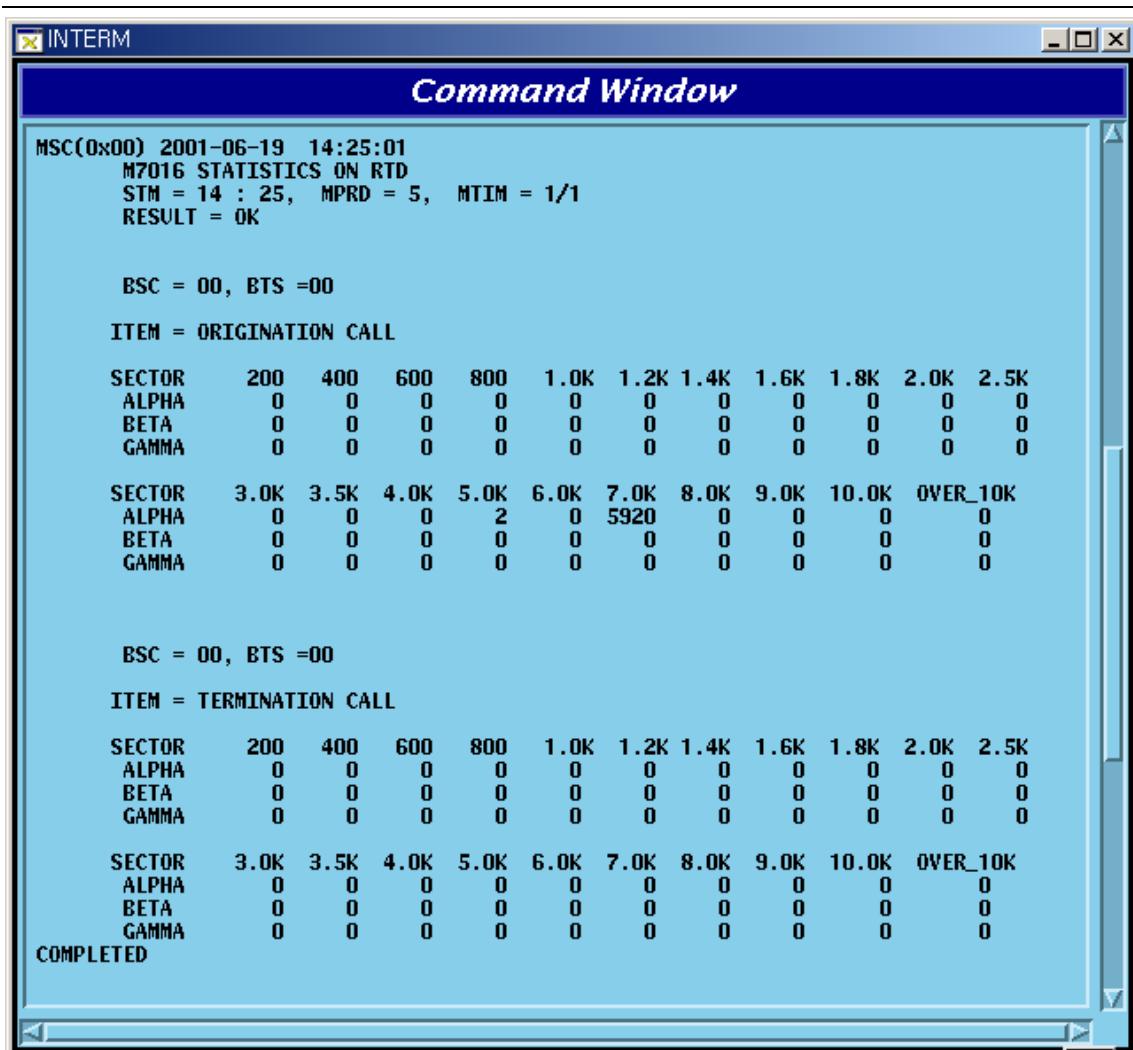


Fig. 4.7-21 RTD Statistics Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.3.12. RF MIN/MAX Statistics Function

RFP reports to the BSP concerning TX power at a given time with the minimum and maximum value.

- Command : STAT-RF:BSC=a,BTS=b,MPRD=c,MTIM=d;
 - a : BSC : BSC number (0 ~ 11)
 - b : BTS: BTS number (0 ~ 47)
 - c : MPRD : Cycle(min) : Default 30min
 - d : MTIM : Repeat Count : Default 4min

- Display Results

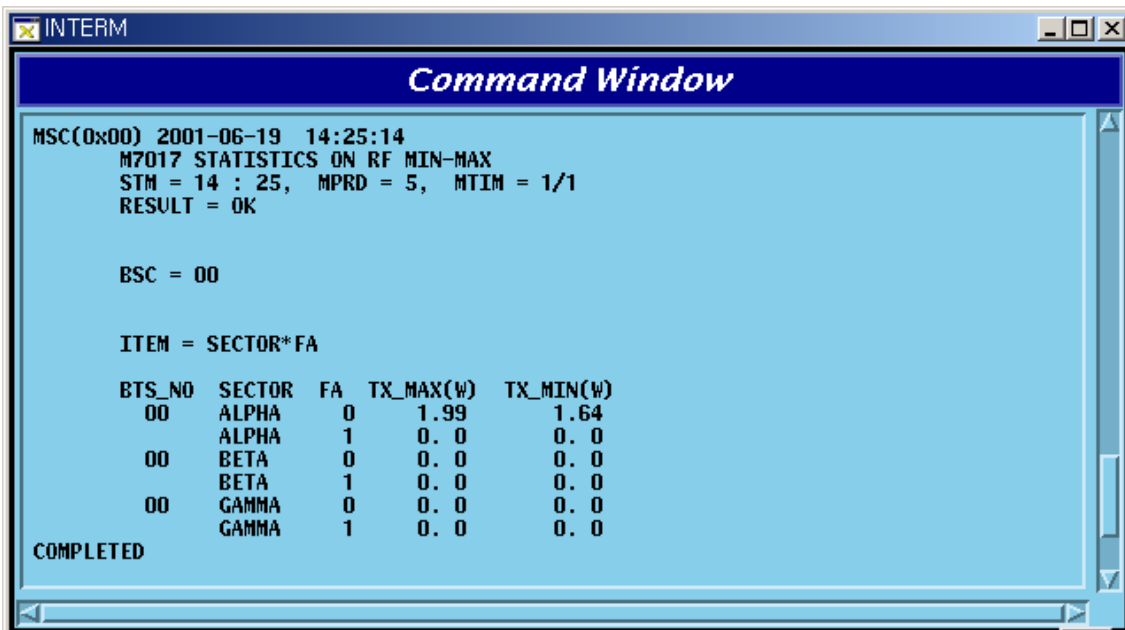


Fig. 4.7-22 RF Min/Max Statistics Function Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.4. Packet Related

Packet related statistics function is as followed.

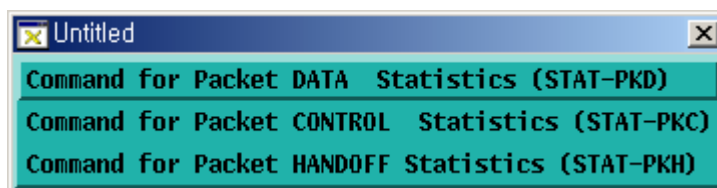


Fig. 4.7-23 Packet Statistics Function

4.7.4.1. Packet Data Statistics Function

PIP collects average data transmission between BSC and PDSN and reports it to the BSM through PCP.

- Command : STAT-PKD:PCP=a,SHELF=b[,PIP=c, MPRD=d, MITM=e];

- a : PCP : PCP number (0 ~ 2)
- b : SHELF : Shelf number (SHELF 0, SHELEF 1, ALL)
- c : PIP : PIP number (0 ~ 11)
- d : MPRD : cycle(min) : Default 30min
- e : MTIME : Repeat Count : count 4times

- Display Results

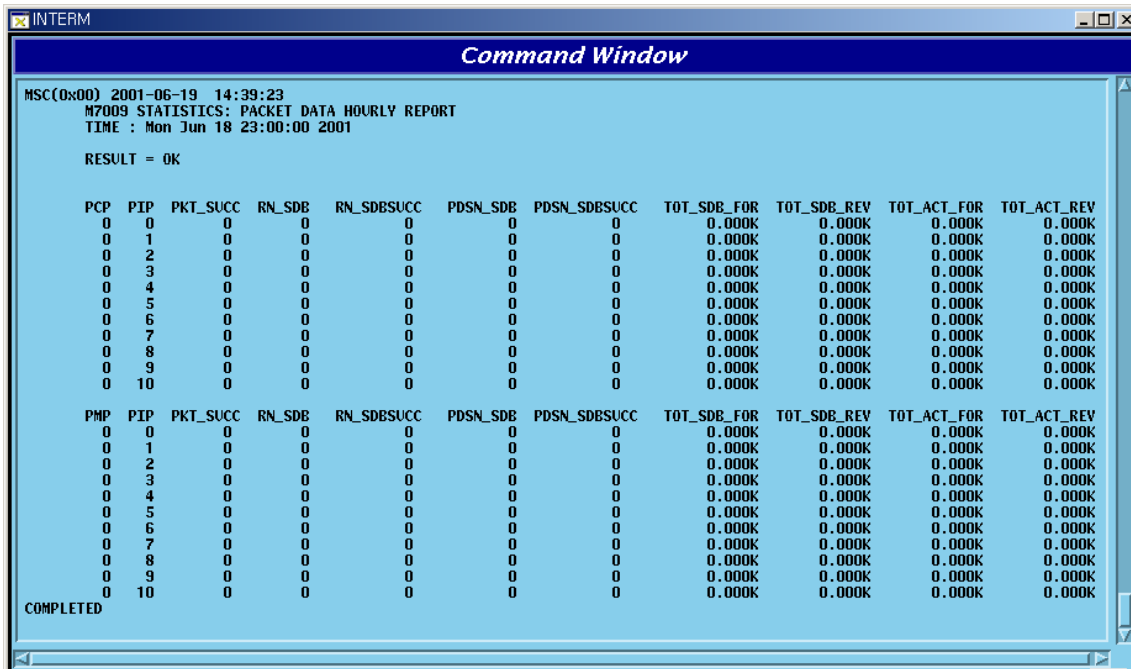


Fig. 4.7-24 Packet Data Statistics Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.4.2. Packet Control Statistics Function

It is the function to collect and report to BSM regarding the following: the call attempt count and call success count, the attempt count and success count of packet call transition from dormant status to active status, and each average call holding time between BSC and PDSN.

- Command : STAT-PKC:PCP=a[,MPRD=b,MTIM=c];
 - a : PCP : PCP number (0 ~ 2)
 - b : MPRD : cycle(min) : Default 30min
 - c : MTIM : Repeat Count : Default 4min

- Display Results

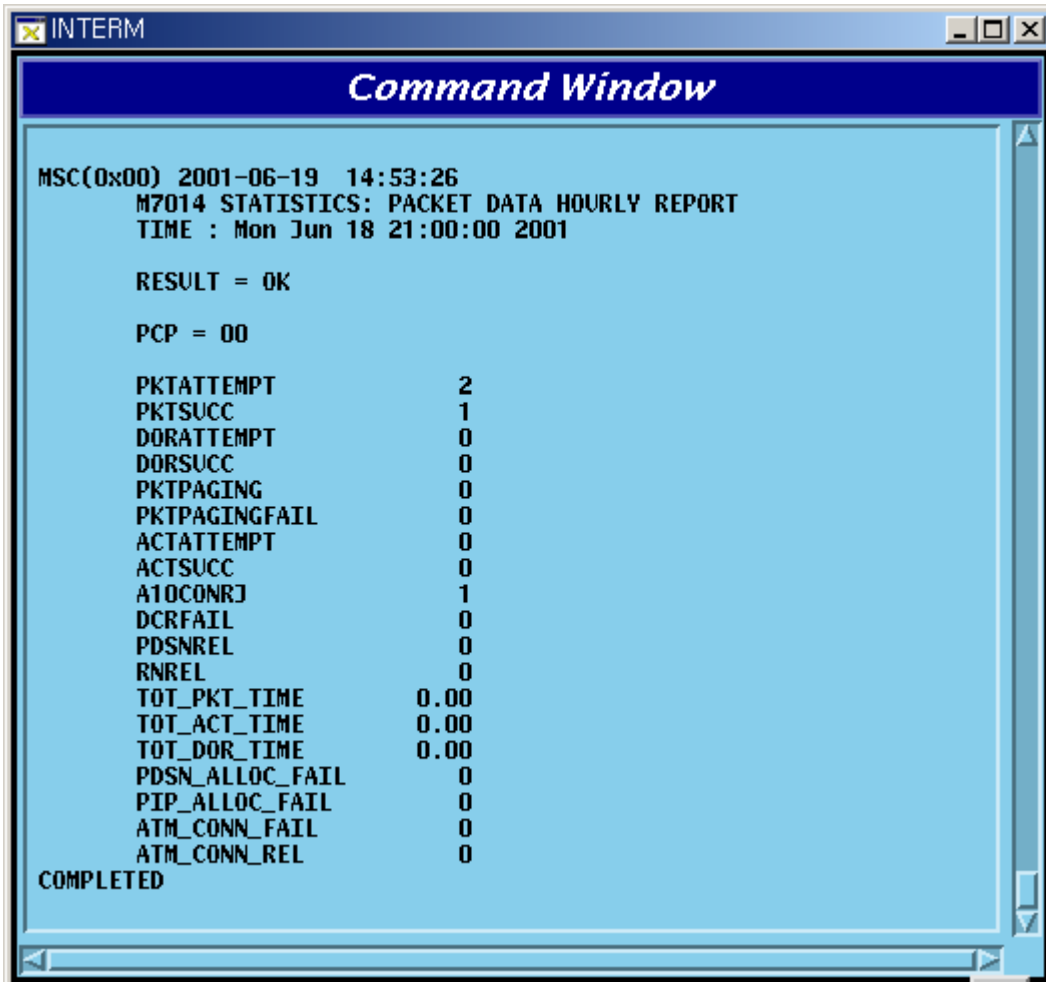


Fig. 4.7-25 Packet Control Statistics Function Results Display

(*)Refer to the appendix for the description of each item in the figure above.

4.7.4.3. Packet Handoff Statistics Function

PCP collects and reports the following statistics data to BSM: attempt and failure count of inter BSC hard handoff occurred in the packet traffic procedure by dormant or active status.

- Command : STAT-PKH:PCP=a[,MPRD=b,MTIM=c];
 a : PCP : PCP number (0 ~ 2)
 b : MPRD : Cycle(min) : Default 30min

c : MTIM : Repeat Count : Default 4times

- Display Results

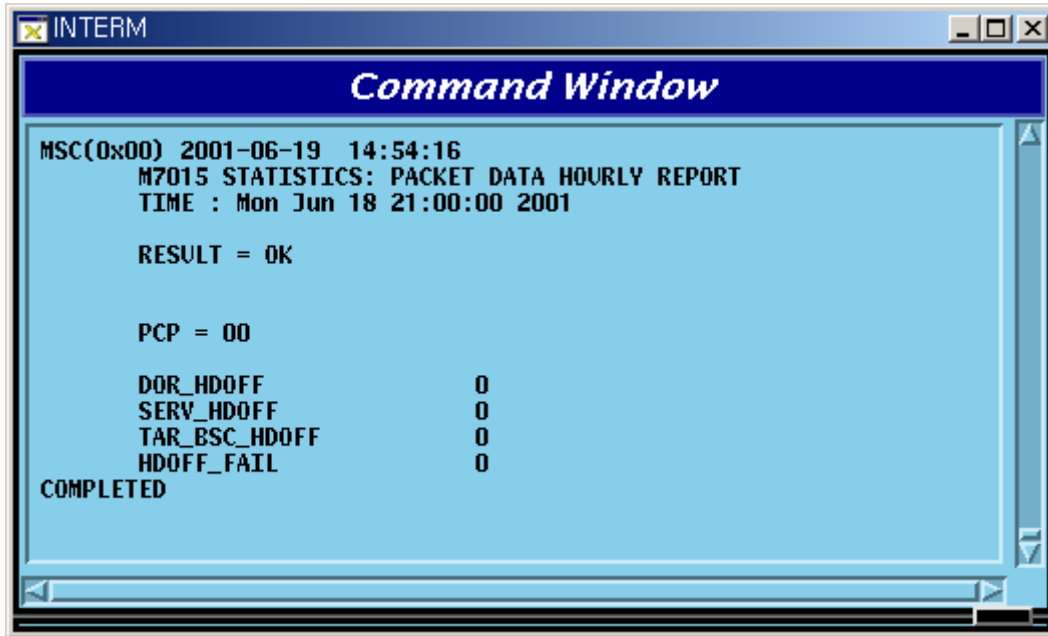


Fig. 4.7-26 Packet Handoff Statistics Function Display Results

(*)Refer to the appendix for the description of each item in the figure above.

4.7.5. Other Statistics Related Commands

4.7.5.1. Displaying Statistics List under Execution

Displaying statistics list under execution at the request of present user.

- Command : DIS-STAT-JOB;
- Display Results

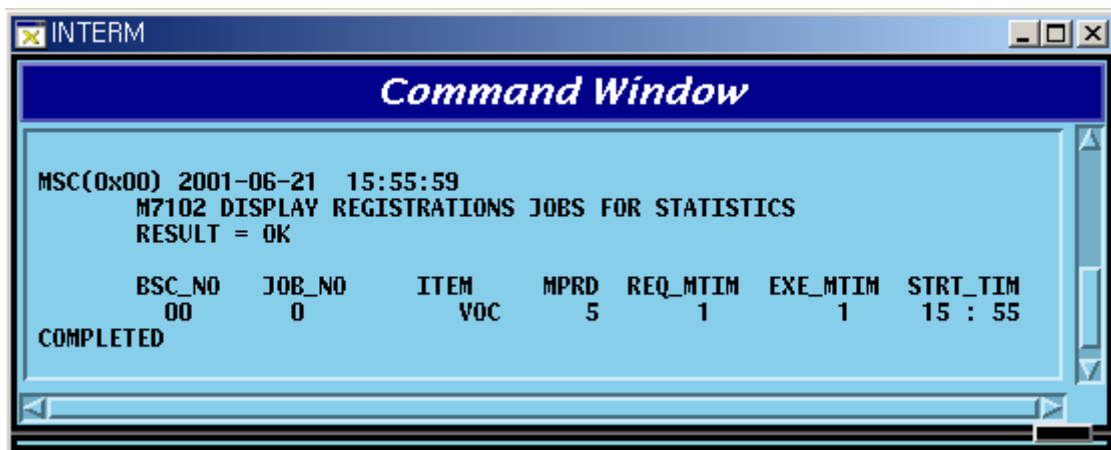


Fig. 4.7-27 Display Results of Statistics List under Execution

4.7.5.2. Statistics Cancel Command

This is the function to cancel On Demand statistics command under execution.

- Command : CANC-STAT:[BSC=a,]JOB=b;
a : BSC : BSC number(0 ~ 11)
b : JOB : Statistics number (0 ~ 7)

4.7.5.3. Hourly / Daily Statistics Data Display Command

This is the function that displays the hourly statistics data collected and stored by BSM through the BSM Intern window.

- Hourly Statistics Display Command:
DIS-HLY-DATA:HOURL=a,ITEM=b,BSC=c,BTS=d;
a : HOUR : Time (00 ~ 23)
b : ITEM : Kinds of Statistics
c : BSC : BSC number (0 ~ 11)
d : BTS : BTS number (0 ~ 47)
- Daily Statistics Display:
DIS-HLY-DATA:WEEK=a,HOUR=b,ITEM=c,BSC=d,BTS=e;
a : WEEK : Day of the Week (MON/TUE/WED/THU/FRI/SAT/SUN)
b : HOUR : hour (00 ~ 23)
c : ITEM : Kinds of Statistics
d : BSC : BSC number (0 ~ 11)
e : BTS : BTS number (0 ~ 47)

4.7.5.4. On Line Statistics Period Change

This is the function to change the period (basically 5minute) of online statistics(real-time traffic statistics) collected by CCP.

- Command : CHG-ONLINE-MPRD:MPRD=a;
a : MPRD : Period(min) to be changed
- Execution Results

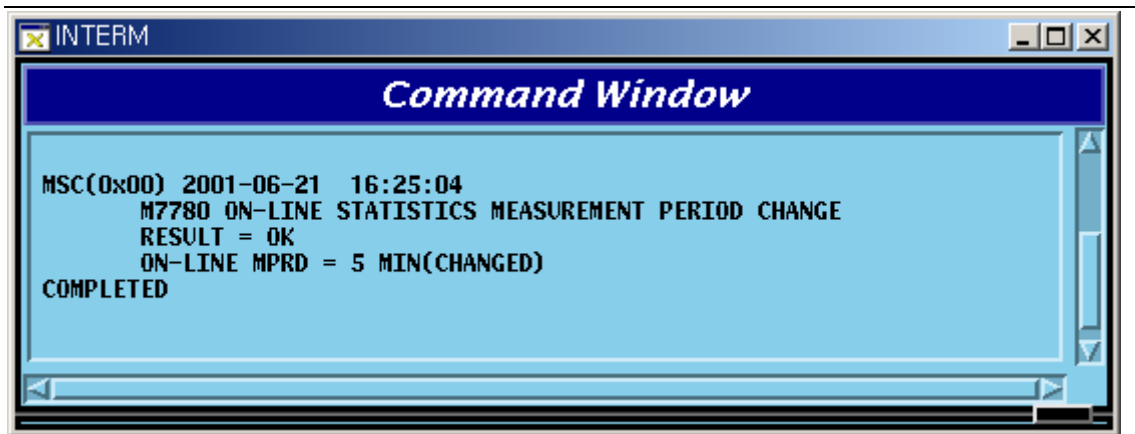


Fig. 4.7-28 Results of Changing On Line Statistics Period

4.8. Alarm/Fault Command

The fault function of BSM is configured into the following: displayed on the console window to the generated alarm and fault, displayed only at user's request to the 23 items below.

Table 4-4.8-1 Alarm/Fault Related Command List

Comment	Related Command
Displaying Inhibited Alarm List	DIS-INH-ALM;
Displaying Audible Alarm Status	DIS-AUD-STS;
Displaying Inhibited Fault List	DIS-INH-FLT;
Displaying Present Alarm Status	DIS-ALM-STS;
Displaying Suppressed Alarm	DIS-SUP-ALM;
Displaying Information about Alarm Message	DIS-ALM-INFO;
Displaying Alarm List	DIS-ALM-LIST;
Displaying Suppressed Fault	DIS-SUP-FLT;
Inhibiting Alarm Message Display	INH-ALM-MSG;
Inhibiting Audible Alarm	INH-AUD-ALM;
Inhibiting Fault Message Display	INH-FLT-MSG;
Suppressing Alarm Message	SUP-ALM-MSG;
Suppressing Fault Message	SUP-FLT-MSG;
Allowing Inhibited Alarm Message	ALW-ALM-MSG;
Allowing Inhibited Audible Alarm	ALW-AUD-ALM;
Allowing Inhibited Fault Message	ALW-FLT-MSG;
Releasing Suppressed Alarm Message	REL-ALM-MSG;

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Releasing Message	Suppressed	Fault	REL-FLT-MSG;
Displaying Alarm	Environment		DIS-ENV-STS
Setting FLAG	Environment	Alarm	SET-ENV-FLAG
Setting Time	Environment	Alarm	SET-ENV-TIME
Setting Temperature	Environment	Alarm	SET-ENV-TEMP
			SET-ENV-HUMI
			RST-ECV-STS
			CLR-ENV-HIST

4.8.1. Alarm/Fault Display

4.8.1.1. Display Command of Inhibited Alarm Message List

This is the command to display the list of the alarm message whose display is inhibited. Check the **Inhibit** status when the alarm to be generated is not generated; if it is not inhibited, check the **Suppress** status.

Table 4-4.8-2 The meaning of Input by BSC Number and BTS Number

BSC	BTS	Meaning
Input	Input	BTS
Input	X	BSC
X	X	CAN
X	Input	Input Error

*Note) The applying scope of the table above equally applied to the Alarm/Fault related command.

- Command DIS-INH-ALM:[BSC=a],[BTS=b];
 a : BSC Number(0 ~ 11)
 b : BTS Number(0 ~ 47)
- Input DIS-INH-ALM:BSC=0;
- Display

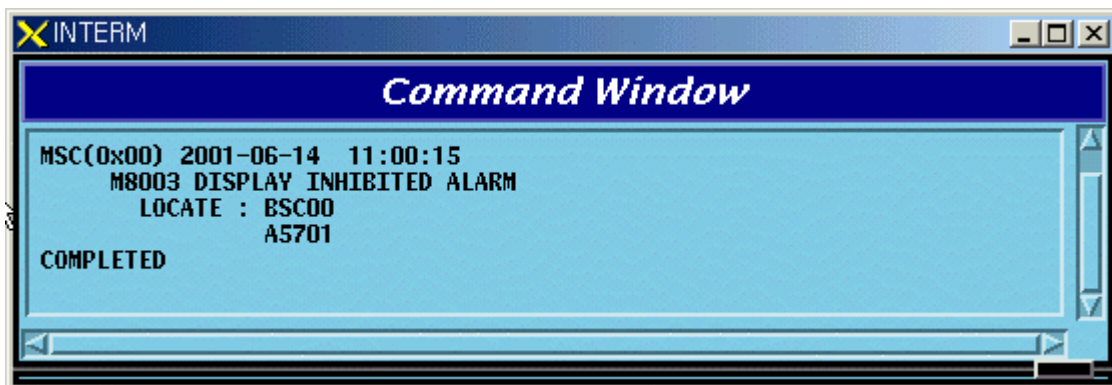


Fig. 4.8-1 Display Result of the Display Inhibited Alarm Message List

4.8.1.2. Display Command for the Audible Alarm Status

This command displays the alarm panel status, presently generated alarm status and inhibition status of the audible alarm.

- Command DIS_AUD-STS;
- Display

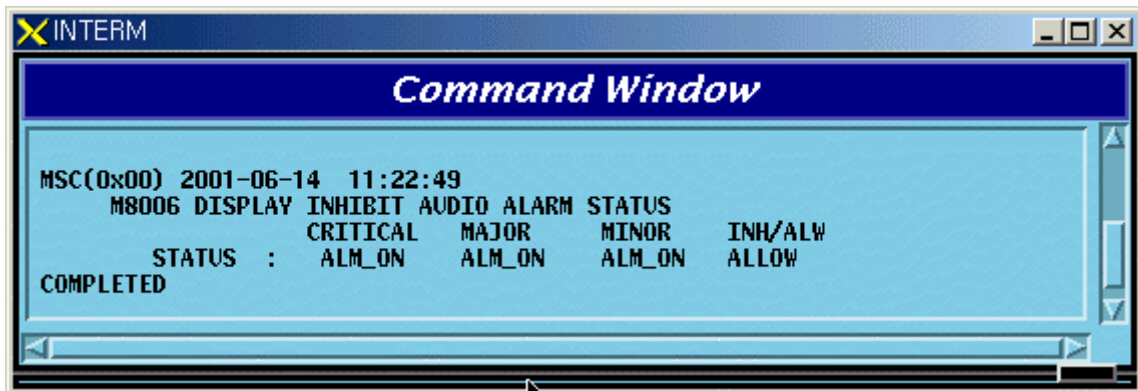


Fig. 4.8-2 Display Result of the Display Command for Audible Alarm Status

4.8.1.3. Display Command for Inhibited Fault Message List

This is the command for the display inhibited fault messages to display their list. If fault message to be generated were not generated this command would be needed to check the **Inhibit** status.

- Command DIS-INH-FLT:[BSC=a],[BTS=b];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
- Input DIS-INH-FLT:BSC=0, BTS=1;
- Display

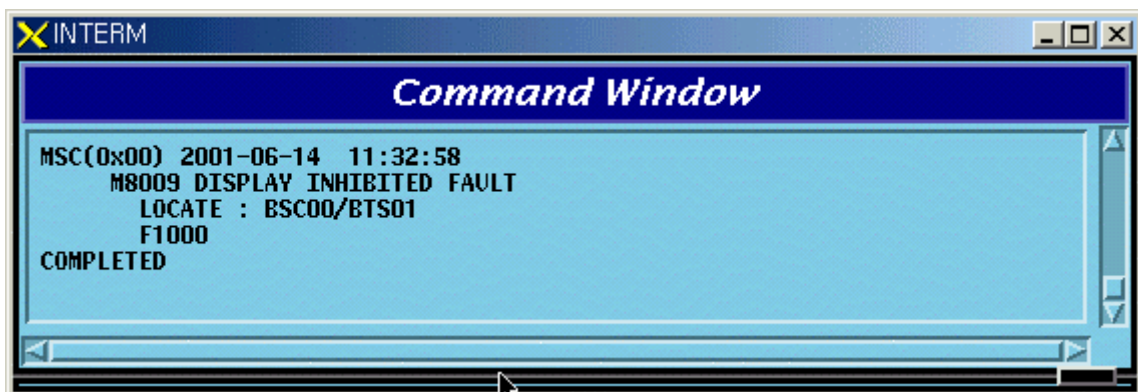


Fig. 4.8-3 Display Result of the List for the Display Inhibited Fault Message

4.8.1.4. Display Command for the Present Alarm Status

This is the display command for the information about the presently generated alarm. If the user would like to see the alarm code only, input nothing or OFF in the Detail Option.

- Command DIS-ALM-STGS[:BSC=a],[BTS=b],[DETAIL=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : DETAIL Option(ON/OFF)
 - ON : Alarm Code + Alarm Info. + Alarm Generated Location
 - OFF: Alarm Code + Corresponding Alarm count(default)

(1) In the case of DETAIL = ON

- Input DIS-ALM-STGS:BSC=0,BTS=0,DETAIL=ON;
- Display

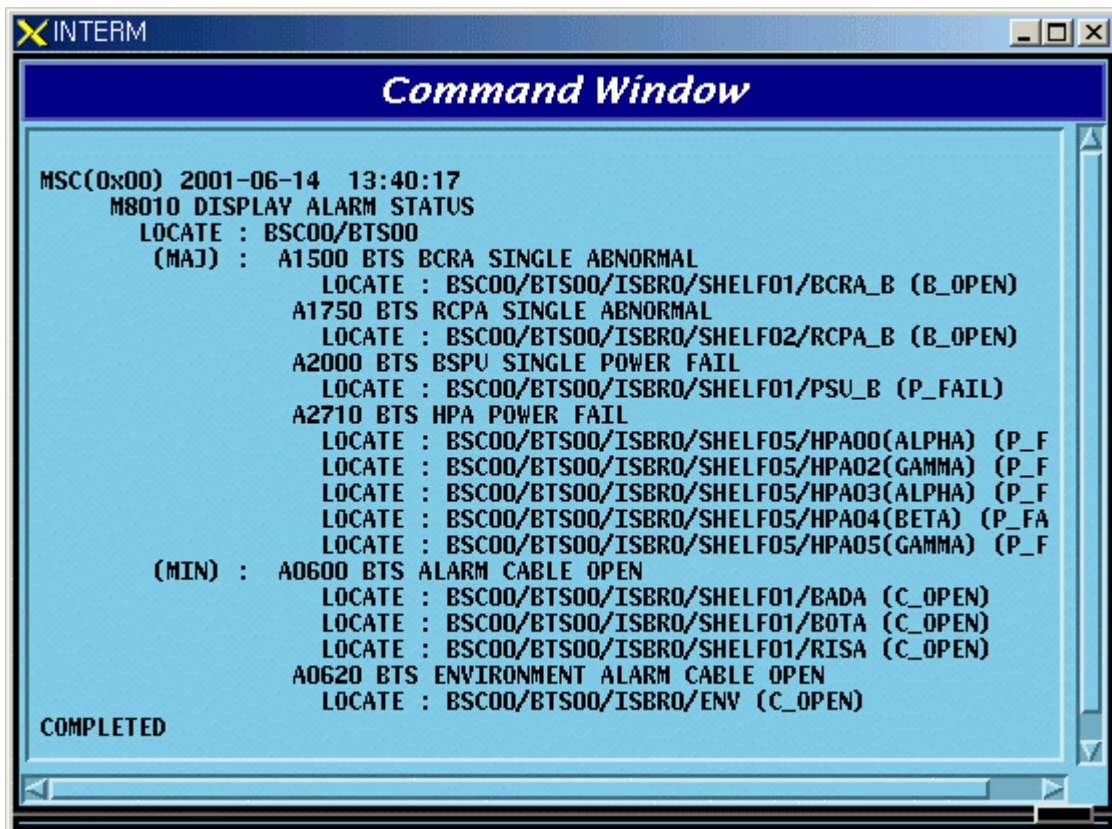


Fig. 4.8-4 Display Result of Display Command for the Present Alarm Status

(2) In the case of DETAIL = OFF

- Input DIS-ALM-STGS:BSC=0,BTS=0,DETAIL=OFF;
- Display

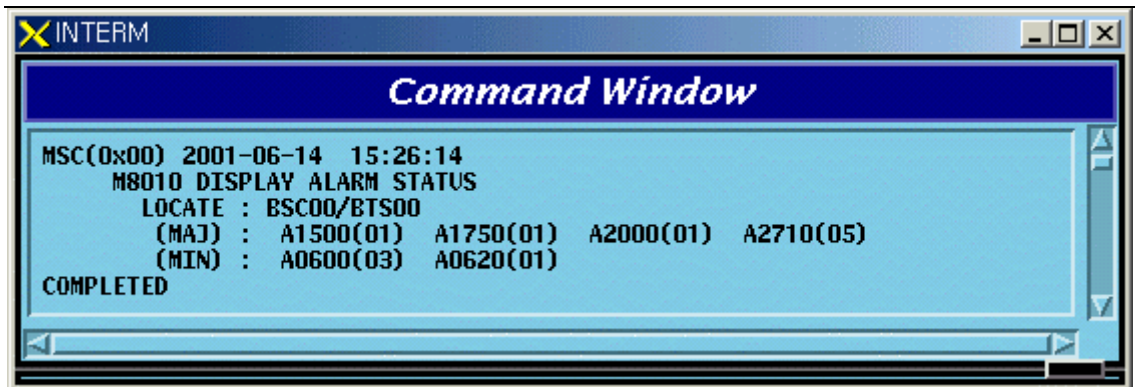


Fig. 4.8-5 Display Result of Display Command for Present Alarm Status

4.8.1.5. Display Command for Suppressed Alarm Message

This is the command for suppress alarm message to be displayed.

- Command DIS-SUP-ALM:[BSC=a],[BTS=b];
 a : BSC Number(0 ~ 11)
 b : BTSNumber(0 ~ 47)
- Input DIS-SUP-ALM:BSC=0,BTS=0;
- Display



Fig. 4.8-6 Display Result of Display Command for the Suppressed Alarm Message

4.8.1.6. Display Command for the Information about Alarm Message

This is the command to display the defined grade of the alarm message and alarm message information.

- Command DIS-ALM-INFO:AN=a;
 a : Alarm Code Number(100 ~ 9999)
- Input DIS-ALM-INFO:AN=1000; or DIS-ALM-INFO:1000;

- Display

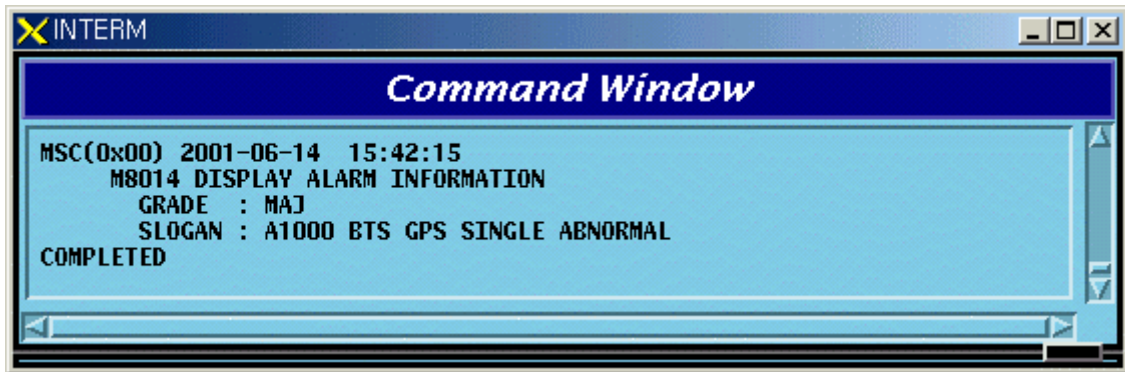


Fig. 4.8-7 Display Result of Display Command for Information about the Alarm Message

4.8.1.7. Display Command for Alarm List

This is the command to display the list for all kinds of alarm.

- Command DIS-ALM-LIST:[SUB-SYS=a];
a : Subsystem Name(CAN/BSC/BTS/ALL)
- Input DIS-ALM-INFO:CAN;
- Display

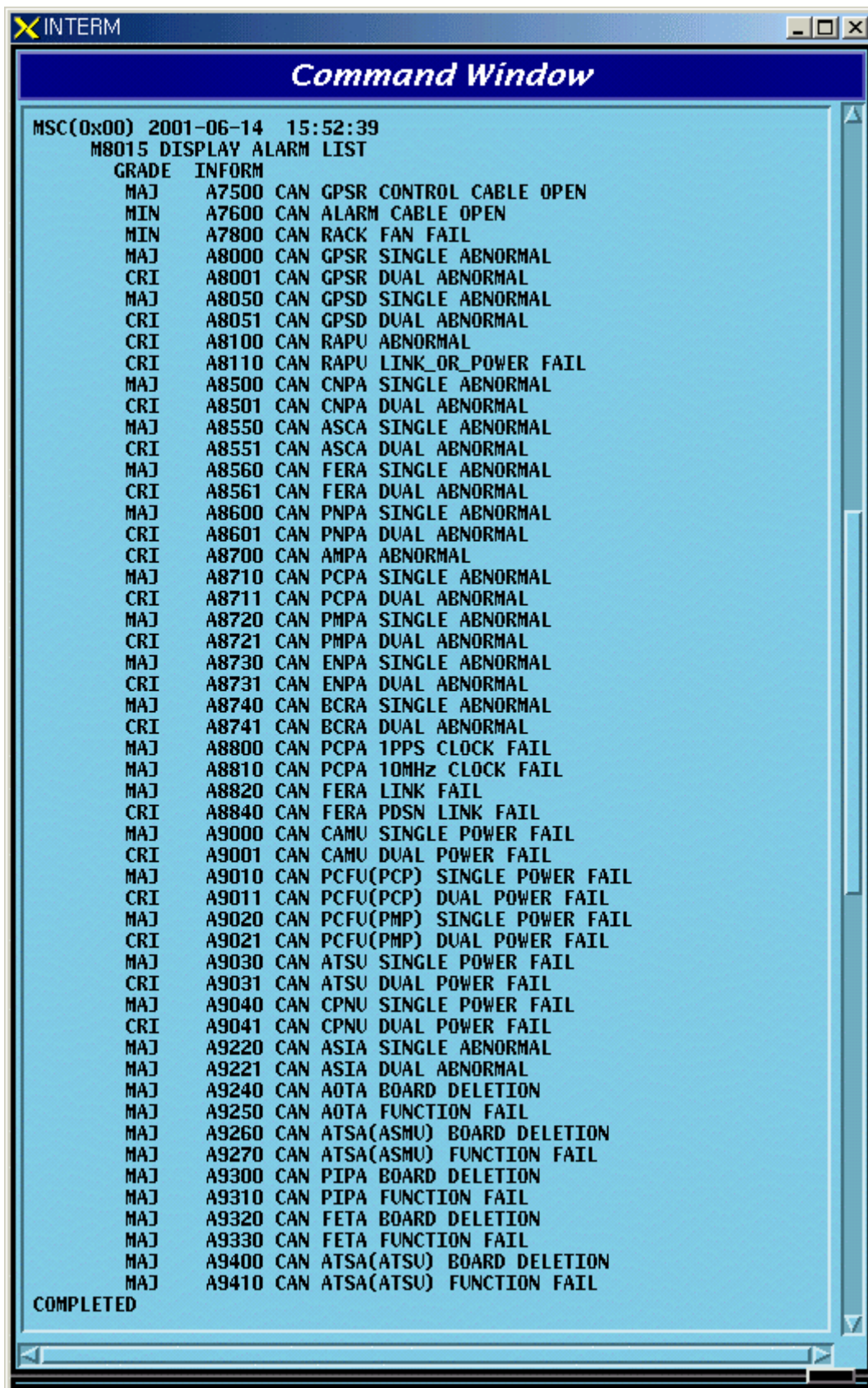


Fig. 4.8-8 Display Result of Display Command for the Information about Alarm List

4.8.1.8. Display Command for the List of the Suppressed Fault Message

This is the command to display the Fault Source Code List for the suppressed fault message.

- Command DIS-SUP-FLT:[BSC=a],[BTS=b];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
- Input DIS-SUP-FLT:BSC=0,BTS=0;
- Display



Fig. 4.8-9 Display Result of Display Command for the Suppress Fault Message List

4.8.2. Alarm/Fault Inhibition

4.8.2.1. Inhibition Command for Alarm Message

This is the function to inhibit the alarm message to be displayed on the console window. If any Alarm Code is not designated it inhibits the entire alarm message generated in the designated system.

- Command INH-ALM-MSG:[BSC=a],[BTS=b],[AN=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS_GRP Number(0 ~ 47)
 - c : Alarm Code Number(0 ~ 9999)
- Input INH-ALM-MSG:BSC=0,AN=4600;
- Display



Fig. 4.8-10 Display Result of Display Inhibition for Alarm Message

*Note) AN : Alarm Number

4.8.2.2. Inhibition Command for Audible Alarm

The audible alarm can be inhibited by the grade and it is applied to all kinds of alarm.

- Command INH-AUD-ALM
- Display



Fig. 4.8-11 Display Result of Inhibition Command for Audible Alarm

4.8.2.3. Inhibition Command for Fault Message

This is the function to inhibit the display of the fault message. If any fault code is not designated, it inhibits all the fault codes.

- Command INH-FLT-MSG:[BSC=a],[BTS=b],[FN=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)

c : Fault Code Number

- Input INH-FLT-MSG:BSC=0,BTS=0,FN=1000;
- Display



Fig. 4.8-12 Display Result of Inhibition/Allowance for Fault Message Display

4.8.2.4. Alarm Message Suppress Command

This command is used for the following cases: when previously checked alarm (by the user) is generating and burden BSM; when suppressing the report for the alarm message from subsystem in order to monitor other important message.

This is the command blocking the message itself for the unnecessary alarm contrary to the command (INH-ALM-MSG) which inhibits the alarm message to be displayed on the BSM console window.

- Command SUP-ALM-MSG:[BSC=a],[BTS=b],[SRC_CODE=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : Alarm Source Code Number(1 ~ 9999)
- Input SUP-ALM-MSG:BSC=0,BTS=0,SRC_CODE=30001;
- Display



Fig. 4.8-13 Display Result of the Suppress Alarm Message Command

4.8.2.5. Fault Message Suppress Command

This command is used for the following cases: when previously checked fault message (by the user) is generating and burden BSM; when suppressing the report for the fault message from subsystem in order to monitor other important message.

This is the command blocking the message itself for the unnecessary fault message contrary to the command (INH-FLT-MSG) which inhibits the fault message to be displayed on the BSM console window.

- Command SUP-FLT-MSG:[BSC=a],[BTS=b],[SRC_CODE=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : Fault Source Code Number(1 ~ 1000)
- Input SUP-FLT-MSG:BSC=0,BTS=0,SRC_CODE=31001;
- Display

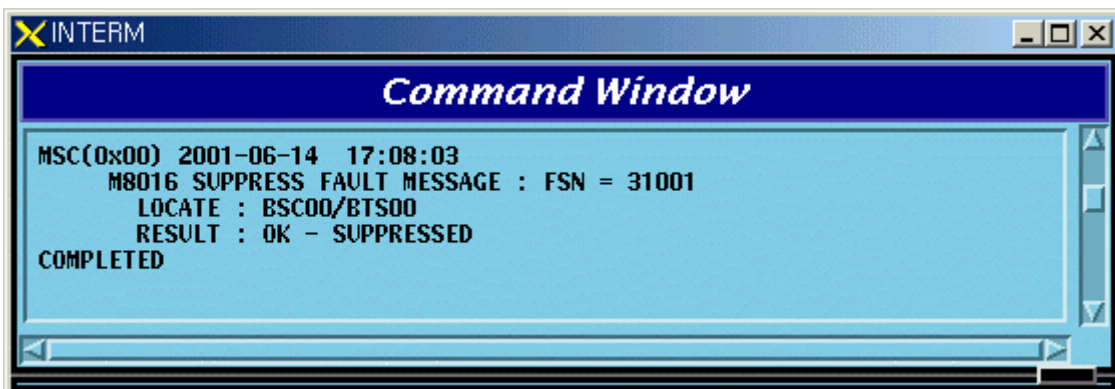


Fig. 4.8-14 Display Result for the Fault Message Suppress Command

4.8.3. Alarm/Fault Control

4.8.3.1. Allowance Command for Inhibited Alarm Message Display

This is the command to allow randomly inhibited alarm message for display by the user. If any specific alarm code is not designated, all the inhibited alarm code for display in the designated system is allowed.

- Command ALW-ALM-MSG:[BSC=a],[BTS=b],[AN=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : Alarm Code Number(0 ~ 9999)
- Input ALW-ALM-MSG:BSC=0,AN=4600;
- Display



Fig. 4.8-15 Display Result of Allowance for Alarm Message Display Inhibition

4.8.3.2. Allowance Command for Inhibited Audible Alarm

This is the command to allow inhibited audible alarm.

- Command ALW-AUD-ALM
- Display



Fig. 4.8-16 Display Result of Allowance Command for Inhibited Audible Alarm

4.8.3.3. Allowance Command for Inhibited Fault Message Display

This is the command to allow randomly inhibited fault message by the user. If any specific alarm code is not designated, all the inhibited fault code for display is allowed.

- Command ALW-FLT-MSG:[BSC=a],[BTS=b],[FN=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : Fault Code Number(1000 ~ 9999)
- Input ALW-FLT-MSG:BSC=0,BTS=1,FN=1000;
- Display



Fig. 4.8-17 Display Result for Allowing Fault Message Display Inhibition

4.8.3.4. Release Command for Suppressed Alarm Message

This is the command to release randomly suppressed alarm message by the user. If there were any follow-up measures after suppressing and the suppressing is not

needed any more, it is highly recommended to release the suppress by this command. If the alarm is not generated in the required situation the suppress matter should be checked.

- Command REL-ALM-MSG:[BSC=a],[BTS=b],[SRC_CODE=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : Alarm Source Code Number(1 ~ 9999)
- Input REL-ALM-MSG:BSC=0,BTS=0,SRC_CODE=30001;
- Display



Fig. 4.8-18 Display Result of Release Command for Suppressed Alarm Message

4.8.3.5. Release Command for Suppressed Fault Message

This is the command to release randomly suppressed fault message by the user. If there were any follow-up measures to the suppressed message and the suppressing is not needed any more, it is recommended to release the suppress by this command.

- Command REL-FLT-MSG:[BSC=a],[BTS=b],[SRC_CODE=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : Fault Source Code Number(1 ~ 1000)
- Input REL-FLT-MSG:BSC=0,BTS=0,SRC_CODE=31001;
- Display



Fig. 4.8-19 Display Result of Release Command for Suppressed Fault Message

4.8.4. Environment Alarm Control

4.8.4.1. Environment Alarm Flag set Command

This is the command to decide (ON/OFF) whether to receive the alarm, which is sensed by the sensor of environment monitoring module, normally or not. ON means receiving the alarm normally and OFF means non-receiving the alarm.

- Command SET-ENV-FLAG:[BSC=a],[BTS=b],[CMD=c],[FLAG=d];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : Command
 - d : Flag(ON/OFF)
- Input SET-ENV-FLAG:
- Display

```

MSC(0x00)    date    time
             M8030 SET ACU FLAG : a
             LOCATE = b
             RESEON = c
    
```

- a : RECTIFIER_SHUT_DOWN_ALARM
- FIRE
- UPPER_FLOOD
- LOWER_FLOOD
- TEMPERATURE1
- TEMPERATURE2

TEMPERATURE3
TEMPERATURE_CENTIGRADE_OPTION
HUMIDITY

b : Locate Information

c : #PROC_NOT_EQUIP
##PROC_ABNORMAL
##THIS COMMAND IS IN SERVICE
##NOK - BTS TYPE MISMATCH
##NOK - BAMA ABNORMAL
##NOK - ACU ABNORMAL
##NOK - RECTIFIER ABNORMAL
##NOK - BAMA NO RESPONSE
##NOK - ACU or REC NO RESPONSE
##NOK - ALREADY SET FLAG ON
##NOK - ALREADY SET FLAG OFF
##NOK - UNKNOWN REASON
##OK - SET FLAG COMPLETED

4.8.4.2. Environment Alarm Reset Command

This is the reset command for environment monitoring module and the rectifier.

- Command RST-ENV-STS:[BSC=a],[BTS=b],[CMD=c];
a : BSC Number(0 ~ 11)
b : BTS Number(0 ~ 47)
c : Command
- Input RST-ENV-STS:
- Display

MSC(0x00)	date	time
M8031 RESET ACU STATUS : a		
LOCATE = b		
RESEON = c		

a : ACU_COLD_BOOT
ACU_RESET
RECTIFIER_POWER_TURN
RECTIFIER_CONTOROLLER_RESET

b : Locate Information
c : ##PROC_NOT_EQUIP
##PROC_ABNORMAL
##THIS COMMAND IS IN SERVICE
##NOK - BTS TYPE MISMATCH
##NOK - BAMA ABNORMAL
##NOK - ACU ABNORMAL
##NOK - RECTIFIER ABNORMAL
##NOK - BAMA NO RESPONSE
##NOK - ACU or REC NO RESPONSE
##NOK - UNKNOWN REASON
##OK - RESET COMPLETED

4.8.4.3. Environment Alarm History Clear Command

This is the command to clear all the history stored in the environment monitoring module.

- Command CLR-ENV-HIST:[BSC=a],[BTS=b],[CMD=c];
a : BSC Number(0 ~ 11)
b : BTS Number(0 ~ 47)
c : Command
- Input CLR-ENV-HIST:
- Display

MSC(0x00)	date	time
	M8032 HISTORY CLEAR : a	
	LOCATE = b	
	RESEON = c	

a : OP HISTORY
RUNNING HISTORY
b : Locate Information
c : ##PROC_NOT_EQUIP
##PROC_ABNORMAL
##THIS COMMAND IS IN SERVICE
##NOK - BTS TYPE MISMATCH
##NOK - BAMA ABNORMAL

##NOK - ACU ABNORMAL
##NOK - RECTIFIER ABNORMAL
##NOK - BAMA NO RESPONSE
##NOK - ACU or REC NO RESPONSE
##NOK - UNKNOWN REASON
##OK - CLEAR HISTORY COMPLETED

4.8.4.4. Time Set Command

This is the command to set time (year/month/date/hour/minute/second) built in environment monitoring module.

- Command SET-ENV-TIME:[BSC=a],[BTS=b],[YEAR=c],[MONTH=d],[DAY=e],[
[HOUR=f],[MINUTE=g],[SECOND=h];

a : BSC Number(0 ~ 11)

b : BTS Number(0 ~ 47)

c : Year(1990 ~ 2049)

d : Month(1 ~ 12)

e : Day(1 ~ 31)

f : Hour(0 ~ 23)

g : Minute(0 ~ 59)

h : Second(0 ~ 59)

- Input SET-ENV-TIME:
- Display

MSC(0x00)	date	time
	M8033 SET ACU DATE AND TIME	
	LOCATE = a	
	RESEON = b	

a : Locate Information

b : #PROC_NOT_EQUIP

##PROC_ABNORMAL

##THIS COMMAND IS IN SERVICE

##NOK - BTS TYPE MISMATCH

##NOK - BAMA ABNORMAL

##NOK - ACU ABNORMAL

##NOK - RECTIFIER ABNORMAL

##NOK - BAMA NO RESPONSE
##NOK - ACU or REC NO RESPONSE
##NOK - UNKNOWN REASON
##OK - SET ACU TIME COMPLETED

4.8.4.5. Temperature Set Command

This is the command to set the temperature (high/low/middle)'s threshold value of which the environment monitoring module takes control. If the temperature surpasses the set threshold value, the alarm is generating.

- Command SET-ENV-TEMP:
[BSC=a],[BTS=b],[HL_TEMP=c],[LOW_TEMP=d],[MID_TEMP=e];
a : BSC Number(0 ~ 11)
b : BTS Number(0 ~ 47)
c : High Temperature(0 ~ 200)
d : Low Temperature(-20 ~ 200)
e : Middle Temperature(-20 ~ 200)
- Input SET-ENV-TEMP:
- Display

MSC(0x00)	date	time
M8034 SET ACU ALARM VALUE TEMPERATURE(HIGH/LOW/MIDDLE)		
LOCATE = a		
RESEON = b		

a : Locate Information
b : ##PROC_NOT_EQUIP
##PROC_ABNORMAL
##THIS COMMAND IS IN SERVICE
##NOK - BTS TYPE MISMATCH
##NOK - BAMA ABNORMAL
##NOK - ACU ABNORMAL
##NOK - RECTIFIER ABNORMAL
##NOK - BAMA NO RESPONSE
##NOK - ACU or REC NO RESPONSE
##NOK - UNKNOWN REASON
##OK - SET ACU TEMPERATURE COMPLETED

4.8.4.6. Humidity Set Command

This is the command to set the threshold value of humidity of which the environment monitoring module takes control. If humidity surpasses this threshold value, the alarm is generating.

- Command SET-ENV-HUMI:[BSC=a],[BTS=b],[HI_HUMI=c];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : High Humidity(0 ~ 100)
- Input SET-ENV-HUMI:
- Display

```
MSC(0x00)    date    time
             M8035 SET ACU HIGH HUMIDITY ALARM LIMITS VALUE
             LOCATE = a
             RESEON = b
```

- a : Locate Information
- b : ##PROC_NOT_EQUIP
##PROC_ABNORMAL
##THIS COMMAND IS IN SERVICE
##NOK - BTS TYPE MISMATCH
##NOK - BAMA ABNORMAL
##NOK - ACU ABNORMAL
##NOK - RECTIFIER ABNORMAL
##NOK - BAMA NO RESPONSE
##NOK - ACU or REC NO RESPONSE
##NOK - UNKNOWN REASON
##OK - SET ACU HUMIDITY COMPLETED

4.8.4.7. Environment Alarm Display Command

This is the command to display the parameter value, flag status, history and other things presently stored in the environment monitoring module.

- Command DIS-ENV-STS:[BSC=a],[BTS=b],[CMD=c],[RECORD_NO=d];
 - a : BSC Number(0 ~ 11)
 - b : BTS Number(0 ~ 47)
 - c : Command
 - d : Record Number(0 ~ 500)
- Input DIS-ENV-STS:
- Display

```
MSC(0x00)    date    time
M8036 DISPLAY ACU STATUS : a
LOCATE = b
TIME : c
CURRENT : d
e - f
g - h
i -
j -
k - m    l - n
k - m    l - n
RECORD_NO :    END_TRANSMIT : o
ACTION = p    ACTOR/STATE = q
CANCELLATION = r
REASON = s
```

- A : Command
- B : Locate Information
- C : ACU TIME
- D : CURRENT TEMPERATURE AND HUMIDITY
- E : ##HIGH TEMPERATURE

##LOW TEMPERATURE
##HIGH HUMIDITY
f : ##ALARM OFF
##ALARM ON
g : ##RECTIFIER SHUT DOWN ALARM
##TEMPERATURE CENTIGRADE OPTION
##FIRE
##UPPER FLOOD
##LOWER FLOOD
##TEMPERATURE1
##TEMPERATURE2
##TEMPERATURE3
##HUMIDITY
h : ##OFF
##ON
I : ##HIGH TEMPERATURE
##LOW TEMPERATURE
##MIDDLE TEMPERATURE
##HIGH HUMIDITY
j : ##TEMPERATURE1
##TEMPERATURE2
##TEMPERATURE3
##HUMIDITY
##AC VOLTAGE
##DC VOLTAGE
##DC ELECTIRIC CURRENT
##RECTIFIER UNIT FAIL
##BATTERY ELECTRIC
##H/E EXTERNAL FAN RPM
##H/E INTERNAL FAN RPM
k :
m : ##FIRE
##UPPER FLOOD
##LOWER FLOOD
##TEMPERATURE1
##TEMPERATURE2
##TEMPERATURE3

##HUMIDITY
##RECTIFIER CABLE OPEN
##FAN CABLE OPEN
##FAN POWER FAIL
##FAN FAIL
##HEAT EXCHANGER POWER FAIL
##HEAT EXCHANGER FAIL
##AC EQUIPMENT HEATER FAIL
##AC BATTERY HEATER FAIL
##FRB DOOR OPEN
##BATTERY DOOR OPEN
##AC FAIL
##HIGH VOLTAGE
##LOW VOLTAGE
##BATTERY LOW VOLTAGE
##MDMC MODULE ERROR
##REC UNIT FAIL
##FUSE RELAY LOSS
##REC ACU COMMUNICATION FAULT
##DC DC FAIL

l :
n : ##NORMAL
##OCCUR
##FAIL
##HIGH
##LOW
##ACTIVE

o : ##NOT END
##END RECORD

p : ACTION INFORMATION
q : ACTOR INFORMATION
r : CANCEL INFORMATION
s : ##PROC_NOT_EQUIP
##PROC_ABNORMAL
##THIS COMMAND IS IN SERVICE
##NOK - BTS TYPE MISMATCH
##NOK - BAMA ABNORMAL

##NOK - ACU ABNORMAL

##NOK - RECTIFIER ABNORMAL

##NOK - BAMA NO RESPONSE

##NOK - ACU or REC NO RESPONSE

##NOK - UNKNOWN REASON

4.9. Operation through GUI

4.9.1. Manager Window.

4.9.1.1. Overview.

GUI manager window is the GUI main window managing GUI applications and communicates with MMI block to exchange GUI information.

4.9.1.2. Operation.

Locate mouse indicator onto the button to display the name of corresponding application; the pressed button means the corresponding application is on the run; the application presently not on the run is presented as selectable button status.

4.9.1.3. Suggestions.



Fig. 4.9-1 Manager window

The MMI should be normally on the run because the manager is interworking with the MMI block.

By accessing X-Window Pixmap file, the XPM file should exist in the XPM directory in the run file directory, or else, 'XPM open file Error!' is displayed and all the block of the GUI can not be run. Otherwise, if any program that use color palette such as 'Netscape' is running, it might not be run because it could not get the palette.

It is recommended using bitmap plane over 16bit to use GUI on the BSM.

4.9.2. Intern Window

4.9.2.1. Overview.

The intern is controlled by the manager; manages the user information and command Input/Output.

4.9.2.2. Login.

The login window is displayed as a initial screen and it gets input the user ID and password. The user should finish the process in 1minute by entering the login ID and password. If the password is not entered after entering the login ID the system performs logout automatically to make the user unable to use the user command input window.

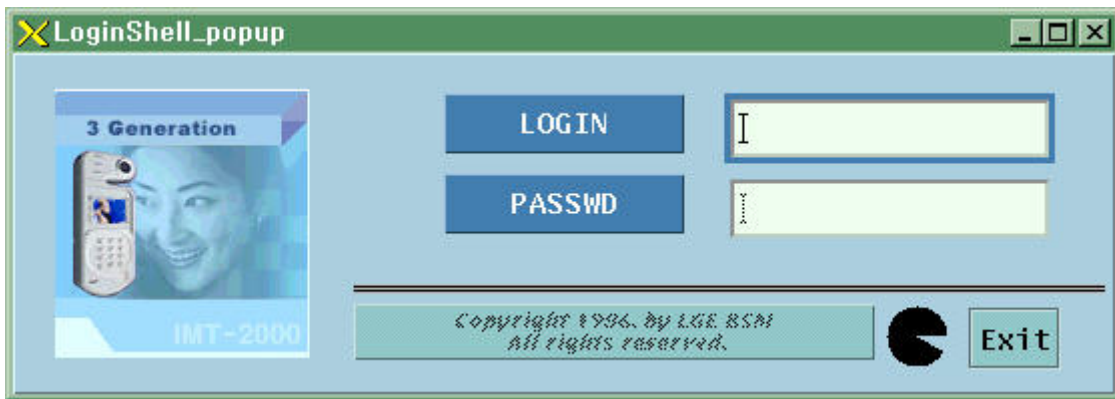


Fig. 4.9-2 Login window.

4.9.2.3. Window Configuration.

It is divided into command result display window, menu bar and command input window; command processing time content is displayed on the window and COMPLETED is displayed at the end of the display window.

The menu bar is consisted of commands into the following order: MMI related command, Loading related command, configuration related command, status related command, test related command, NO.7 related command, statistics related command, alarm related command and PREVIOUS menu that execute the command previously executed.

The prompt should be displayed on the screen in case the input window of lower part is in standby status, and when the communication with CA of MMI is disconnected the prompt is not displayed.

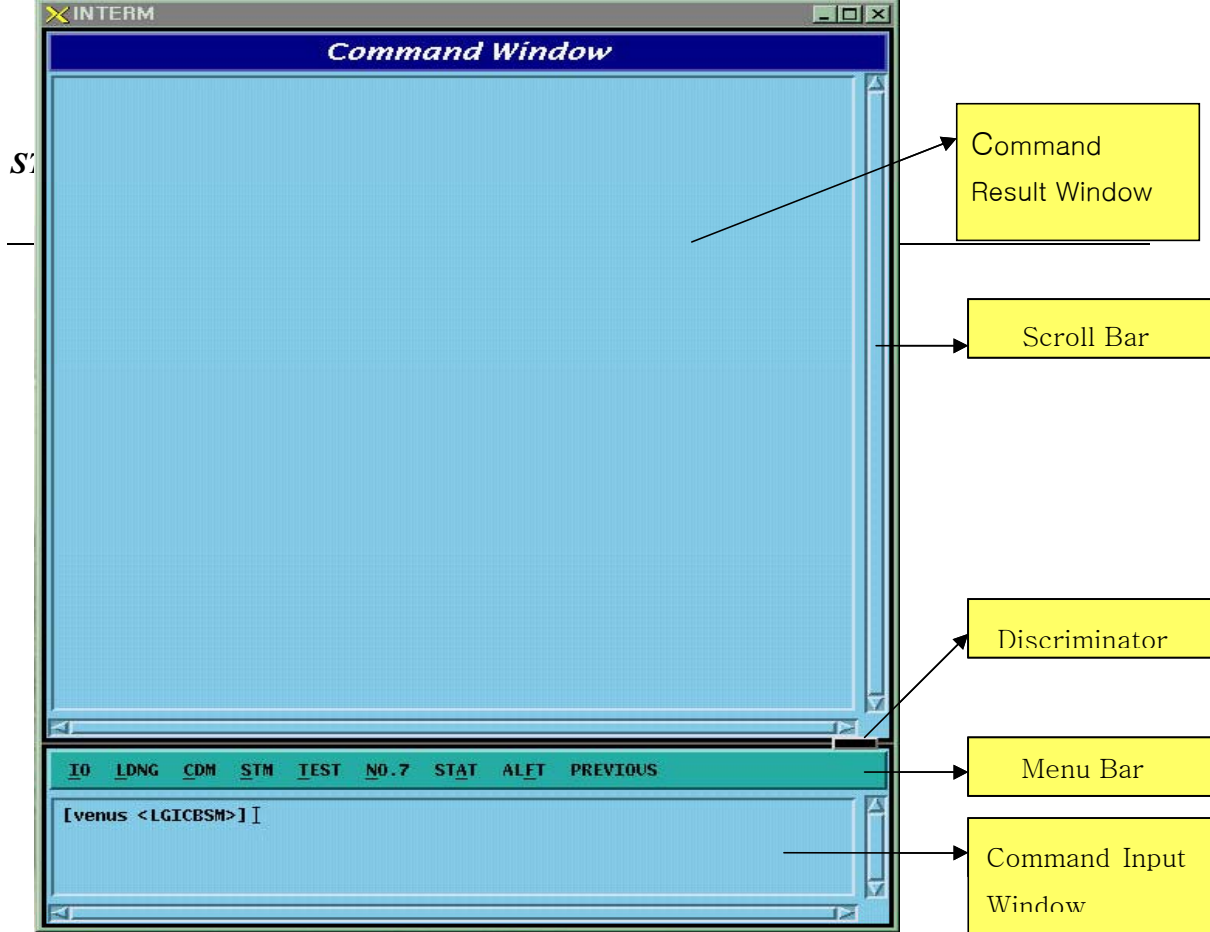


Fig. 4.9-3 Intern Configuration.

The line between the display window and the input window is a discriminator which can adjust rate of input and display windows by dragging the button on the upper side with mouse pointer. The display window by the command supports the popup menu to adjust the display environment. It is divided into background color, text color, text font, text size, and finish; press button 3 to pop up menu and then user can operate it. The underlined letter in the pull down menu operation is the accelerator letter. Choosing Meta + letter, the user can operate it immediately. If the user chooses the utmost part with dotted line in the menu, the system offers Tear-Off function to operate menu independently.

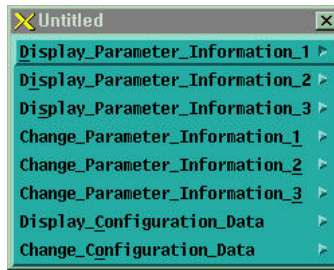


Fig. 4.9-4 CDM Tear-off

4.9.2.4. Operation Command and Usage.

All commands are available in the pop-up menu with mouse as followed and also available by inputting command manually on the INPUT WINDOW depending upon command grammar like using shell command in UNIX.

4.9.2.4.1. Command Input Method using POP-UP MENU

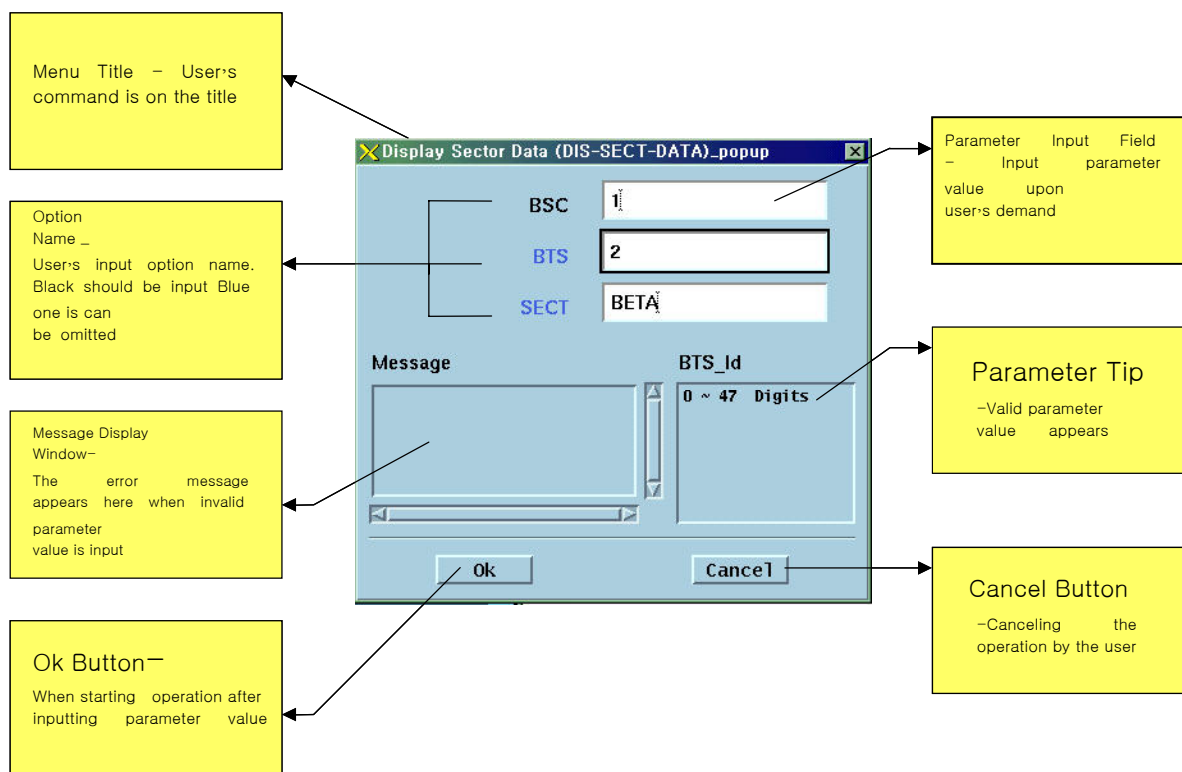


Fig. 4.9-5 POP-UP window

4.9.3. Batch Job

It is the function to make commands operate depending on the set value by reserving the MMC at the user's definition for the user's convenience.

4.9.3.1. Batch Job Window Configuration

The window is divided into the following three parts by the characteristics of the work: batch job set part, batch job list and command list, menu part.

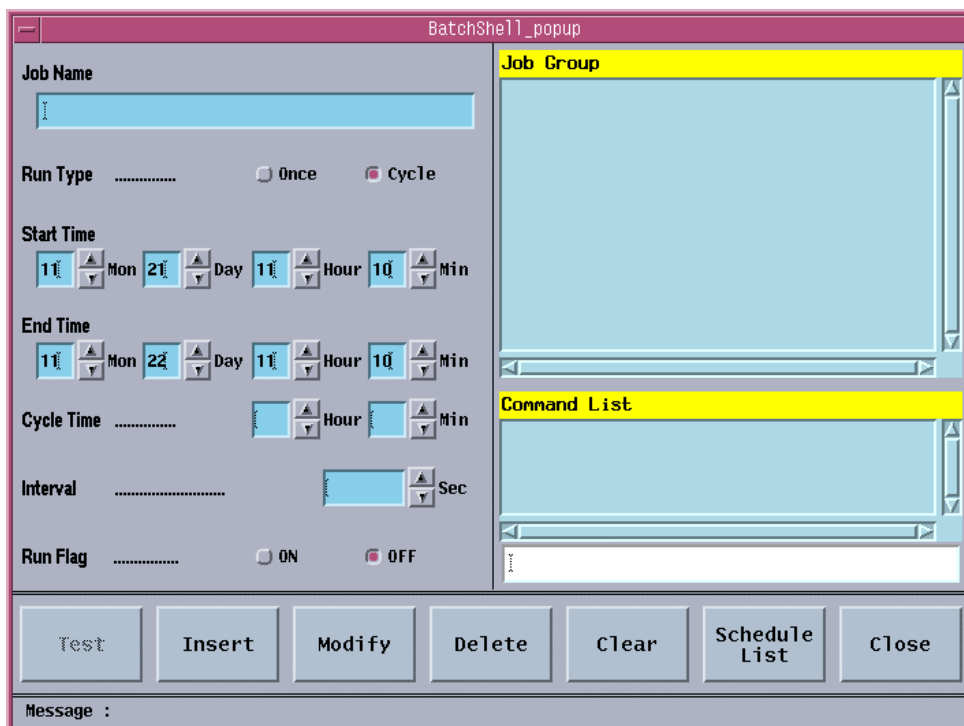


Fig. 4.9-6 Batch Job Screen

4.9.3.2. Run Batch Job

The batch job menu is included in the IO sub-menu, and just one batch job can be executed in one workstation. If the batch job is authorized, the menu is displayed in the executable status; if the batch job is already under execution the system prevents the overlapping of the work by making the menu 'Disable'. That is, the menu can be run on the intern run with bim; the menu always is 'Disable' upon remote access using telnet or rlogin; the menu can be run upon client access using the pcsnet because it uses local DB.

4.9.3.3. Batch Processing Set Area

Job Name

It is the name of the work to be set and added into the Job Group when storing. The maximum length of the name is restricted into 40 letters.

Run Type

Set if the work to be operated with a cycle, or at the specific time. (ONCE, CYCLE)

Start Time

It is the starting time of the work and the present time of the system is filled in the data field as a basic value.

End Time

It is the ending time of the work and the next date for the present time of the system is filled in the data field as a basic value. If the ending time has passed the present time it takes the Run Flag off.

Cycle Time

It designates the hour and minute to execute the next command when the Run Type is set as Cycle.

Interval

It is the time between each command represented in seconds (1~6000) when several commands are input in single work name. Interval over 5sec is recommended.

Run Flag

It represents whether the set batch processing is executed. (ON, OFF)

List Area

Job Group

It is the list of registered works and the key value, which controls DB.

Command List

It is the list of commands for single work. Maximum four commands can be input.

Command Input Text Field

It is the field on which the command is input.

4.9.3.4. Menu Field

Test

It is the menu to test if the command for the presently selected work or the work for which the input is performed is input without error.

Insert

It is the menu to input new work.

Modify

It is the menu to modify the previously input work.

Delete

It is the menu to delete the input work or the command in the command list.

Clear

It is the menu to remove the values left in the data field.

Schedule List/Setup Screen

It shows the schedule list presently on the execution standby status.

Exit/Close

It is the menu to close the batch job window.

4.9.3.5. Message Display Area

Error message on operation and messages for alarm and status change are displayed.

4.9.3.6. Batch Job Operation

4.9.3.6.1. Open Window

Select IO menu of “INTERM”, which is command I/O window, and click Batch Job then the window is opened.

4.9.3.6.2. Job Input

Job name is the key value that controls DB so it should be the one and only value. When selecting insert menu it would not be stored unless the job name is input. The data field restricts the number of letters when inputting the data; emits alarm sound when it is exceeded. The figure input part is configured with the field in which the figure can be input manually and the buttons that change the figures. The maximum and minimum value is designated so if the figure exceeds this scope, it is set as a minimum value; if a letter is input the system emits alarm sound. After one command is input in the command input field, press ‘Enter’ key then it added into the command list. If a wrong command is added, select the list and press ‘Delete’ menu then it will be deleted.

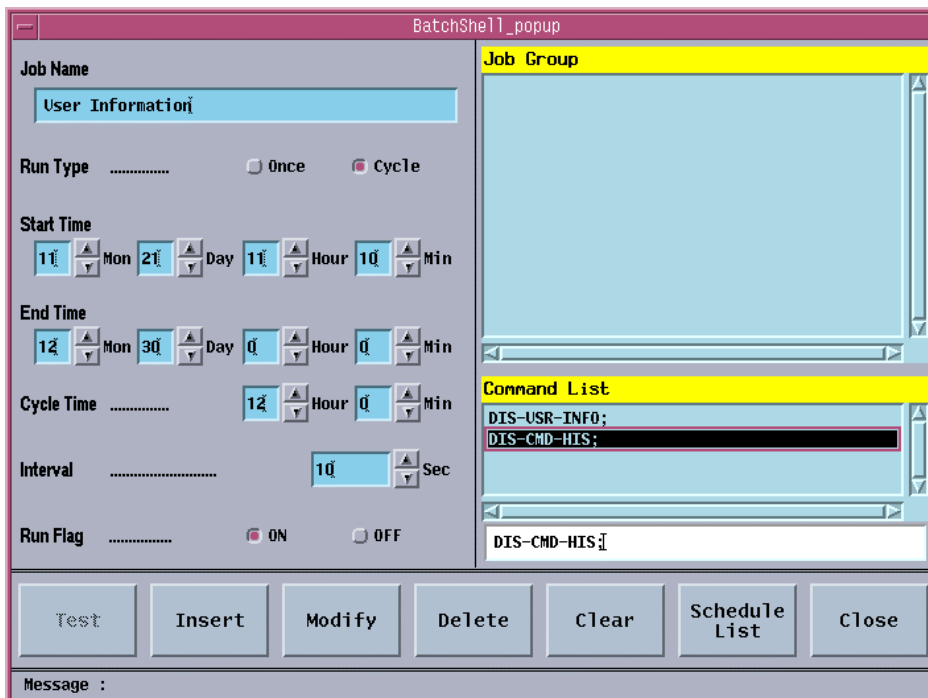


Fig. 4.9-7 Batch Job Input

After the input is completed, check if it is set with correct values and choose 'Insert' menu.

4.9.3.6.3. Job Modifying

The job modification takes the same method with the input but the job name operates the key of DB cannot be modified.

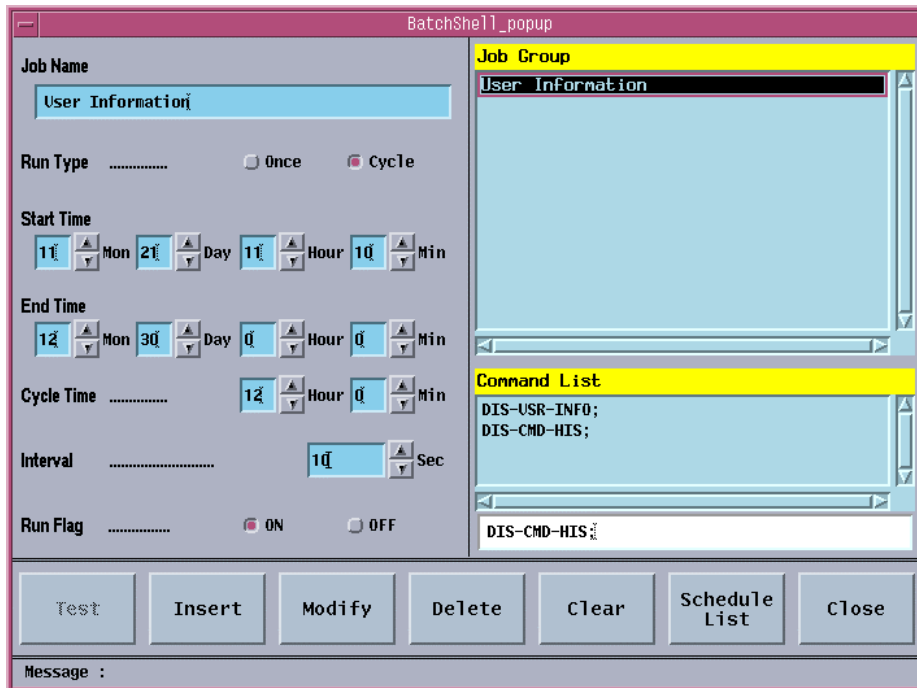


Fig. 4.9-8 Batch Job Modification

After modifying, input 'Modify' menu by all means, so as that the modification is completed.

4.9.3.6.4. Job Deletion

Use 'Delete' menu with great care because it has two functions: deleting job group and deleting command list. Choose 'Delete' menu after selecting job group list then the chosen job will be deleted; press 'Delete' menu after selecting command group then the command will be deleted. Choose 'Modify' once more when deleting command so as to delete the command completely and store the content into the DB.

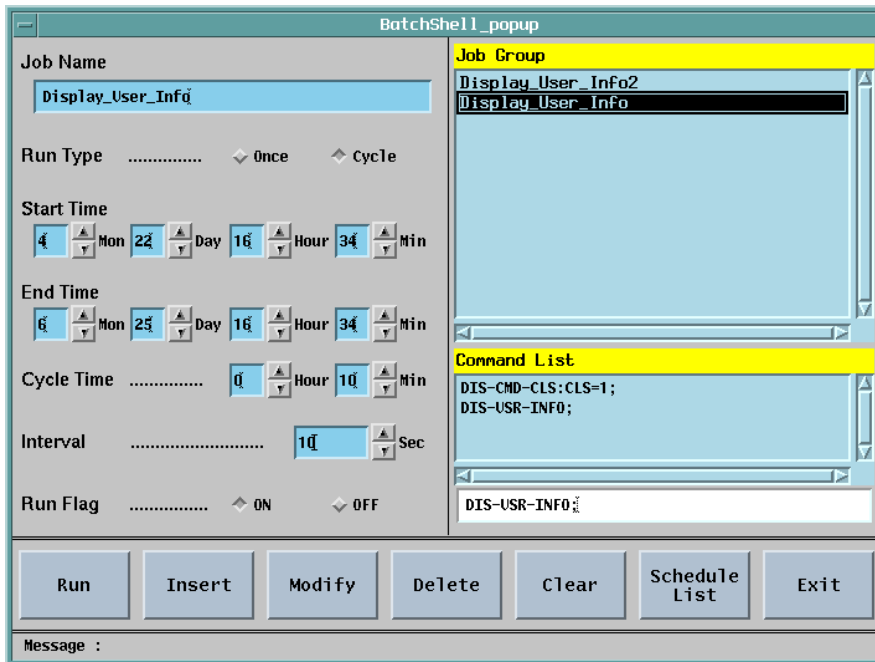


Fig. 4.9-9 Batch Job Deletion

4.9.3.6.5. Job Status Display

This menu shows the set jobs with their schedule. This menu shows setup window and schedule list by converting them with toggle method.

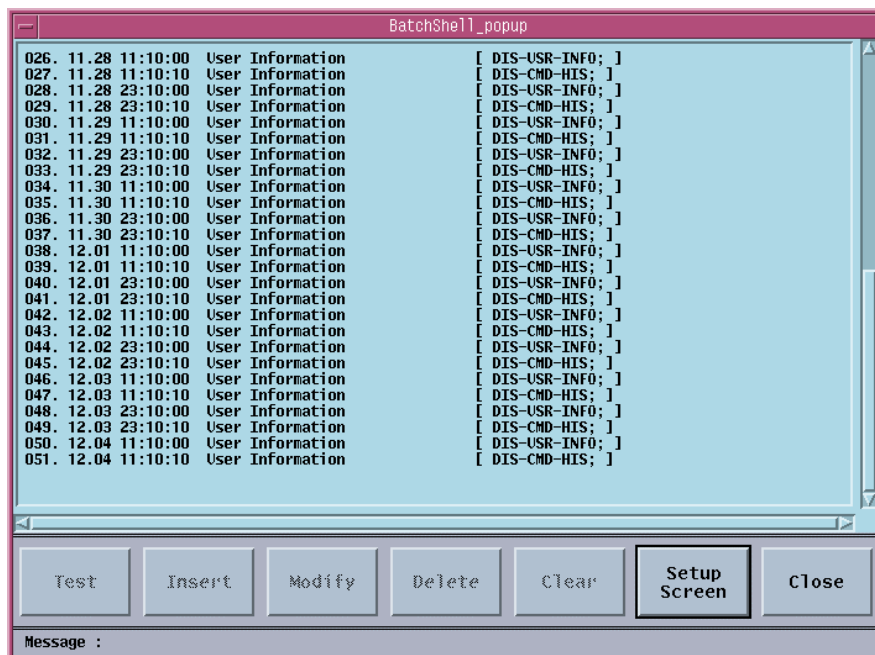


Fig. 4.9-10 Batch Job Status Display

4.9.4. Console Window

4.9.4.1. Overview

It is the window displaying event list of processor and also displays status change alarm and alarm information.

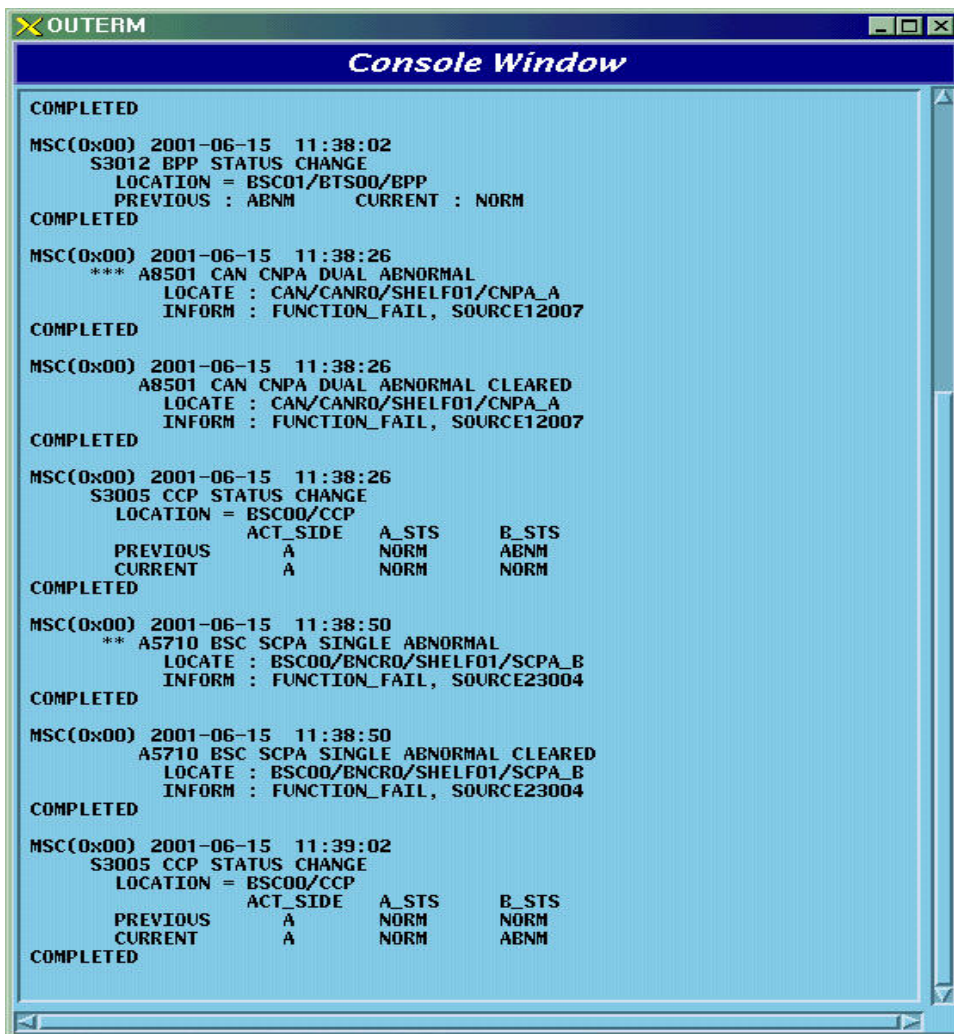


Fig. 4.9-11 Console Window

4.9.4.2. Operation

The console window displays system message, supports pop-up menu and its display environment is adjustable. It is divided into background color, text color, text font, text

size and close; press mouse button 3 to operate this function then the operating menu pops up. The number of message to be displayed is uncertain depending upon system load but roughly 400 through 800 messages can be displayed per second.

4.9.5. Controller

4.9.5.1. Overview

As the GUI gets complicated and varied the control for GUI is needed. Therefore, place a controller to control the entire GUI with close relation to their connection. Furthermore, due to the supply of network environment the user can access to a system more easily; the control is more complicated; monitor equipment to monitor and control them is needed; so the equipment to control the network and message display is developed.

The controller manages the host accessing to BMS Server; controls the display message of BSC, BTS, and Message Type; is in charge of process management.

4.9.5.2. Operation

Press ctrl among the buttons in Manager to start operation.

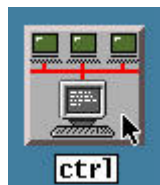


Fig. 4.9-12 ctrl Start Icon

Then the following screen is displayed.

The controller is divided into two parts of network control and message control.



Fig. 4.9-13 Controller Window

4.9.5.3. Message Filtering

The message control function is only supplied to the host, and it can filter and display the message of particular BTS or specific part. The message type is sorted into ALARM, FAULT, STATUS, and ETC. If the message type is not defined display the 'all message display'.

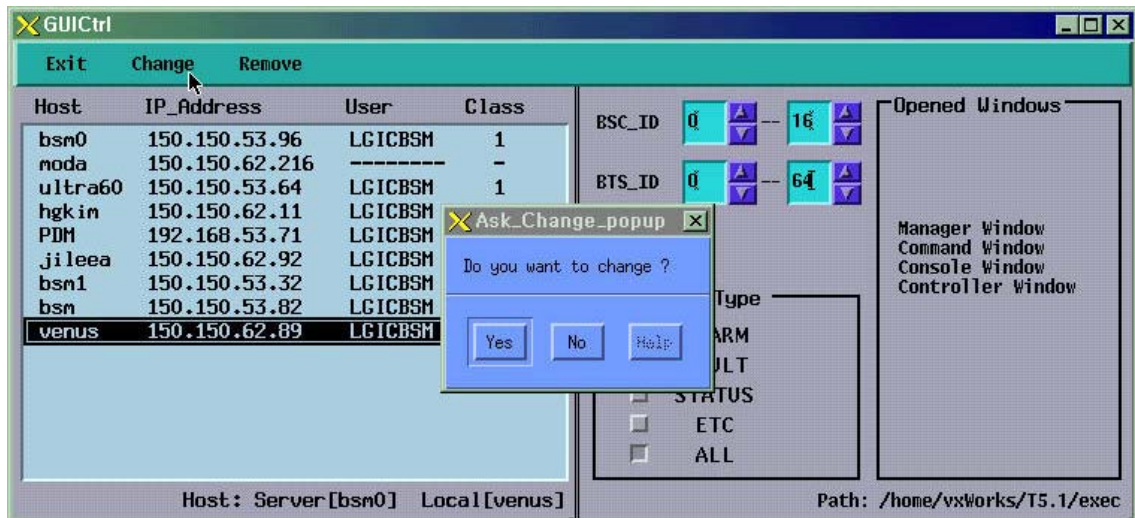


Fig. 4.9-14 Message Filtering of Controller

4.9.5.4. Network Management

The network control is the function provided by the BMS server and supplies the following functions: checking the host name of presently accessed client, address, user,

user's grade, and message display information and compulsory expulsion of them. The client can display the hosts presently in operation but cannot control the other users except its host.

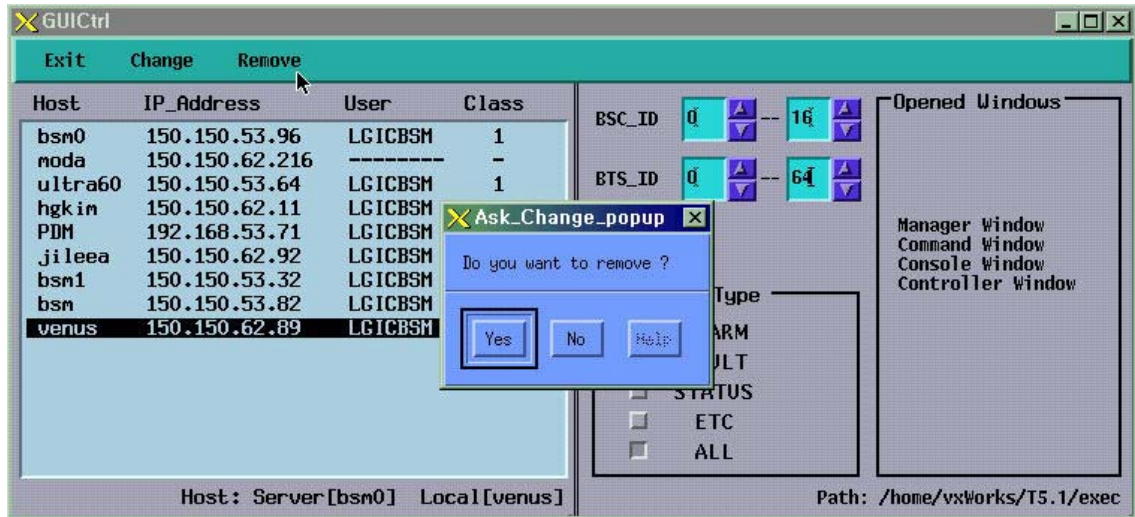


Fig. 4.9-15 Network Management of Controller

4.9.5.5. Suggestions

This program refers to the /etc/hosts file, so IP_Address, Domain_name, and Alais_name should be correctly recorded fit for the network configuration information.

4.9.6. Status Window (stmGUI)

4.9.6.1. Overview

The user can use the MMC (DIS--STS, DIS--ALM, DIS--FLT) to investigate the status of processor, board and alarm occurrence in each BSC/BTS. However, the user should keep on inputting commands with keyboard or mouse to check it on real-time; moreover, it is hard for the user to grasp the whole situation at one sight; therefore, the system takes advantage of the GUI(Graphic User Interface) to help the user in operation and for the more efficient system management.

4.9.6.2. Environment Setup

Solaris 2.7 and CDE library are used to develop the BMS as the OS and Graphic library. Moreover the Window Manager is set to be performed under CDE (Common Desktop Environment). Therefore, the user would be in a good operational environment if he operates the system on the environmental ground above (refer to the set and

environment set).

4.9.6.2.1. Suggestions

LD_LIBRARY_PATH is one of the most important environment variables. The stmGUI could be down during the operation unless the user let the stmGUI search /usr/X11R5/lib first of all.

e.g.) setenv LD_LIBRARY_PATH /usr/dt/lib/:usr/openwin/lib/:usr/lib

4.9.6.2.2. Data Files

If the stmGUI is unable to be run, the needed data files could be non-existed. Therefore, check if the following files are in the DATA/GUI Directory.

RACK.DAT : file contains the shape of RACK .
SHELF.DAT : file contains the shape of SHELF.
PROCESS.DAT: definition file of the processors.
*.xpm : drawing files needed in screen processing.
bts_name.info : files contain BTS name.