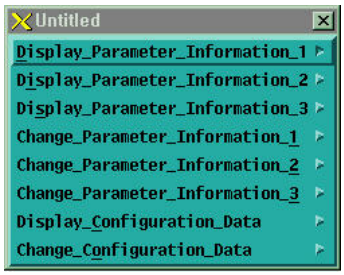

Fig. 4.9-4 CDM Tear-off

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

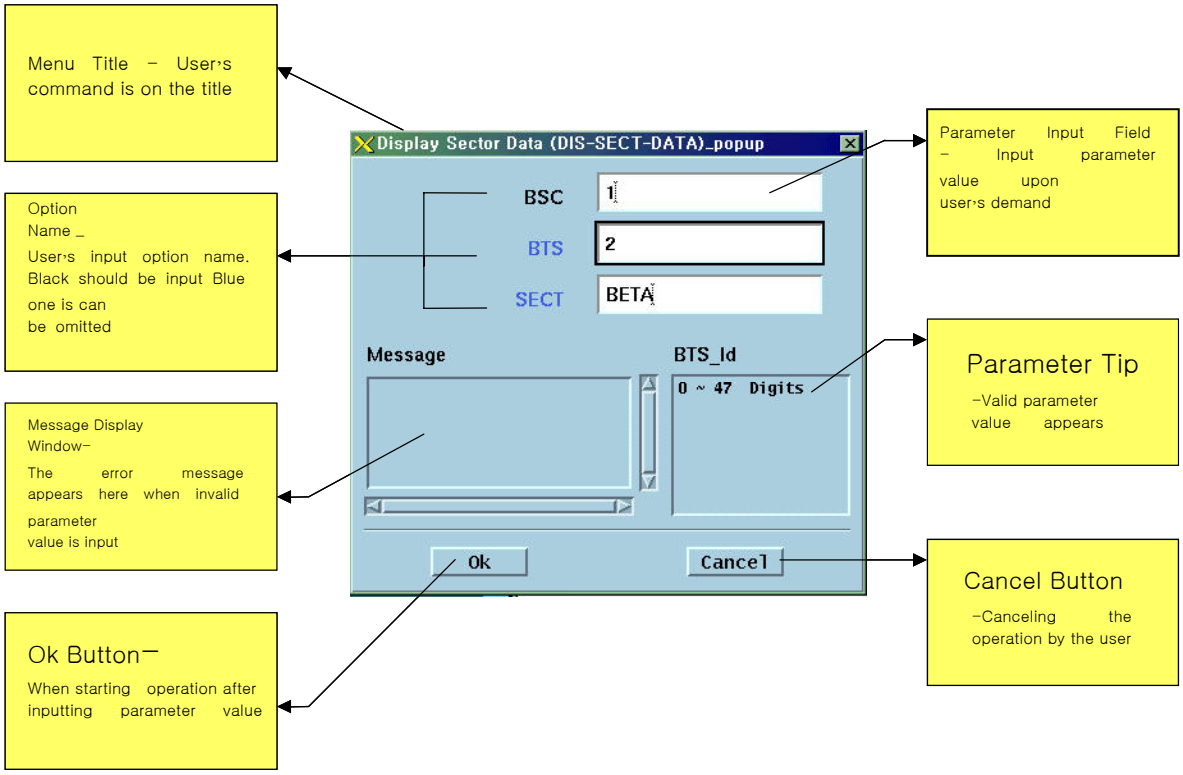

Fig. 4.9-5 POP-UP window

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.

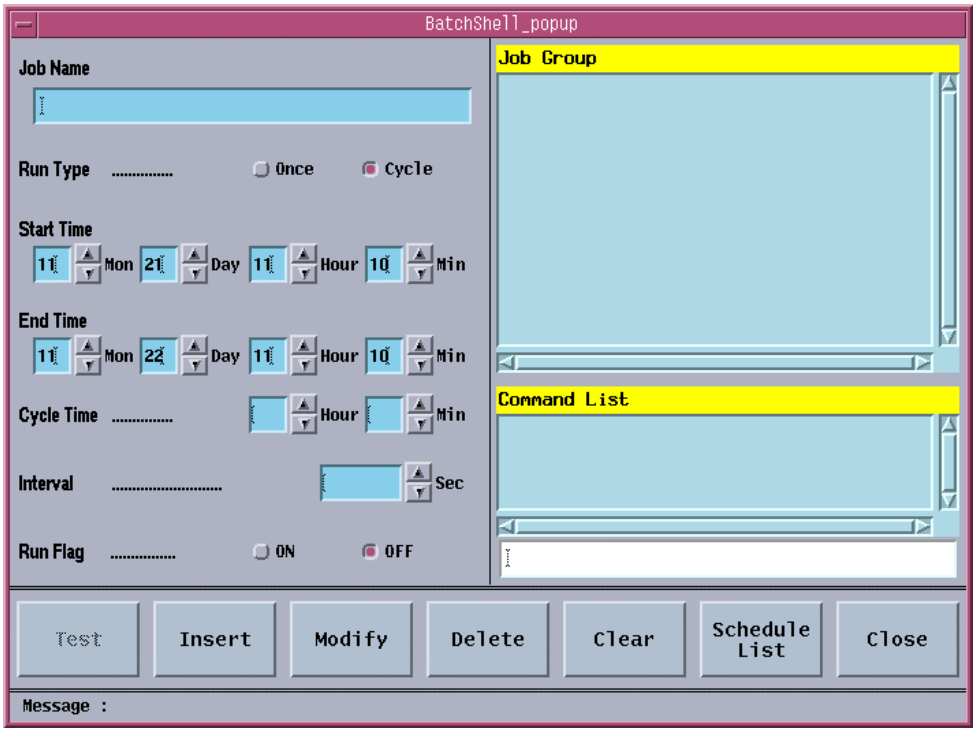

Fig. 4.9-6 Batch Job Screen

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 interm 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.

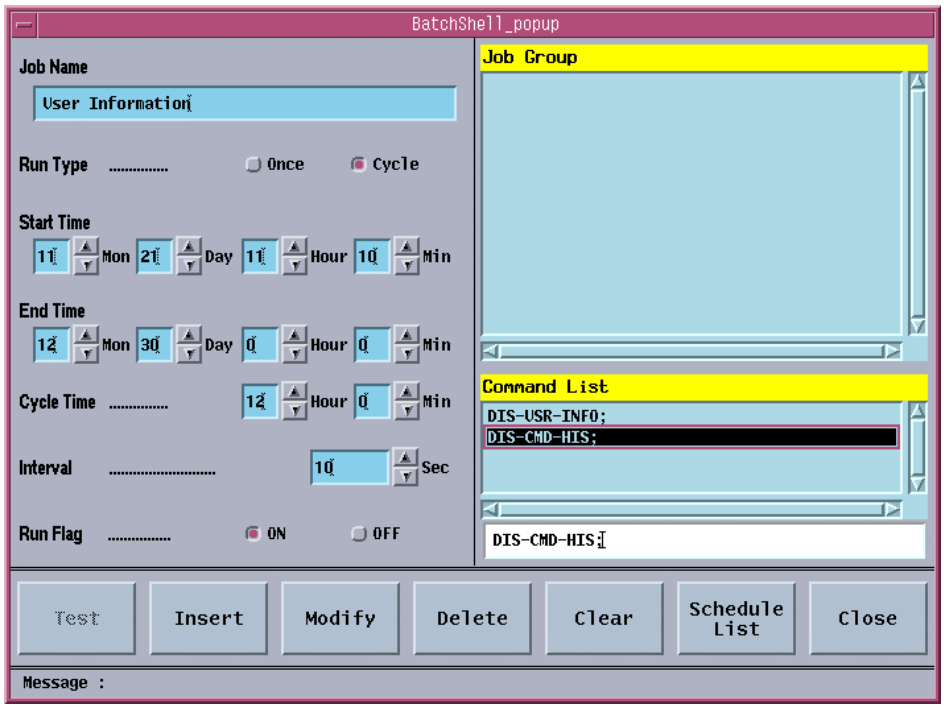

Fig. 4.9-7 Batch Job Input

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.

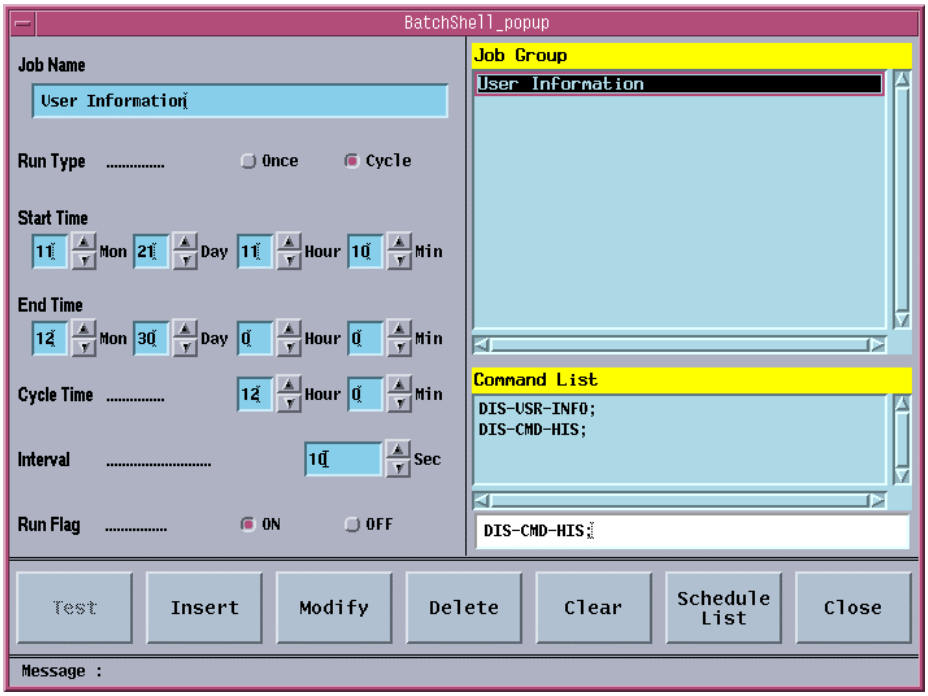

Fig. 4.9-8 Batch Job Modification

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.

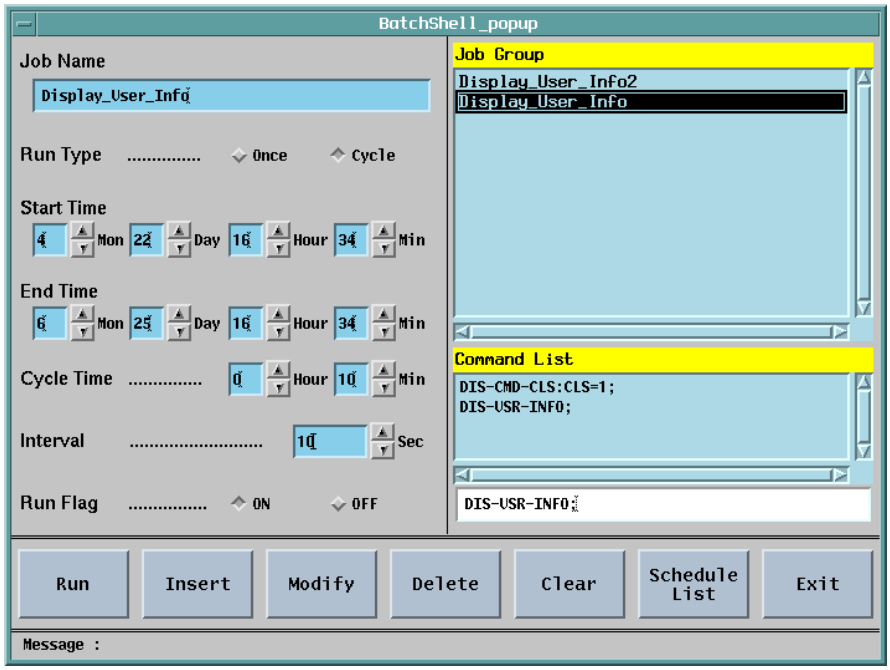

Fig. 4.9-9 Batch Job Deletion

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.

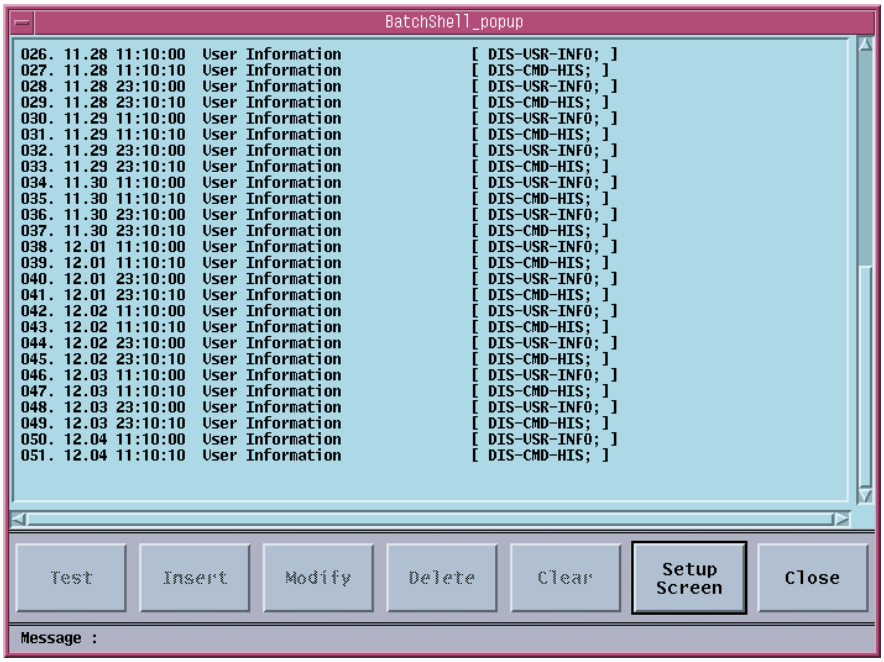

Fig. 4.9-10 Batch Job Status Display

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.

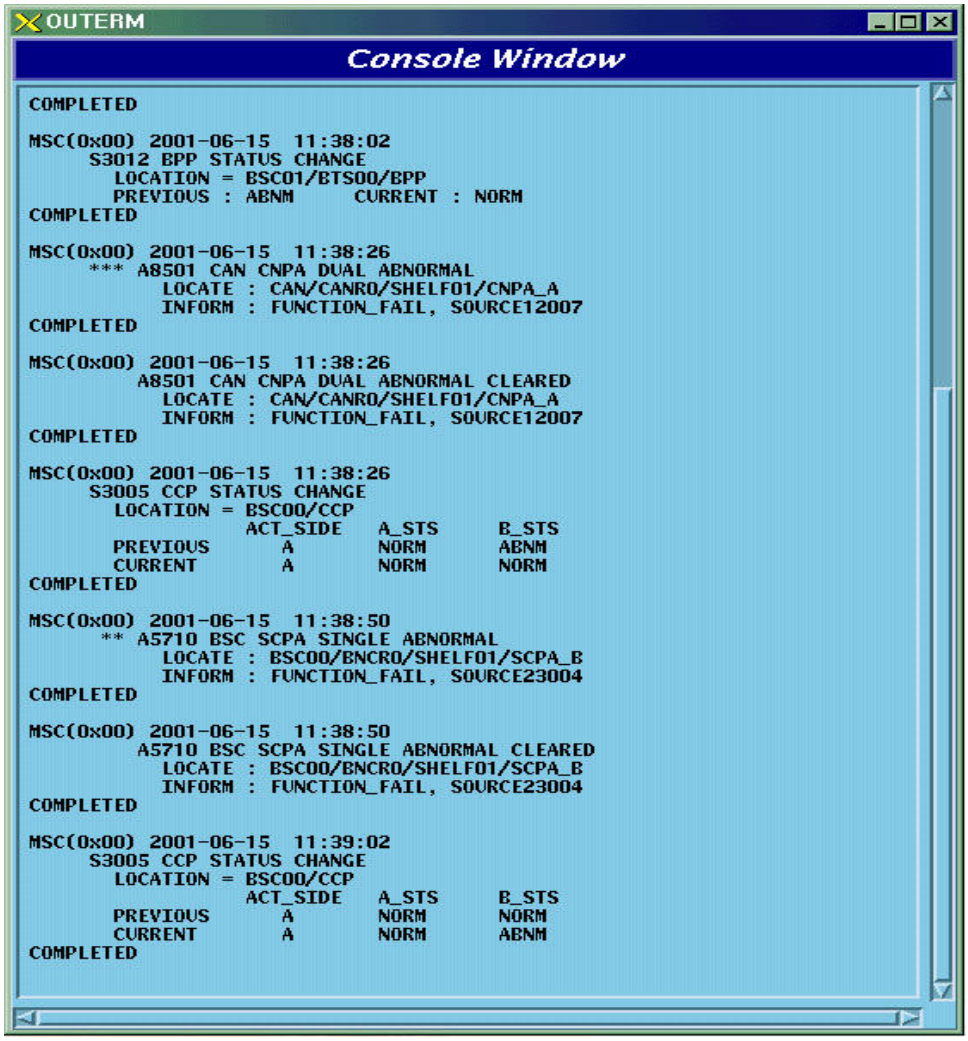

Fig. 4.9-11 Console Window

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.

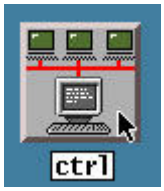

Fig. 4.9-12 ctrl Start Icon

Then the following screen is displayed.

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

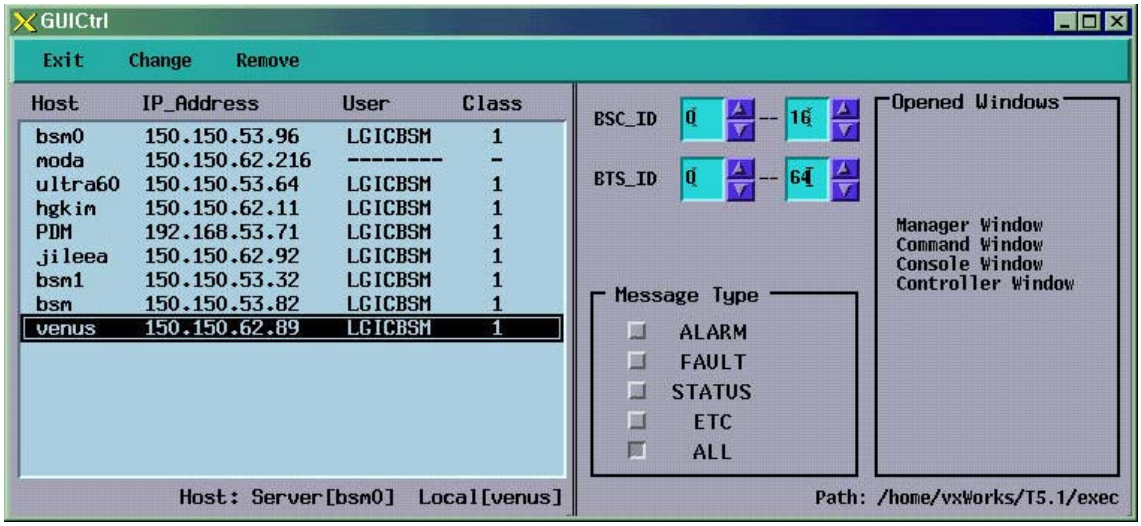

Fig. 4.9-13 Controller Window

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'.

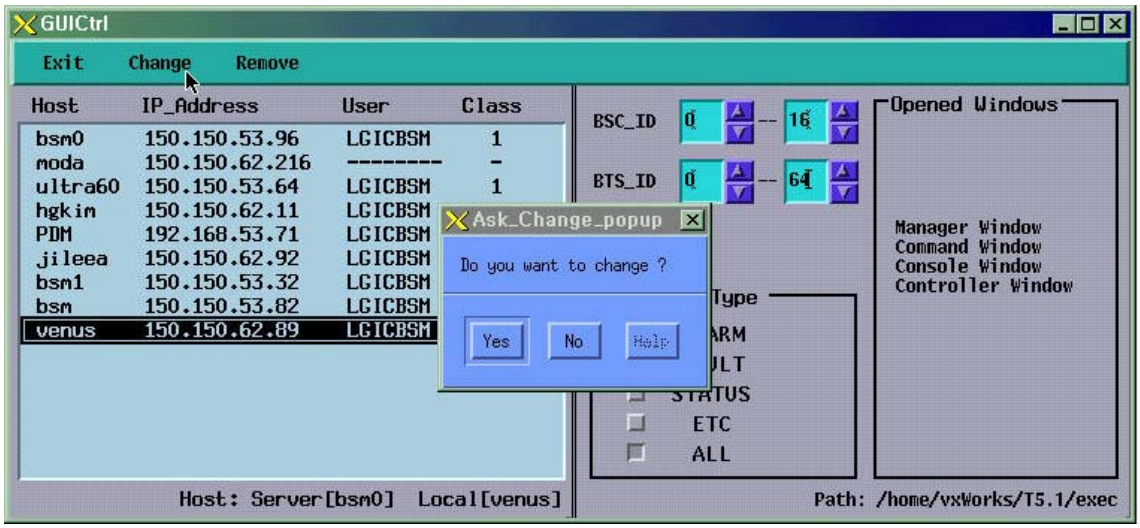

Fig. 4.9-14 Message Filtering of Controller

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.

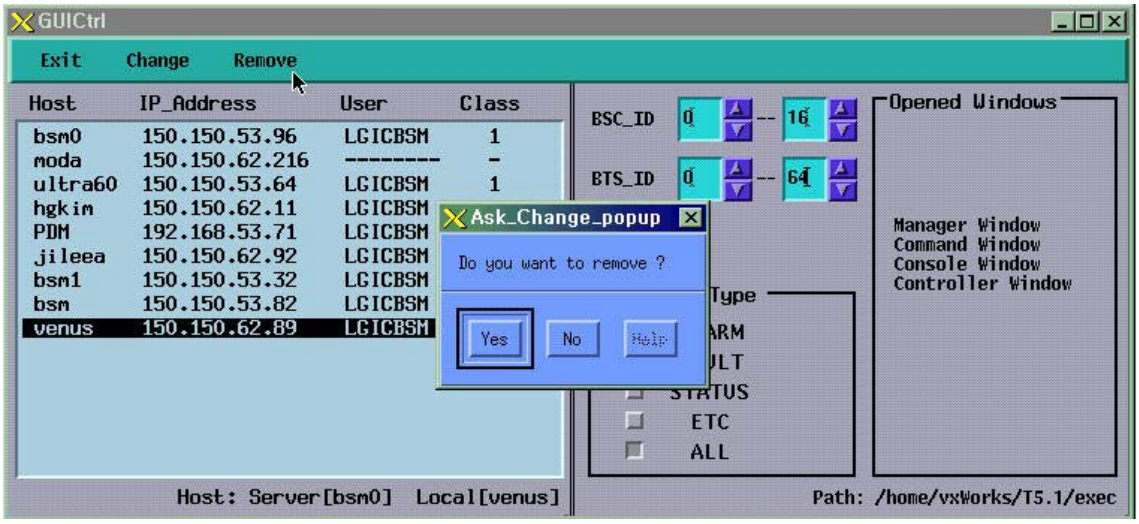

Fig. 4.9-15 Network Management of Controller

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.

4.9.6.3. Directions for Use

The direction is configured with full of drawings. Refer to the STMX, TRMX Block for detailed operation. Press stmGUI among the buttons of Manager.

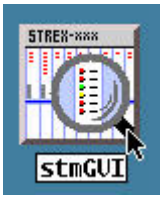

Fig. 4.9-16 stmGUI Start Icon

Then the following screen is displayed.

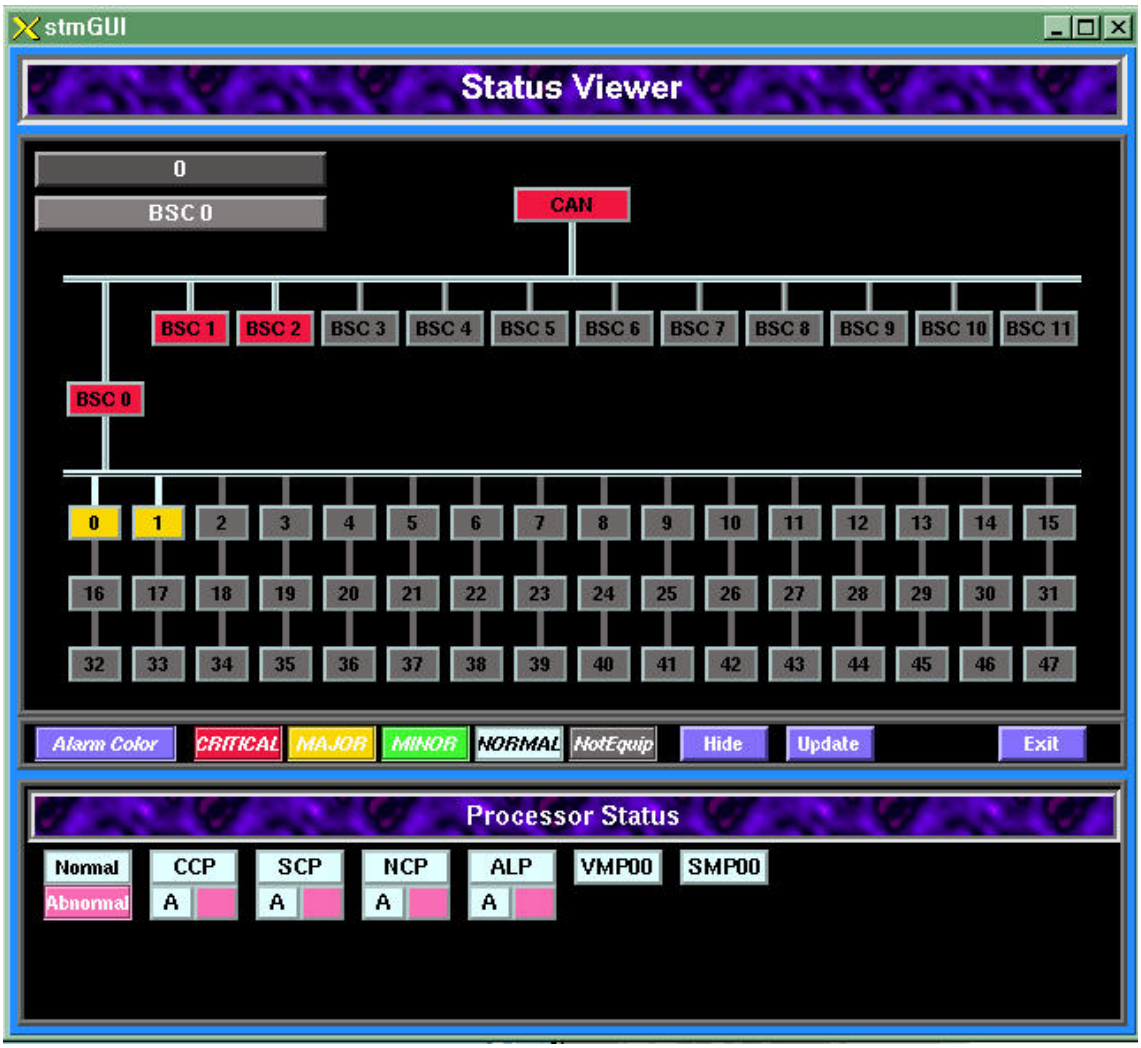

Fig. 4.9-17 stmGUI Main Screen

The figure above shows the status that the highest-grade alarm of the BSC0 is the critical alarm and the highest alarm of the BTS0, major alarm, is generated.

4.9.6.3.1. BTS Name Display.

Fig. 4.9-18 Display Screen of BTS Name.

e.g.) On the figure above, ghjeong is the real name of the BTS and BTS 0 is the BTS ID.

4.9.6.3.2. Main Menu

Fig. 4.9-19 Main Menu

Hide : It is used when hiding RACK and SHELF simultaneously from the screen.

Update : It is used in compulsory loading of initial value upon deletion and extension by MMC.

Exit : It ends the program.

4.9.6.3.3. Color by the Alarm Grade

Fig. 4.9-20 Alarm Color

Red : Critical

Orange : Major

Green : Minor

Azure : Normal

Gray : BTS Is Not Equipped

4.9.6.3.4. Status Color.

Fig. 4.9-21 Status Color Tone

4.9.6.3.5. Processor Status

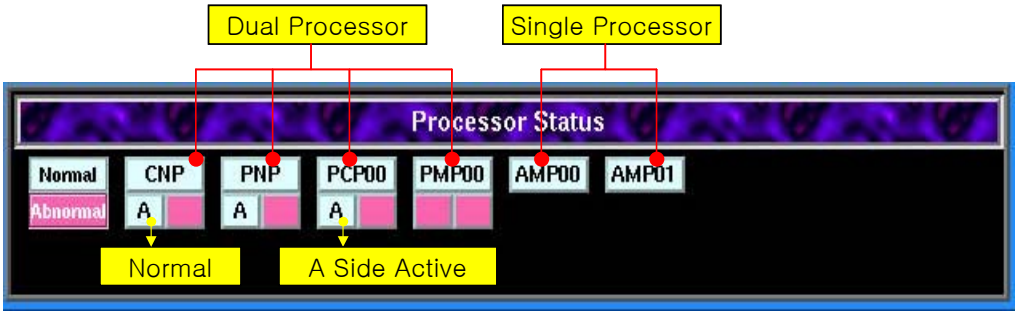

Fig. 4.9-22 Processor Status (CAN)

Fig. 4.9-23 Processor Status (BSC)

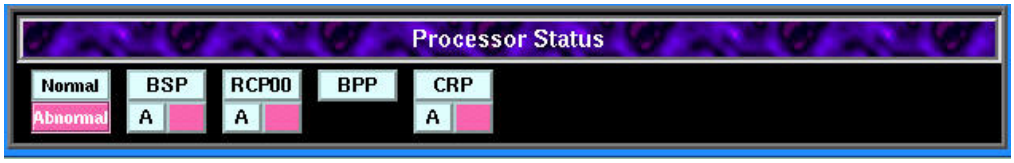

Fig. 4.9-24 Processor Status (BTS)

4.9.6.3.6. Rack View

To see the shape of BSC/BTS one should press the corresponding button.

Select a BSC.

Fig. 4.9-25 BSC Selection

Select a BTS.

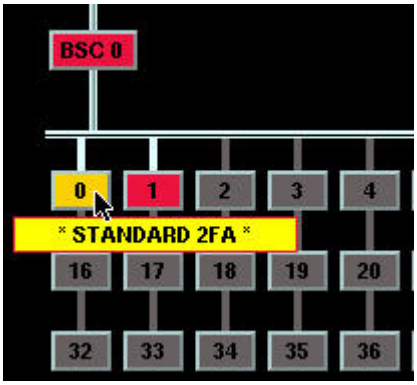

Fig. 4.9-26 BTS Selection

.

4.9.6.3.7. Rack Shape Diagram.

The following shape appears if CAN, BSC or BTS is chosen.

4.9.6.3.7.1. CAN Rack

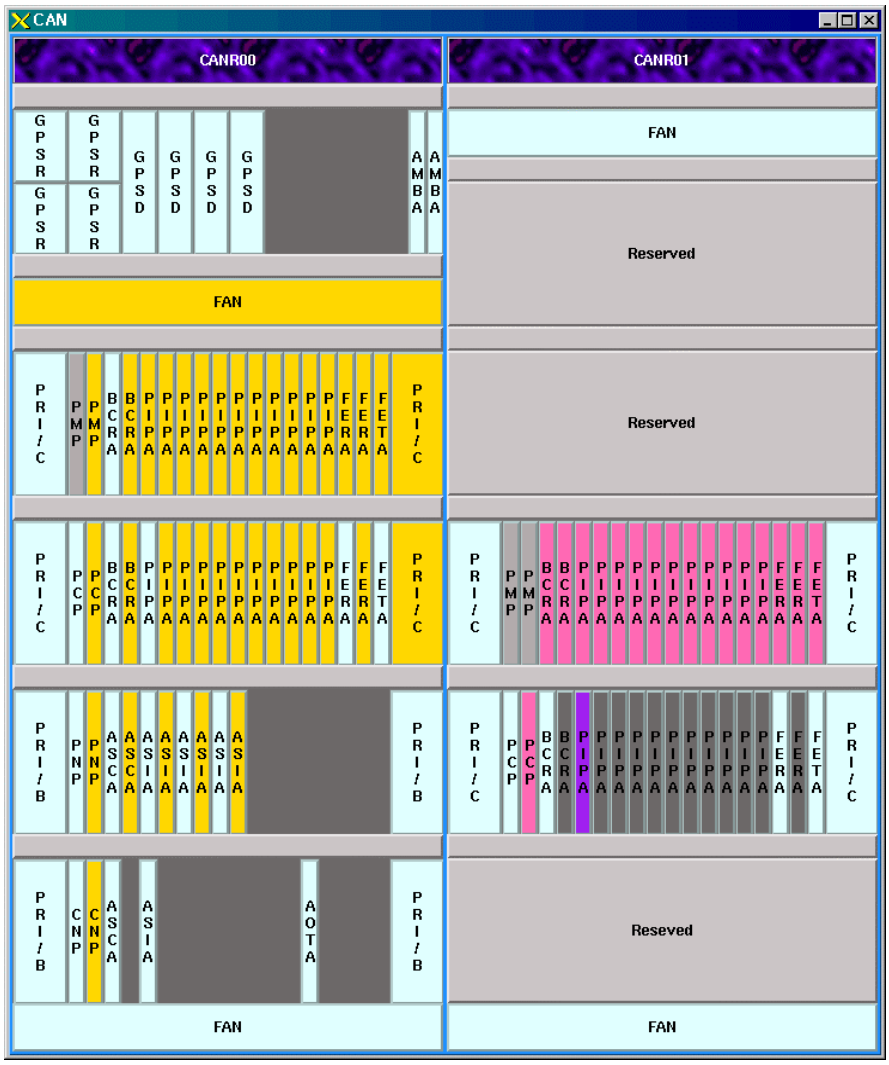

Fig. 4.9-27 CAN Rack Shape.

The color of each slot manifests the alarm information of equipped cards. For example, the yellow color of BCRA, PIPA and FERA in the 4th shelf of the left side shows that the alarm is generating at Major status.

4.9.6.3.7.2. BSC Rack

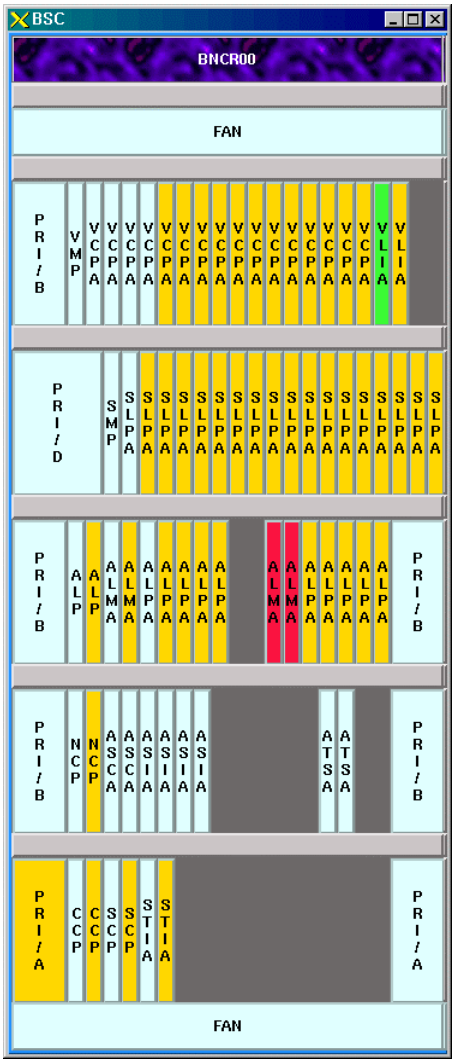

Fig. 4.9-28 BSC Rack

4.9.6.3.7.3. BTS Rack

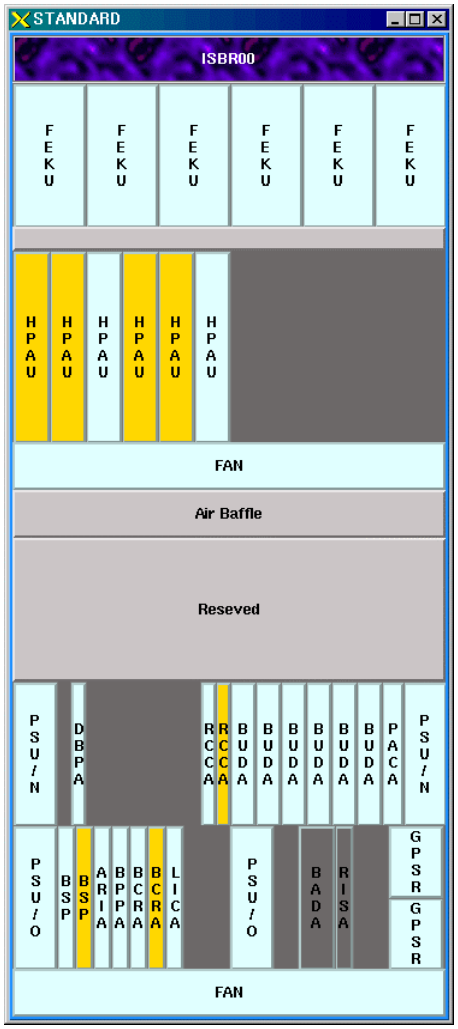

Fig. 4.9-29 BTS Rack

4.9.6.3.7.4. Slot Shape Diagram.

The corresponding dialog box is displayed upon clicking slot in the rack shape diagram.

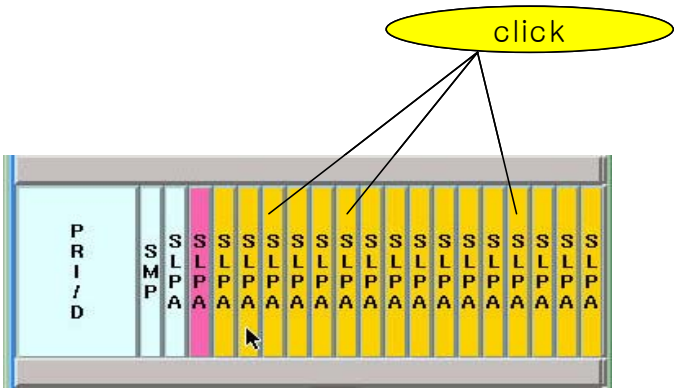

Fig. 4.9-30 card click example.

The following dialog box appears upon clicking SLPA card above.

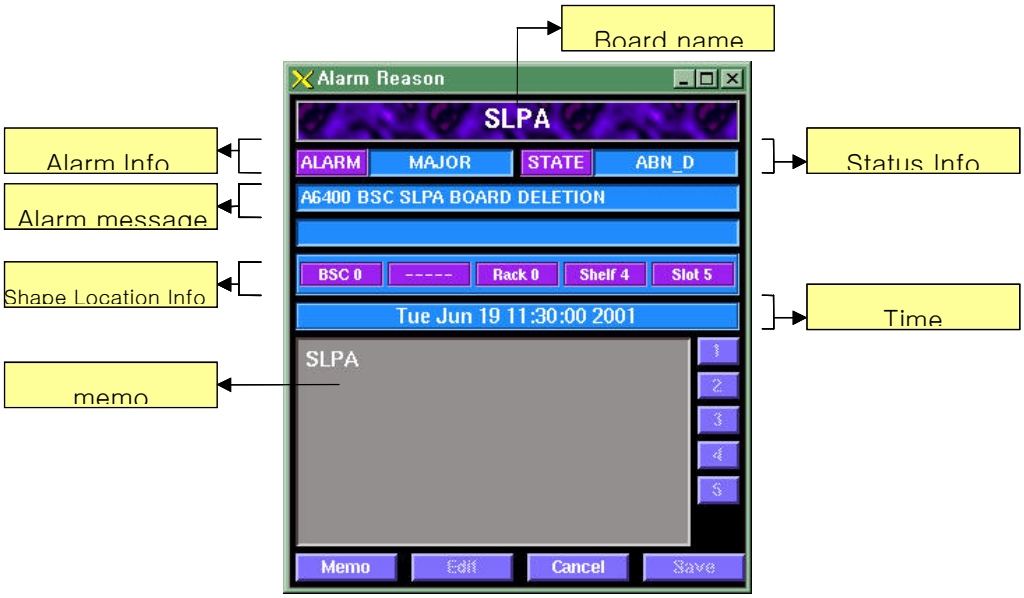

Fig. 4.9-31 e.g.)Dialog box- card Information

Memo: Stores the edited results temporarily.

Edit: Edit button

Cancel: End button

Save: Stores the edited.

1,2,3,4,5 button: The memo is stored in numerical order.

Click numbers in right side(1,2,3,4,5) to see the memo.

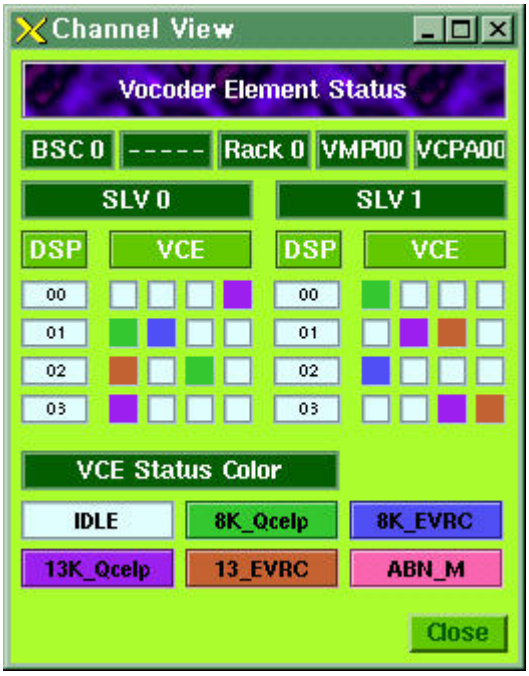

Fig. 4.9-32 e.g.)Dialog box-Vocoder Element Status

For example, the SK_Qcelp type call in the VCE0 of DSP1 is in busy status.

Fig. 4.9-33 e.g.)Dialog box-DBPA Chip Status

4.9.6.3.7.5. Status Display

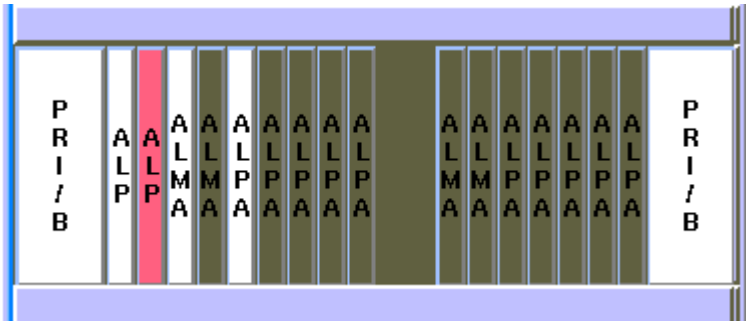

Fig 4.9-34 Display Status by Board

4.9.6.3.7.6. Alarm Display

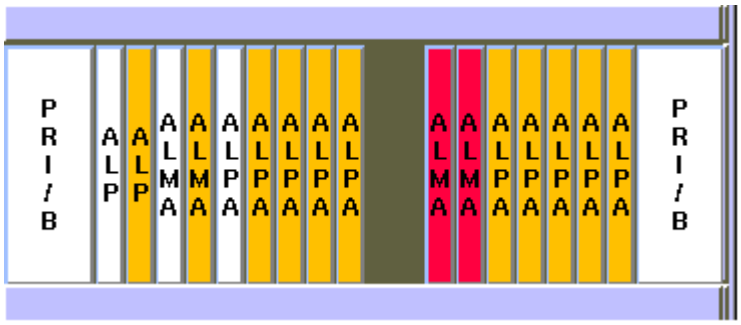

Fig. 4.9-35 Alarm Display by Board.

4.9.6.4. Suggestions on Operation.

4.9.6.4.1. Status Management

The status and alarm are displayed in turn at 2-minute intervals in managing each board.

If there is no Alarm it displays the status color.

4.9.6.4.2. The Order of Priority

The stmGUI receives the process results of the status block (STMX) and fault block (TRMX) to reprocess them. Therefore, both of the two blocks should be normally operated for the normal operation. If the initial data setup of STMX has not been done while BSM is running, stmGUI may display undefined values. In this case, press update

button to initialize the value again.

4.9.6.4.3. End

Use Exit button in the main screen to end the program. It is undesirable using command kill or xkill. Proper procedure is recommended.

4.9.7. Neighbor Control Window (neighbor)

4.9.7.1. Overview.

Graphic neighbor is a tool that helps addition and deletion of the information related to the BTS neighbor. User can view, add and delete the information related to neighbor using the existing MMC but it requires the user to input lots of data. Therefore, graphic neighbor minimize the input amount of user for user's convenience.

4.9.7.2. Environment Setup.

Refer to the environment setup of stmGUI.

4.9.7.3. Directions for Use

Most of the directions are constituted of drawings and refer to the CDMX for detailed operation.

Press neighbor among the buttons of Manager to start.

Fig. 4.9-36 Neighbor Start Icon

The following initial screen appears.

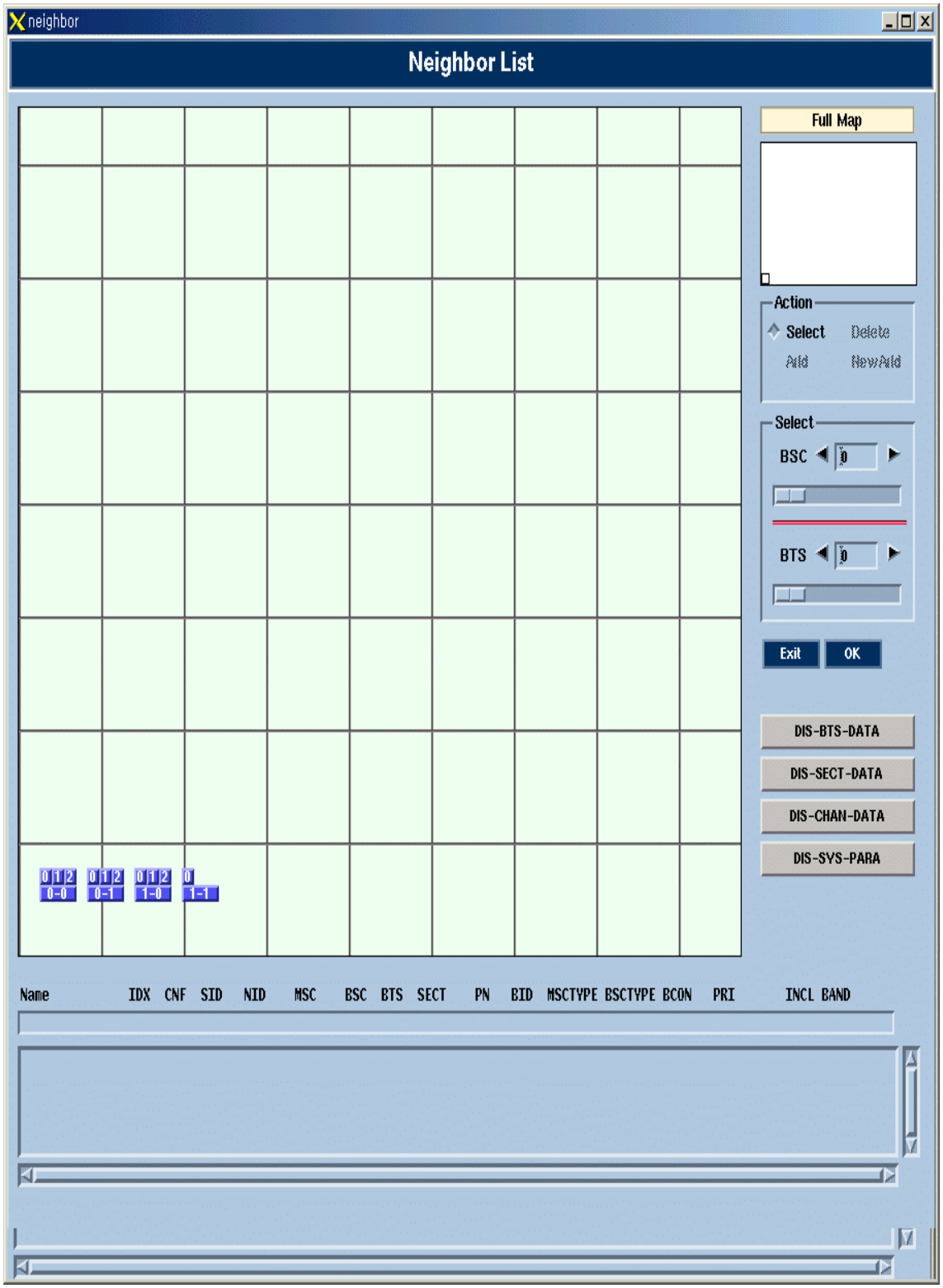

Fig. 4.9-36 Neighbor Initial Screen

4.9.7.3.1. Main Menu

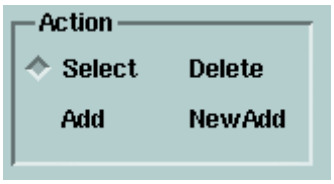

Fig. 4.9-37 Main Menu Screen

User can select a function in this screen.

Select : select or change the BTS or sector. For selection, select a BTS first and then select a sector in the BTS.

Delete : delete the neighbor in the presently selected sector. Press sector to be deleted after selection.

Add : add neighbor into the presently selected sector. Press a sector to be added after selection.

NewAdd : add a neighbor of other MSC into the presently selected sector. Input information into the window field appeared after selection.
(There is no default value)

4.9.7.3.2. BTS Selection

There are two methods for selecting BTS.
Surely, the BTS subjected to the MSC of the presently operating system can be selected.

4.9.7.3.2.1. Method using Map.

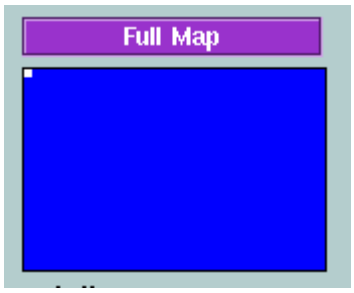

Fig. 4.9-38 Full Map

Dragging mouse can search the desired location here. Click BTS (label : x-y) in the

desired location with this method and press the sector of the BTS to select.

4.9.7.3.2.2. Selection Method by BTS ID.

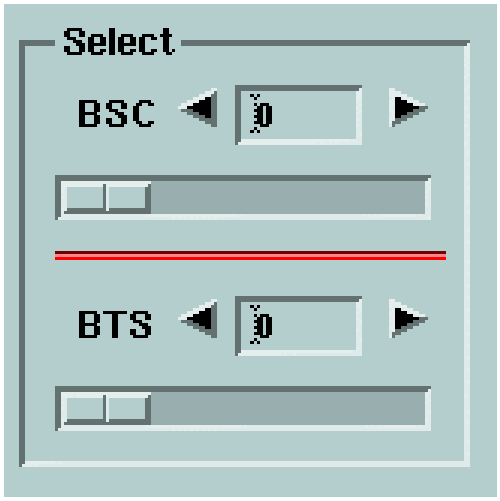

Fig. 4.9-39 Random BTS Selection

BSC : It is the BSC to which the BTS belongs.

BTS : It is the BTS ID of the BTS.

Press OK button to complete the selection.

4.9.7.3.2.3. Selection Example.

Fig.4.9-40 Initial Screen (Before selecting BTS)

Fig. 4.9-41 After selecting BTS.

Fig. 4.9-42 After selecting Sector(Green: neighbor).

4.9.7.3.3. Neighbor Information

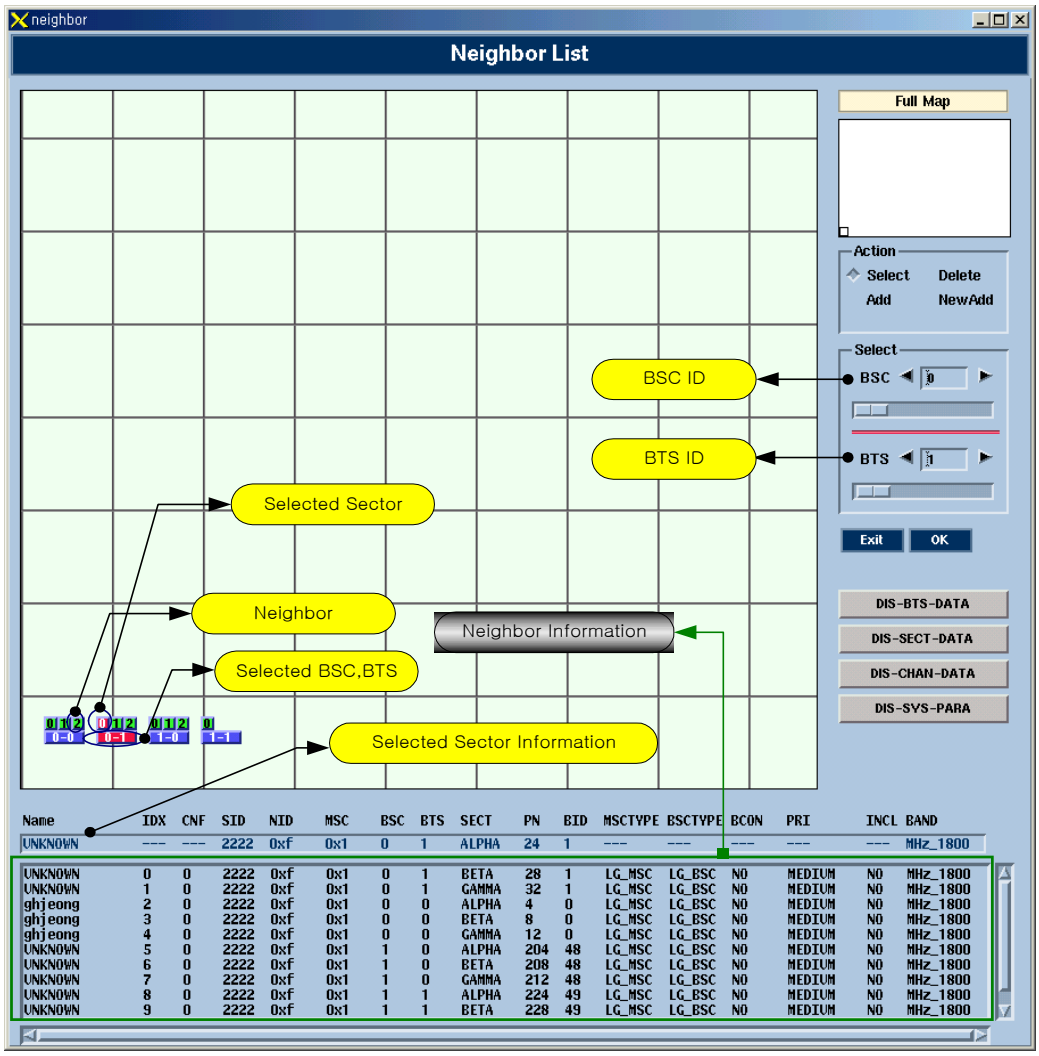

Fig. 4.9-43 Neighbor Information Screen

The own neighbor list checking is possible through the information in the lower part or the green tinted sector.

4.9.7.3.4. Neighbor Addition

The following window appears after selecting neighbor to be added.

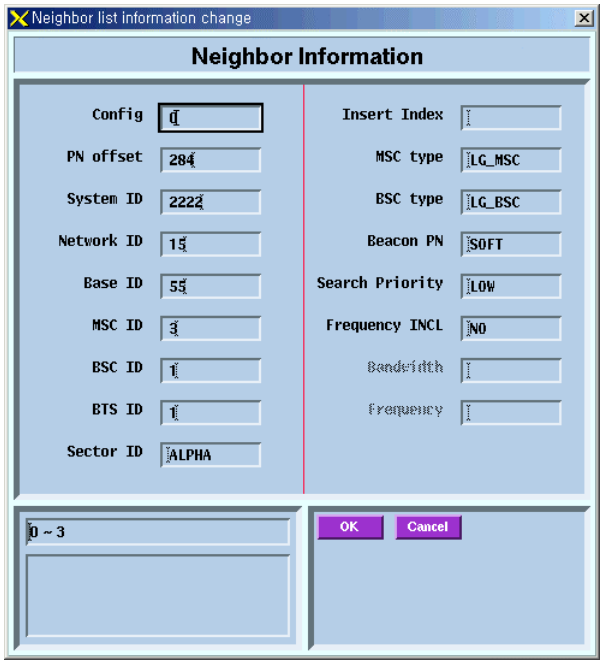

Fig. 4.9-44 Inputting neighbor belongs to mother MSC

Adding neighbor belongs to the mother MSC requires the user to input just 4~6 fields.

Fig. 4.9-45 Inputting neighbor belongs to other MSC

Adding neighbor belongs to other MSC requires the user to input all the information.

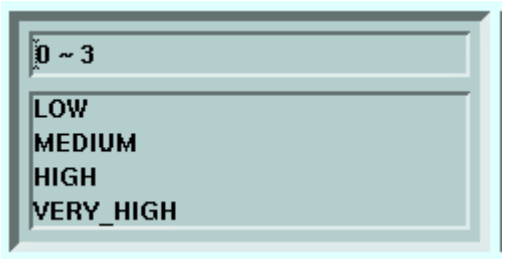

Fig. 4.9-46 Default Value upon Input

Select a field to be input then the system shows the default values. To select a value input the value onto the corresponding input space or select one among the values in the lower part with mouse. Press OK after the input is done or press Cancel to return to the Main screen.

4.9.7.3.5. Neighbor Deletion

Deletion can be completed with two kinds of method.
Press the corresponding line in the lower part or press the BTS sector button.

4.9.7.4. Suggestions in Operation

4.9.7.4.1. The order of priority

Graphic Neighbor is a tool for adding/deleting neighbors. Therefore, performing extension or deletion with MMC can bring out a wrong result while the Graphic Neighbor is being used. And if it is performed the user should run the Graphic Neighbor once again. The neighbor intercommunicates with the configuration block (CDMX) through MMI block. Consequently, the two blocks should be in normal operation.

4.9.8. Call Trace Window

4.9.8.1. Overview.

Call Trace Window is a tool that shows all kinds of call trace information for a specific for a specific MS onto the GUI (Graphic User Interface) screen of the user's terminal. Call trace command can be executed and the results can be checked through the existing MMC or dedicated window for call trace. The user can set time as long as he want with Timer for the maximum of two MS to trace calls.

4.9.8.2. Environment Setup

Refer to the environment setup of stmGUI

.

4.9.8.3. Directions for Use.

Most of the directions are constituted of drawings and refer to the TSMX Block for detailed operation.

Press call among the buttons of Manager to start.

Fig. 4.9-47 Call Trace Start Icon

Then the following screen appears.

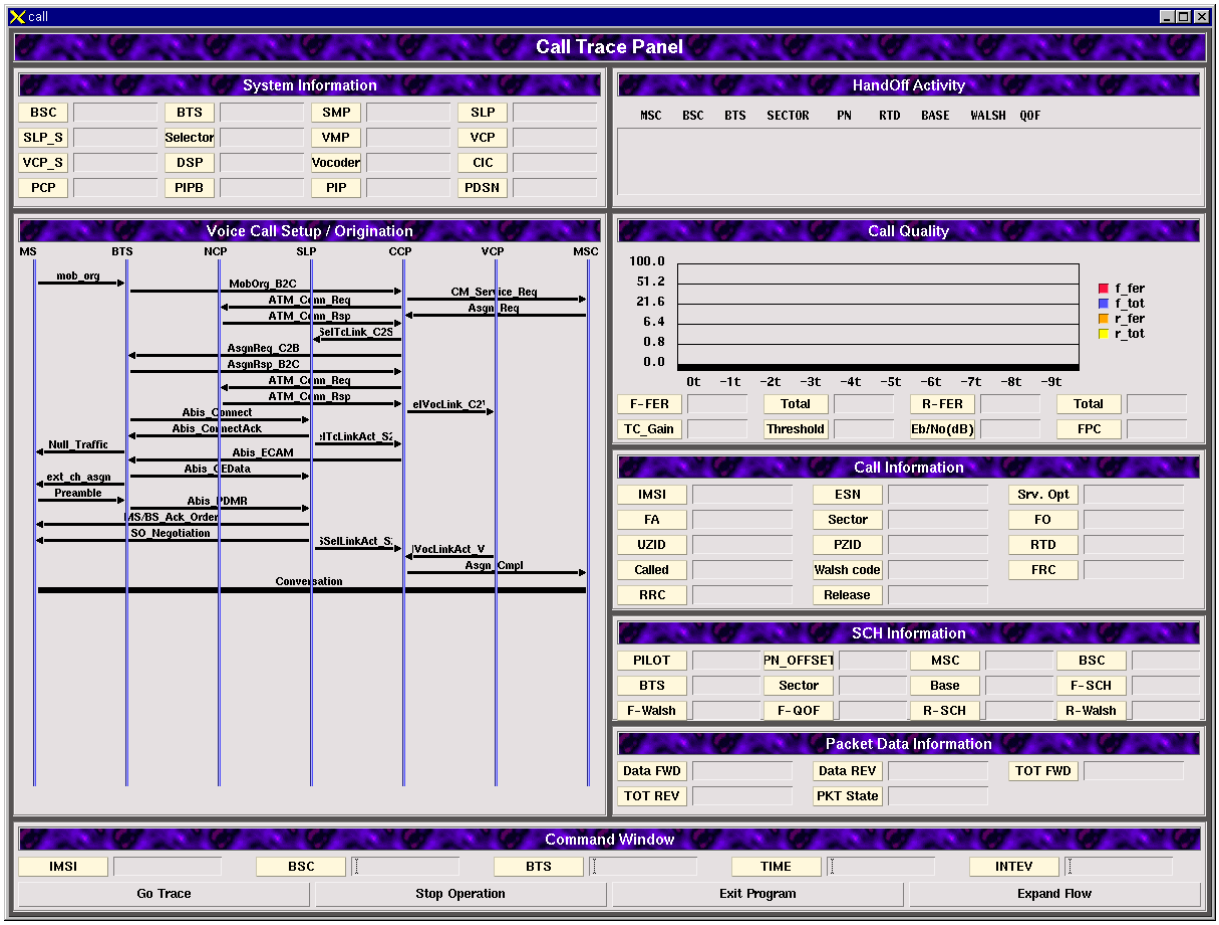

Fig. 4.9-48 Call Trace Initial Screen

4.9.8.3.1. Sub Menu.

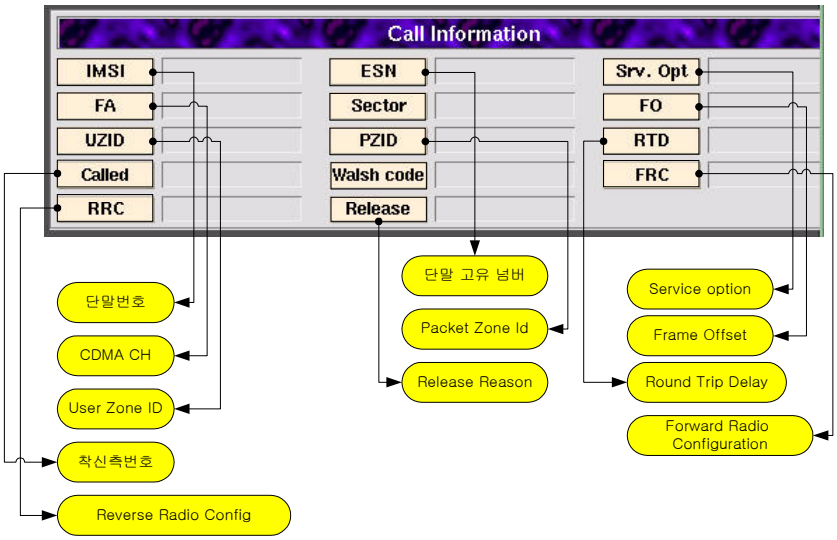

Fig. 4.9-49 Call Information.

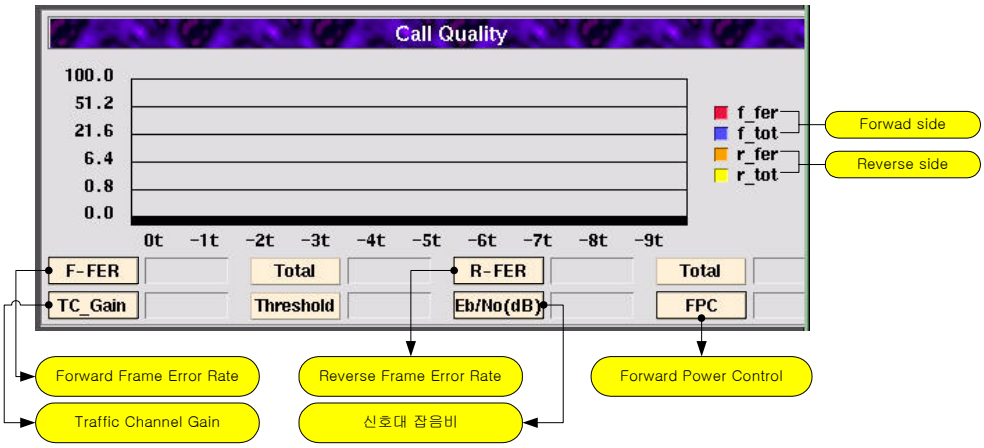

Fig. 4.9-50 Call Quality

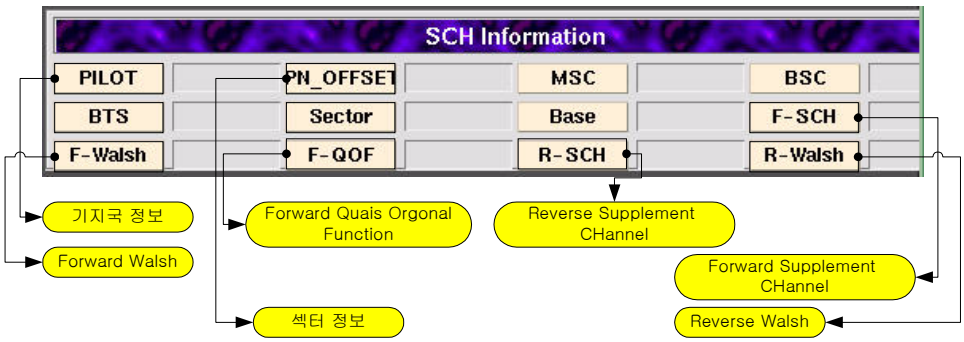

Fig. 4.9-51 SCH Information

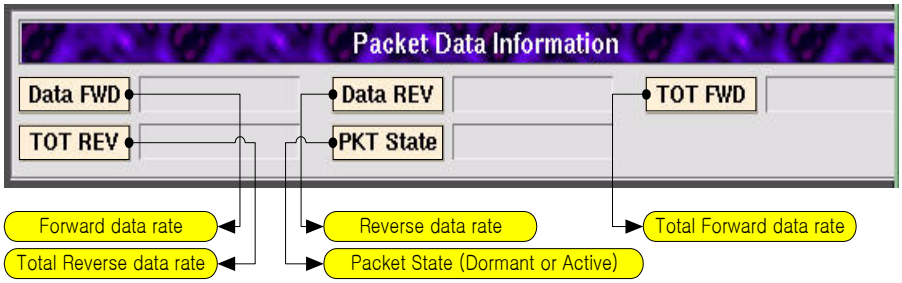

Fig. 4.9-52 Packet Data Information

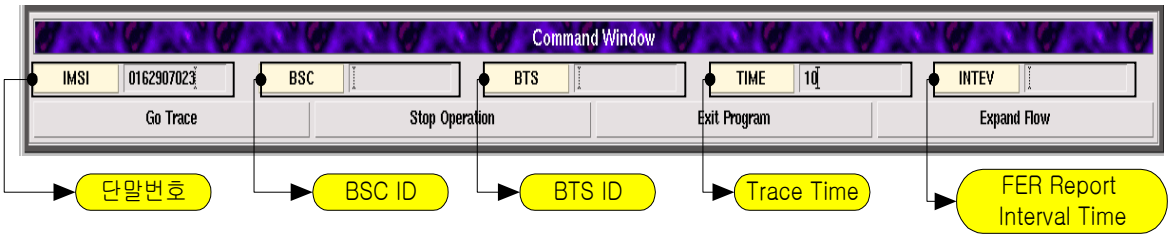

Fig. 4.9-53 Command Window

Input MS number (IMSI), BSC ID, BTS ID, Trace Time and FER Report Interval Time into the command window of [Fig. 4.8-53], and press Go Trace button below, then the call trace starts. Press Stop Operation beside Go Trace button to stop the process during the operation and press Exit Program to end call trace program. The Expand Flow shows the flow to the PDSN upon clicking it.

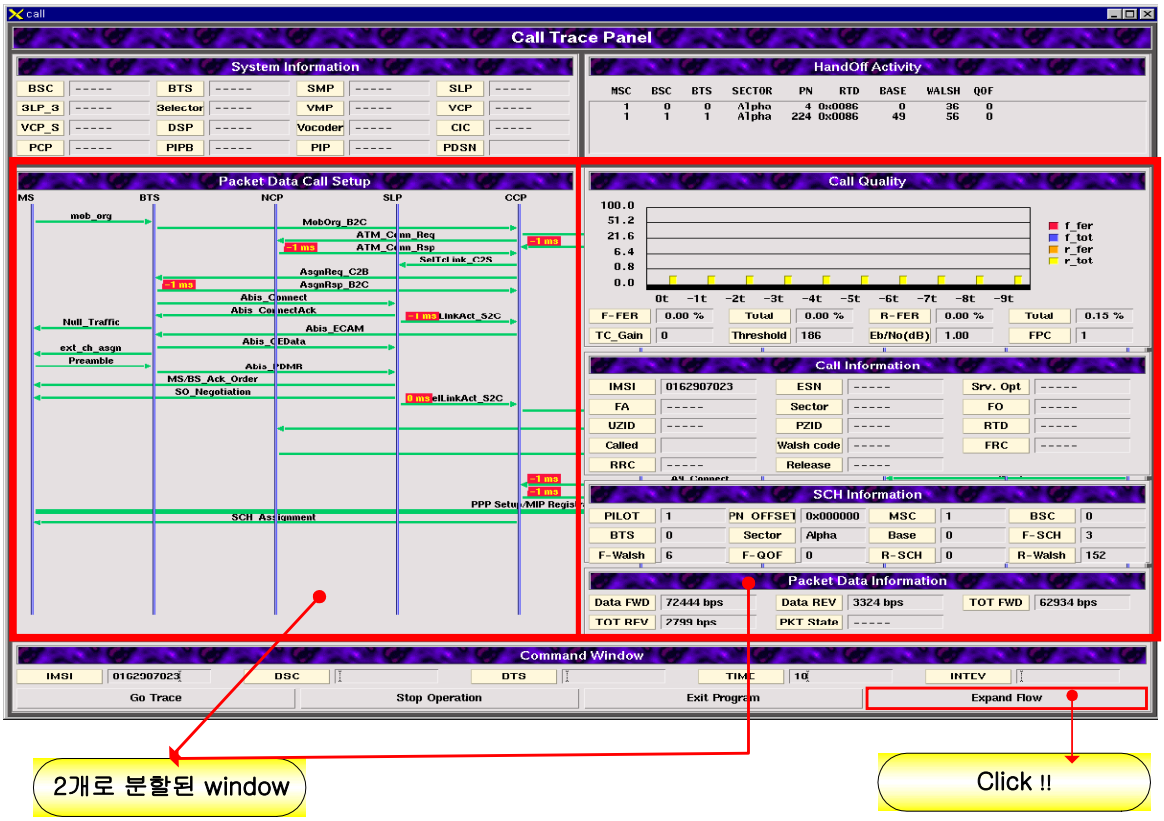

Fig. 4.9-54 Example of Expand Flow Button

If the user wants to see the expand flow hidden by the window at the right side after call test, click Expand Flow button to see the expand flow.

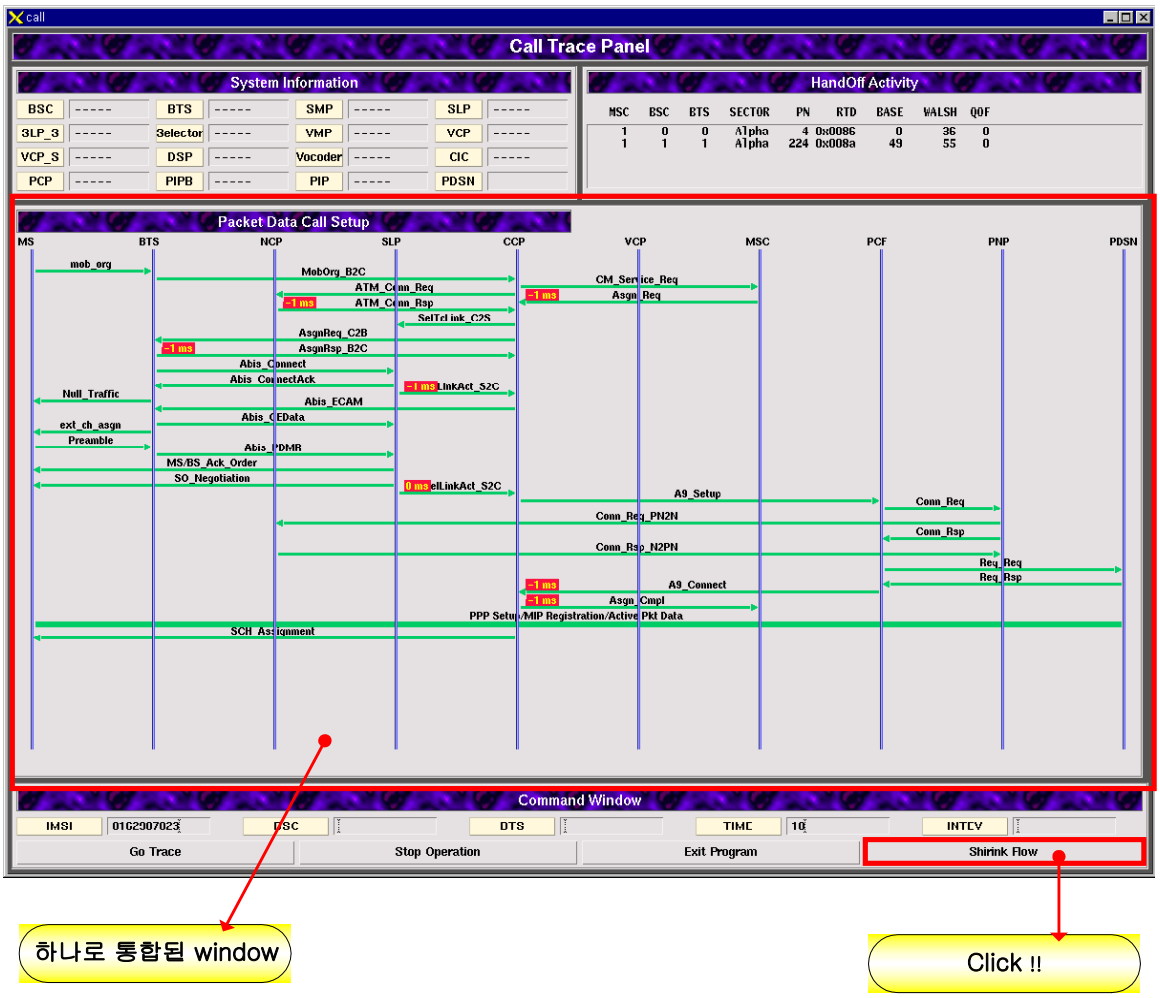

Fig. 4.9-55 Example of Shrink Flow Button

To see the hidden window (Call Information, Call Quality, Handoff Activity at the right) click Shrink Flow button.

4.9.8.3.2. Voice Call

4.9.8.3.2.1. Origination Call (Voice Call Setup / Origination)

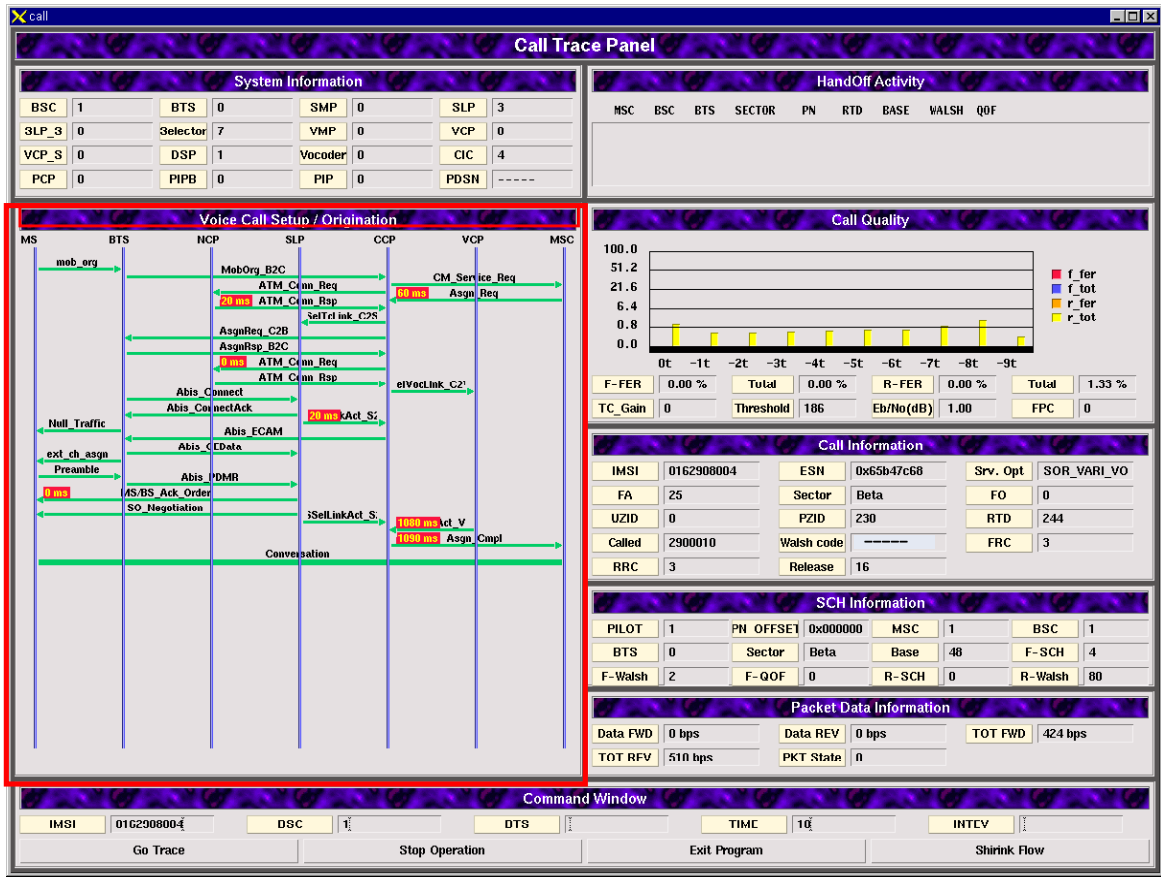

Fig. 4.9-56 Voice Call Setup / Origination

It is FLOW that shows voice originating call process procedure and System Information, Call Information and Call Quality Information are represented on it. The handoff information is also represented when the handoff is generated.

4.9.8.3.2.2. Termination Call.(Voice Call Setup / Termination)

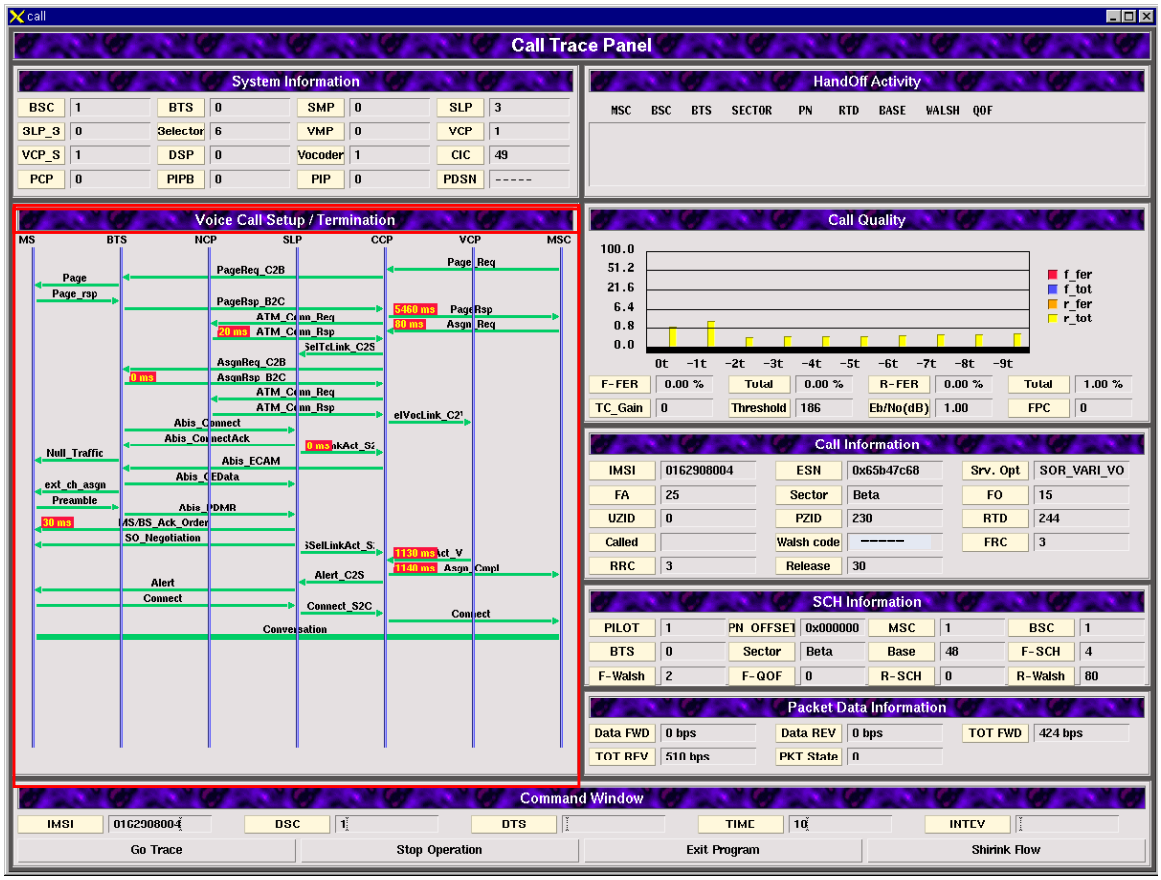

Fig. 4.9-57 Voice Call Setup / Termination

It is FLOW that shows the voice originating call process procedure, and System Information, Call Information and Call Quality Information are represented on it. The handoff information is also represented when the handoff is generated.

4.9.8.3.3. Data Call

4.9.8.3.3.1. Packet Data Call Setup

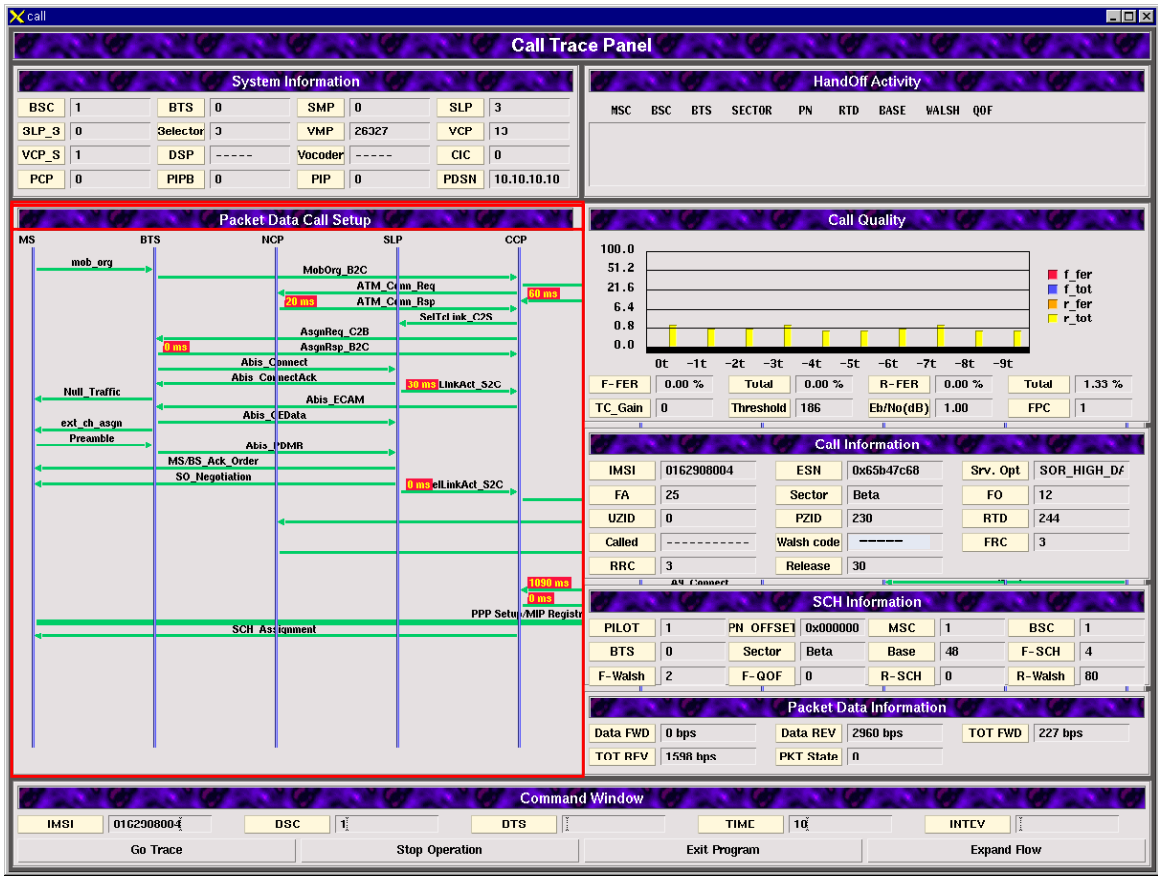

Fig 4.9-58 Packet Data Call Setup

It is FLOW that shows packet data call processing procedure and the System Information, Call Information, Call Quality, Supplemental Channel Information and Packet Data Information are represented on it. The handoff information is also represented on it when the handoff is generated.

4.9.8.3.3.2. Packet Data Call Reactivation / Network Initiated

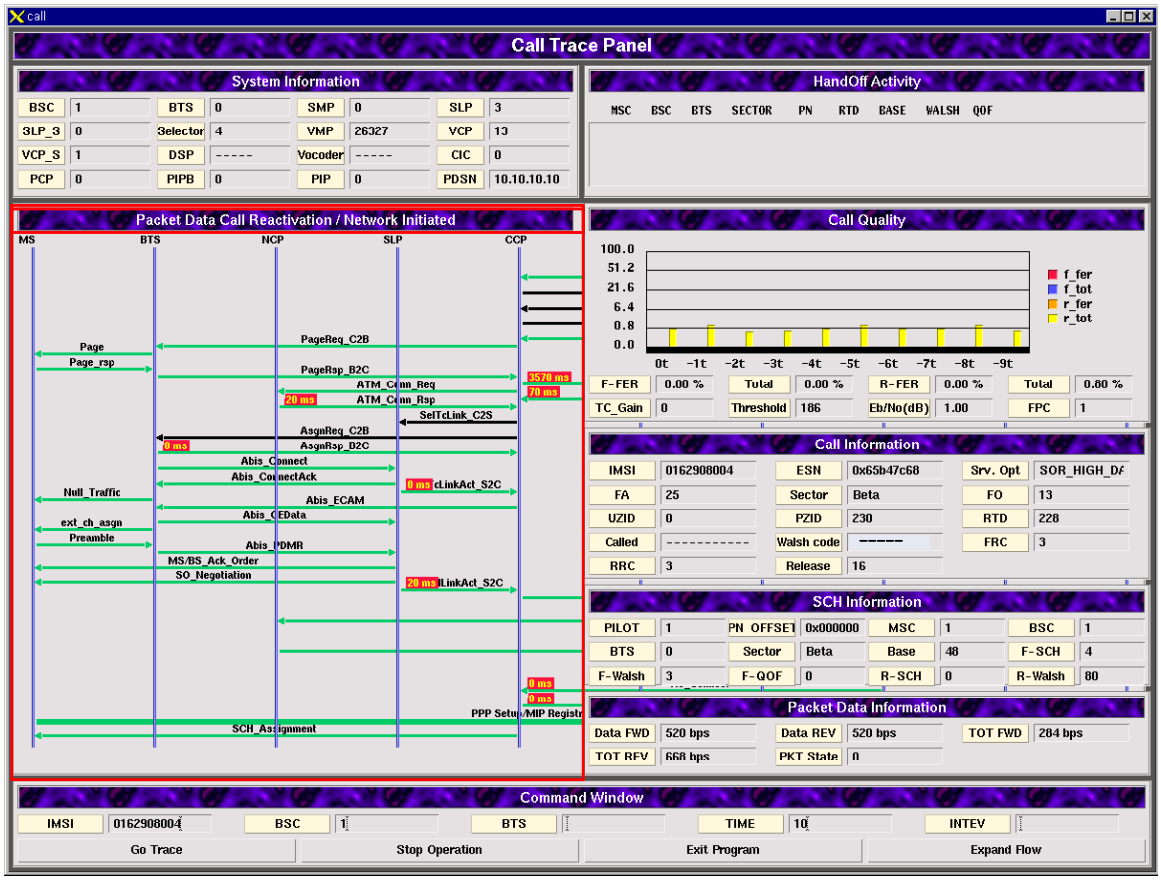

Fig. 4.9-59 Packet Data Call Reactivation / Network Initiated

It is FLOW that shows processing procedure of the packet data call which fell into the dormant status and then be reactivated by the network side. The System Information, Call Information, Call Quality, Supplemental Channel Information and Packet Data Information are represented. The handoff information is also represented on it when the handoff is generated.

4.9.8.3.3.3. Packet Data Call Reactivation / MS Initiated

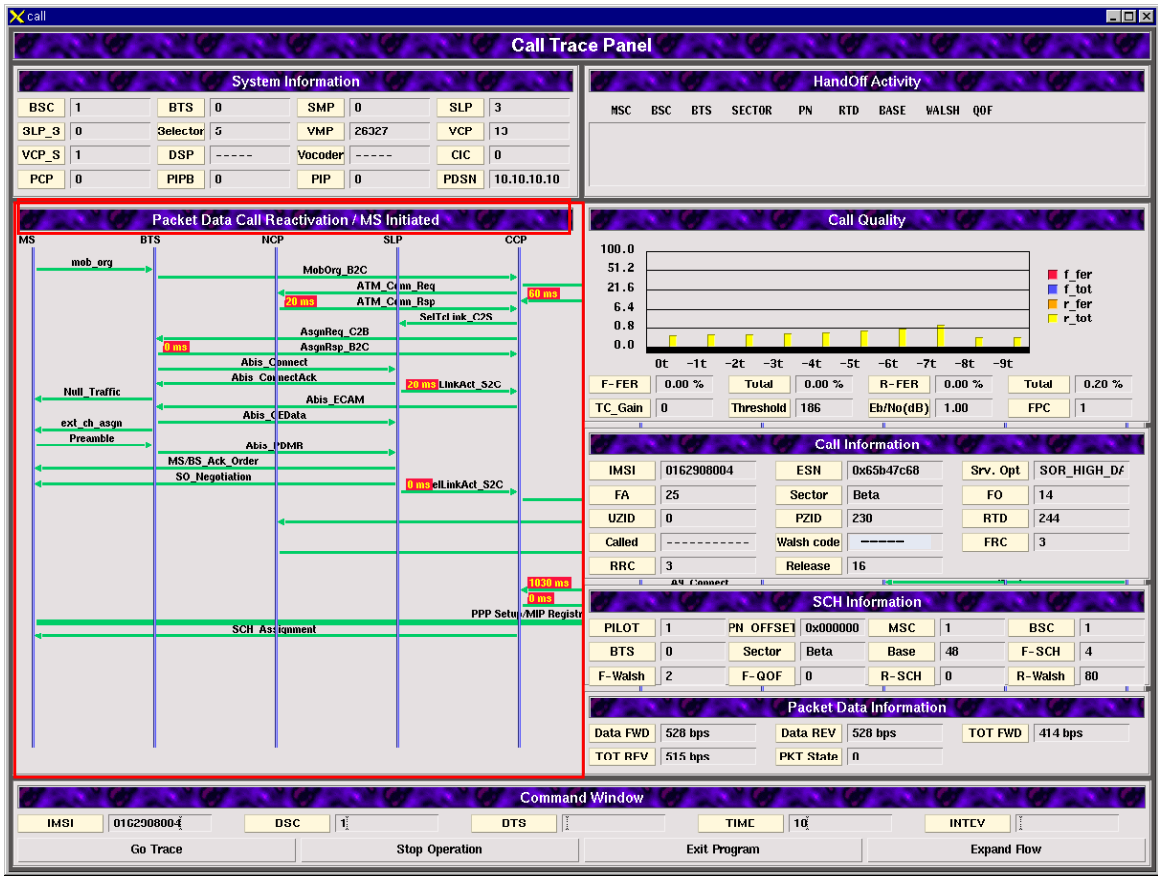

Fig. 4.9-60 Packet Data Call Reactivation / MS Initiated

It is FLOW that shows the process procedure of packet data call which fell into the dormant status and then reactivated by the MS; the System Information, Call Information, Call Quality, Supplemental Channel Information and Packet Data Information are represented on it. The handoff information is also represented on it when the handoff is generated.

4.9.9. BTS Address Search Window.

4.9.9.1. Overview.

The BTS address search program provides the following functions: 1) it can search the corresponding BTS name and address with BSC and BTS number. 2) it can search BSC and BTS number and address with BTS name. 3) it can search BSC and BTS number and name with BTS address.

4.9.9.2. Environment Setup.

It use Solaris 2.7 and Informix 7.3.1 as OS.

4.9.9.2.1. Data Files

bts_name.info : the file contains BTS name and address

4.9.9.3. Directions for Use.

The initial condition is scheduled to configure in the future.

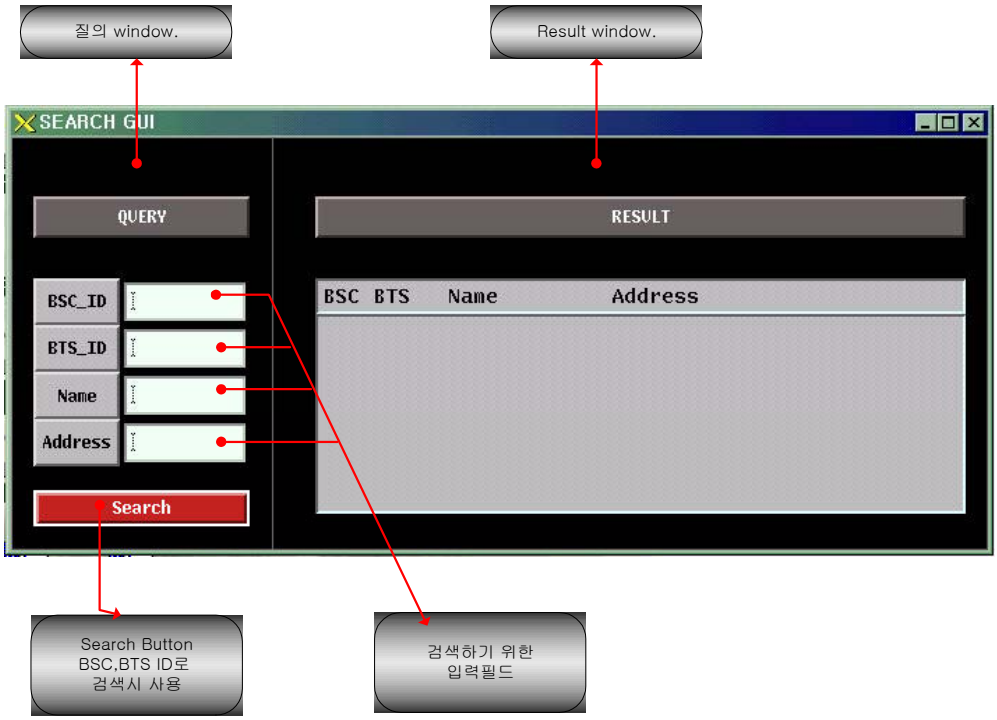

Fig. 4.9-61 BTS Address Search Window Initial Screen

4.9.9.3.1. File Information Display

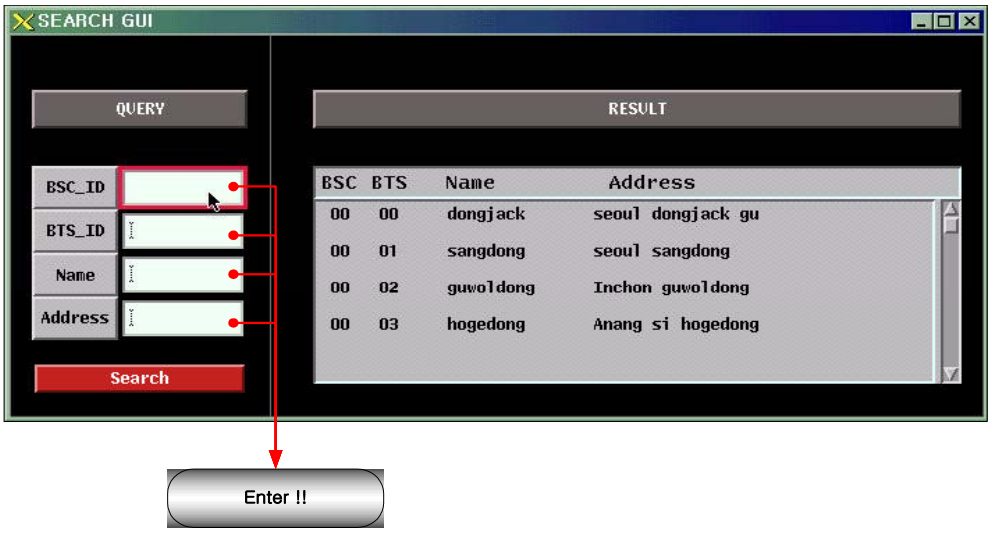

Fig. 4.9-62 File Information Display

Press Enter key on any place of the input field to display the file information on the result window.

4.9.9.3.2. Searching with BSC ID.

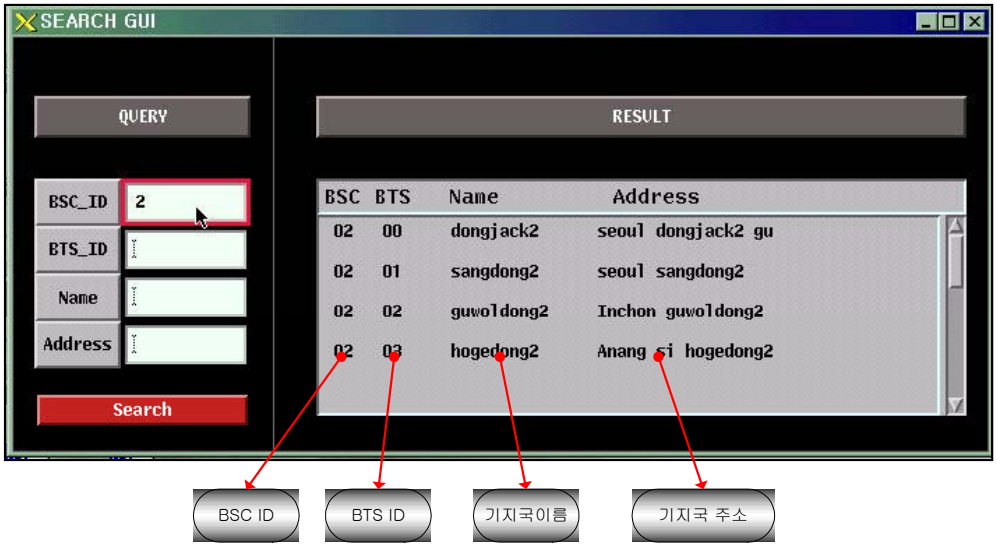

Fig. 4.9-63 Searching with BSC

Input desired BSC number and press Enter key to display the result on the result window when searching with BSC_ID.

4.9.9.3.3. Searching by BTS ID.

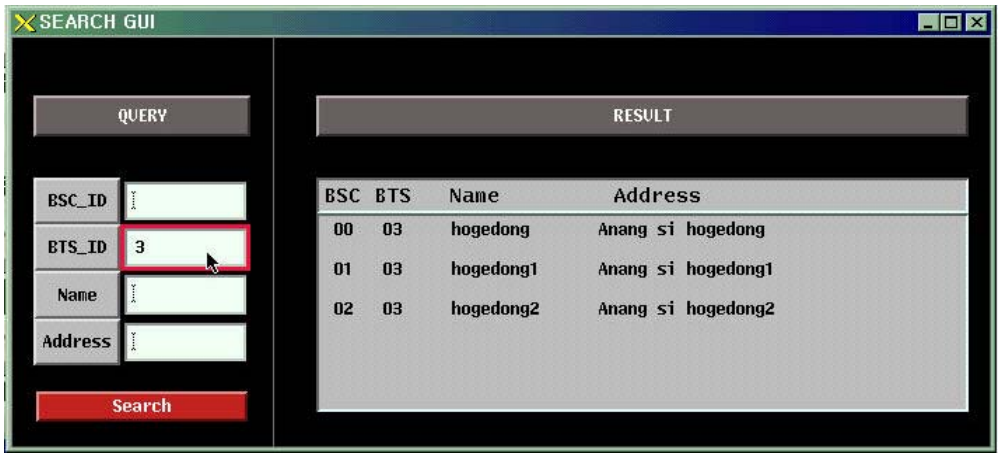

Fig. 4.9-64 Searching by BTS

Input desired BTS number and press Enter key to display the result on the result window when searching with BTS_ID.

4.9.9.3.4. Searching with BTS name.

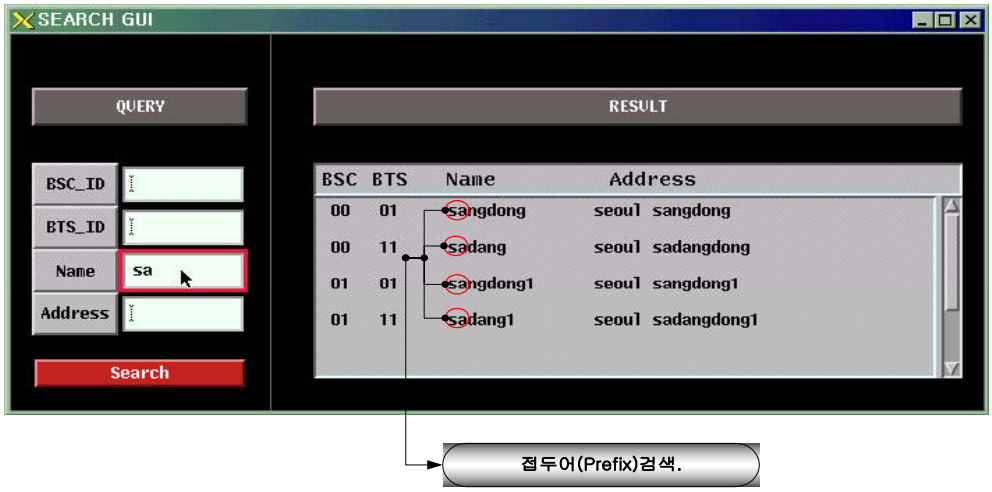

Fig. 4.9-65 Searching with BTS name-1

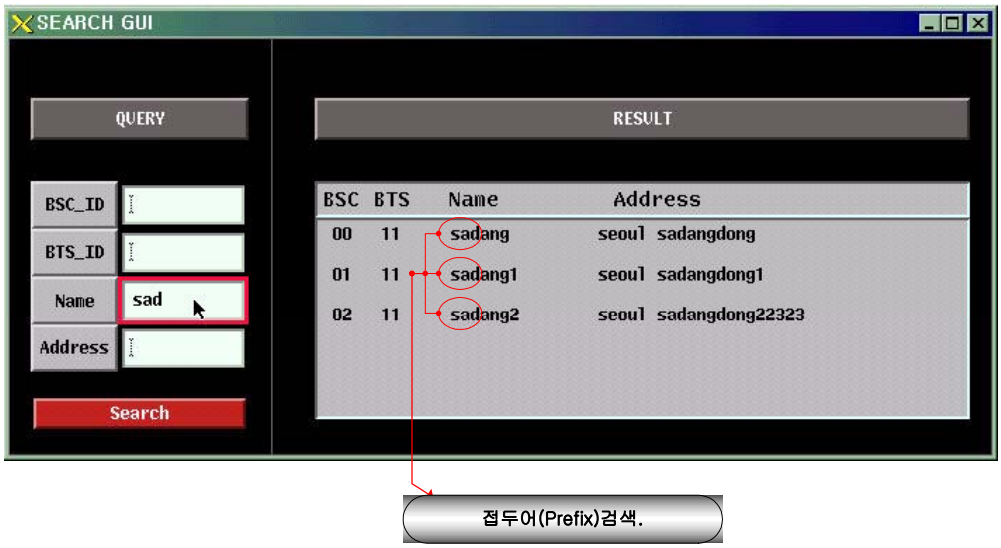

Fig. 4.9-66 Searching with BTS name-2

If the user input name into the name input field when searching with BTS name, the searching is performed with real-time prefix. For example, the names start with “s” are displayed upon inputting “s”, the names start with “sad” are displayed upon inputting “sad”.

4.9.9.3.5. Searching with BTS address.

Fig. 4.9-67 Searching with BTS Address-1

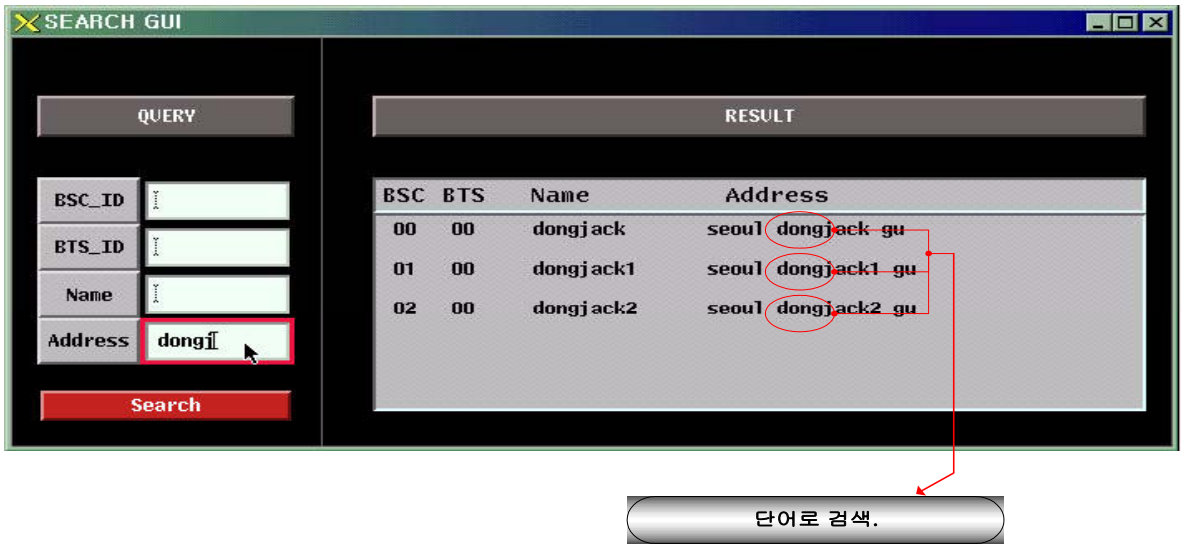

Fig. 4.9-68 Searching with BTS Address-2

The BTS addresses are searched with real-time words upon inputting address into the address input field when searching with BTS address. For example, the addresses start with “dong” are displayed upon inputting “dong”, and the addresses start with

“dongj” are displayed upon inputting “dongj”.

4.9.9.3.6. Searching with Search Button.

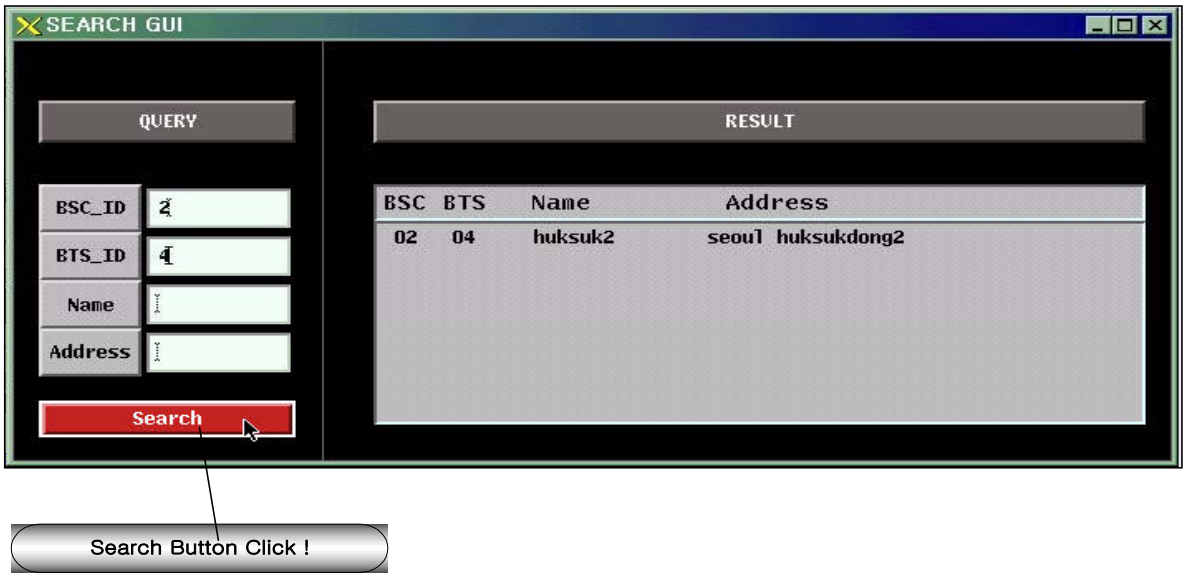

Fig. 4.9-69 Searching with Search Button.

Search Button provides the following functions: 1) simultaneous searching for BSC_ID and BTS_ID 2) single searching for BSC_ID or BTS_ID

4.9.9.4. Suggestions for Operation.

4.9.9.4.1. The Order of Priority.

BTS address searching program is a graphic tool that provides the following function: 1) searching BTS name and address with BSC ID and BTS ID, 2) searching BSC ID, BTS ID, and address with name, 3) searching BSC ID, BTS ID, and name with address. The address search program should be rerun when inserting, deleting or modifying the data of the bts_name.info file that includes BTS information.
The Informix should be normally run because the Informix db is used for searching.

5. BSM On-Line Message

5.1. Fault/Alarm Message

5.1.1. Alarm Message

5.1.1.1. CAN Occurrence Alarm Message

5.1.1.1.1. CAMB

5.1.1.1.1.1. CNP Processor

1) When A-Side of the duplicated CNP is normal and functional problems occur on the B- side board

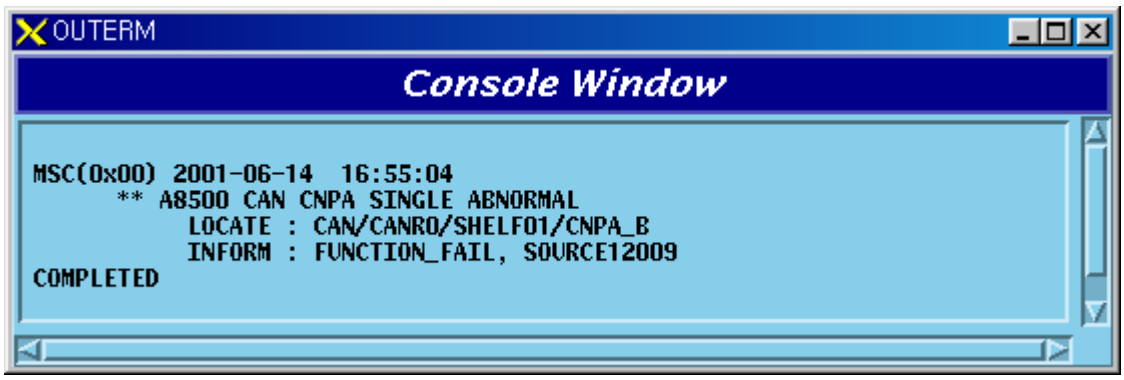

Fig. 5.1-1 CNP Single Function Fail

2) When functional problems occur on the B-Side after functional problems occur on the A-Side of the duplicated CNP,

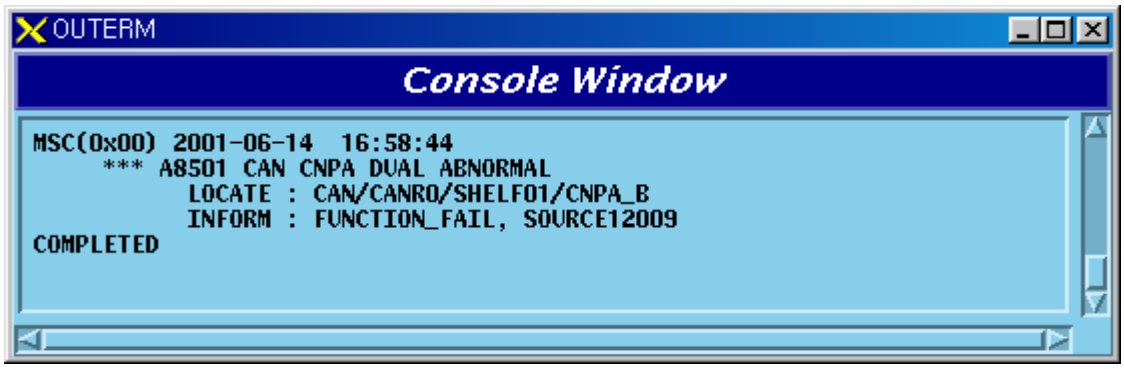

Fig. 5.1-2 CNP Dual Function Fail

3) When A-Side of the duplicated CNP is normal and the B-Side board is removed

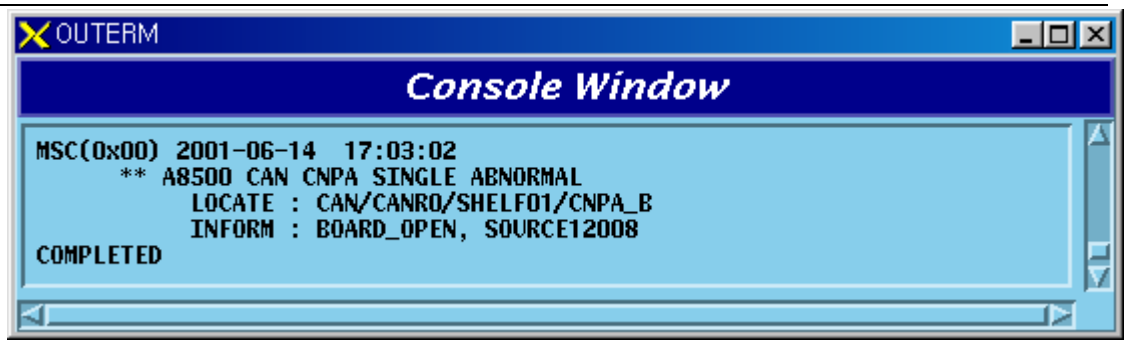

Fig. 5.1-3 CNP Single Board Open Fail

4) When B-Side is removed after A-Side of the duplicated CNP is removed

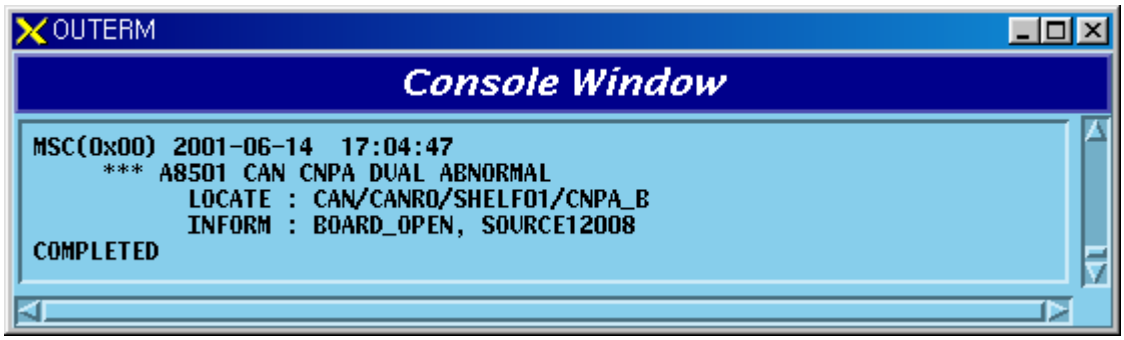

Fig. 5.1-4 CNP Dual Board Open Fail

5.1.1.1.1.2. ASCA Board

1) When A-Side of the duplicated ASCA is normal and functional problems occur on the B-Side board

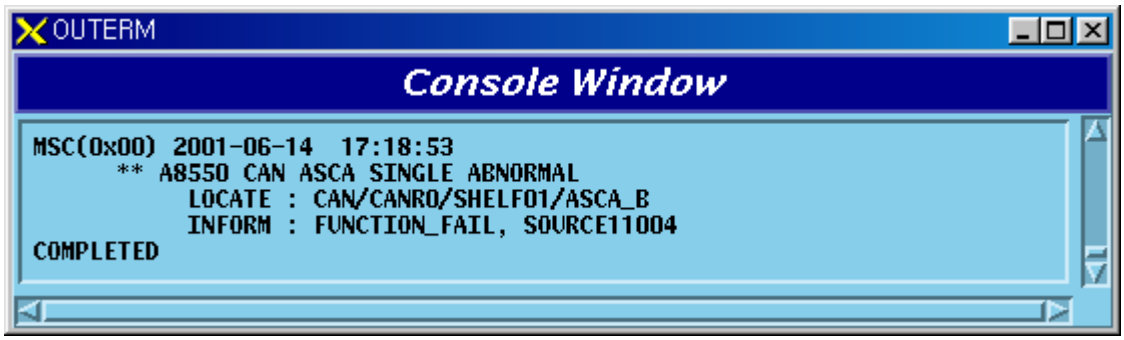

Fig. 5.1-5 CAN ASCA Single Function Fail

2) When functional problems occur on the B-Side after functional problems occur on the A-Side of the duplicated ASCA

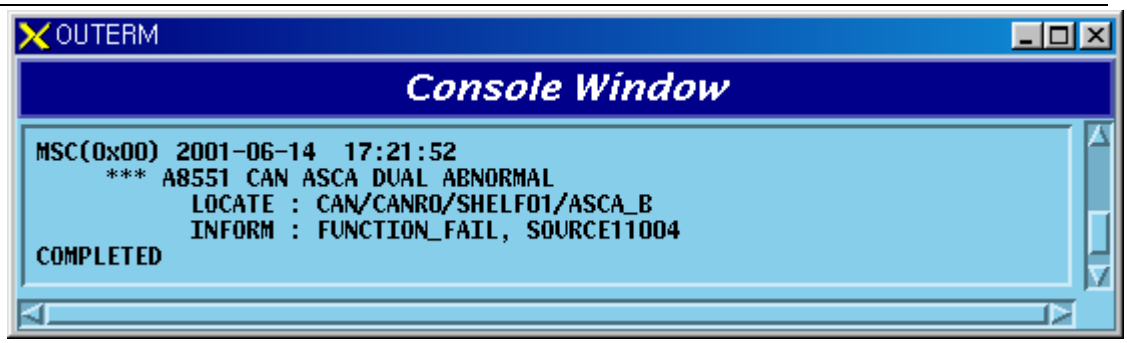

Fig. 5.1-6 CAN ASCA Dual Function Fail

3) When A-Side of the duplicated ASCA is normal and B-Side board is removed

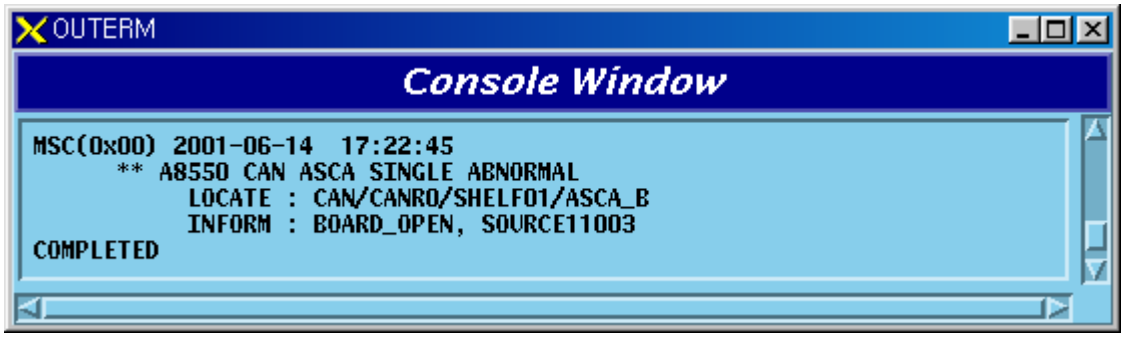

Fig. 5.1-7 CAN ASCA Single Board Open Fail

4) When B-Side is removed after A-Side of the duplicated ASCA is removed

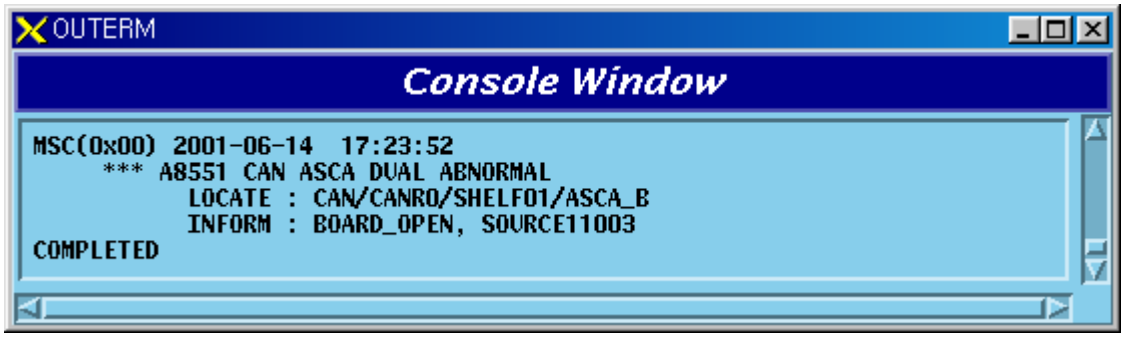

Fig. 5.1-8 CAN ASCA Dual Open Fail

5.1.1.1.1.3. ASIA Board

1) When A-Side of the duplicated ASIA is normal and functional problems occur on the B-Side board

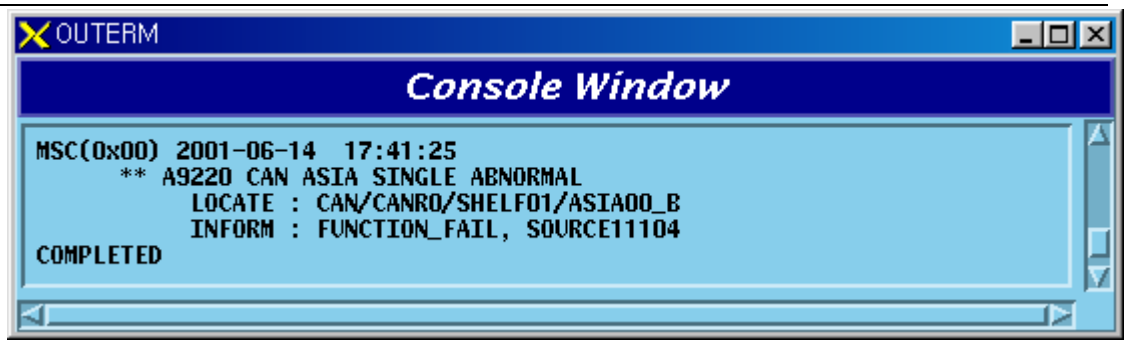

Fig. 5.1-9 CAN ASIA Single Function Fail

2) When functional problems occur on the B-Side board after functional problems occur on the A-Side of the duplicated ASIA

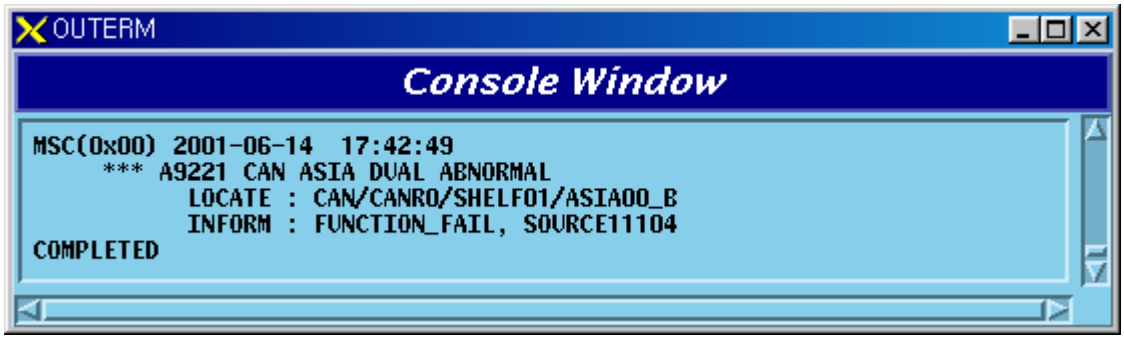

Fig. 5.1-10 CAN ASIA Dual Function Fail

3) When A-Side of the duplicated ASIA is normal and B-Side board is removed

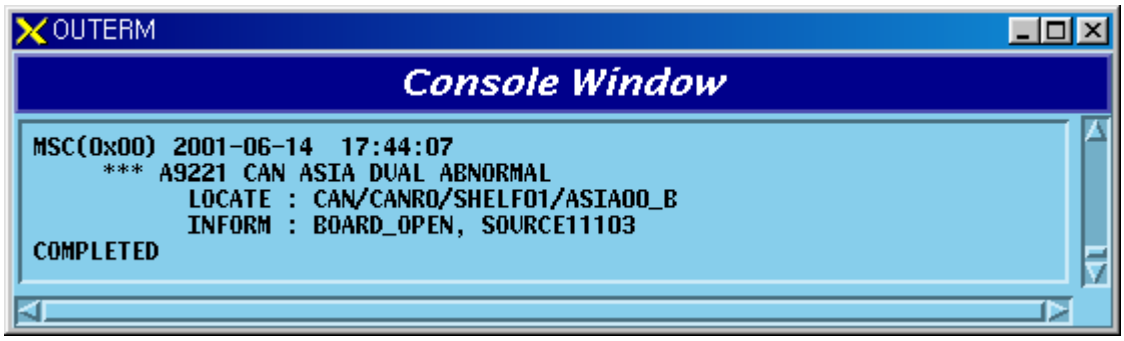

Fig. 5.1-11 CAN ASIA Single Board Open Fail

4) When B-Side board is removed after A-Side of the duplicated ASIA is removed

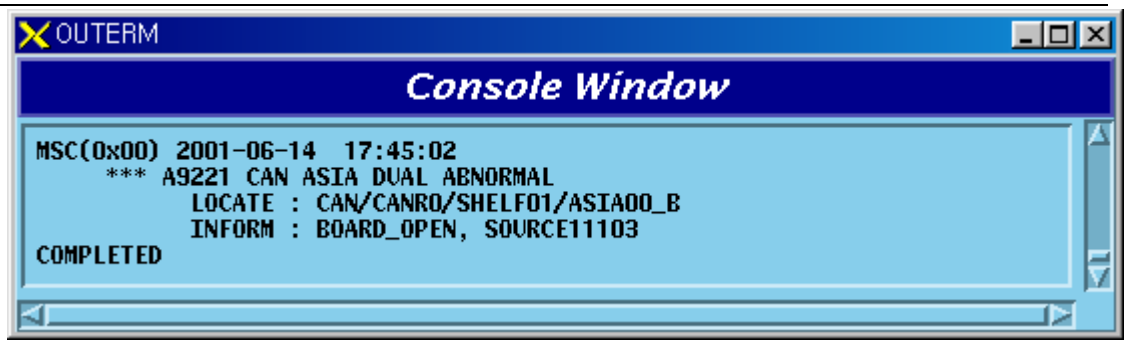

Fig. 5.1-12 CAN ASIA Single Board Open Fail

5.1.1.1.1.4. AOTA Board

1) When functional faults occur on AOTA board

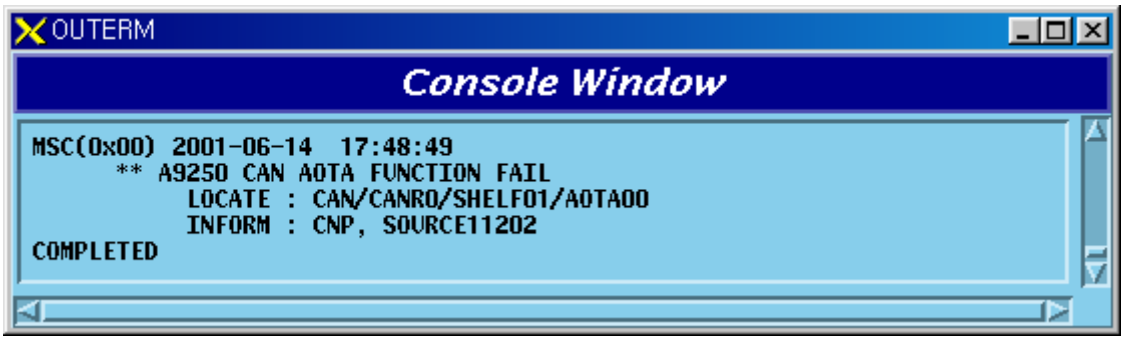

Fig. 5.1-13 CAN AOTA Function Fail

2) When AOTA board is removed

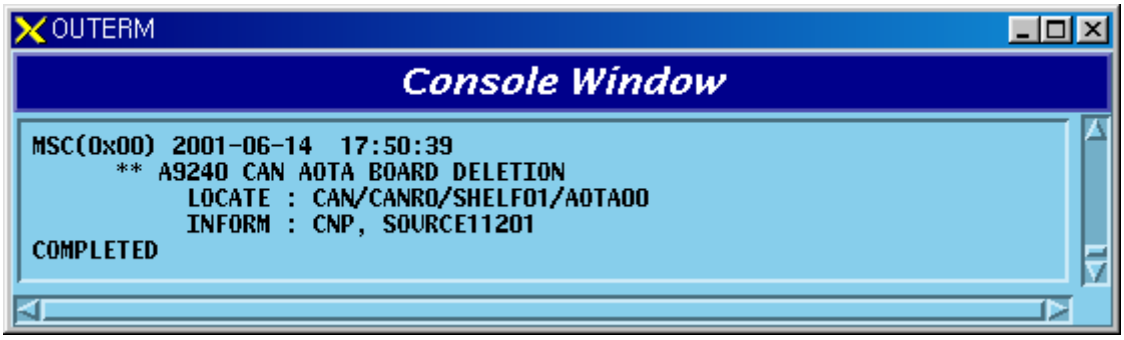

Fig. 5.1-14 CAN AOTA Board Open Fail

5.1.1.1.1.5. ATSA Board

1) When functional faults occur on ATSA board

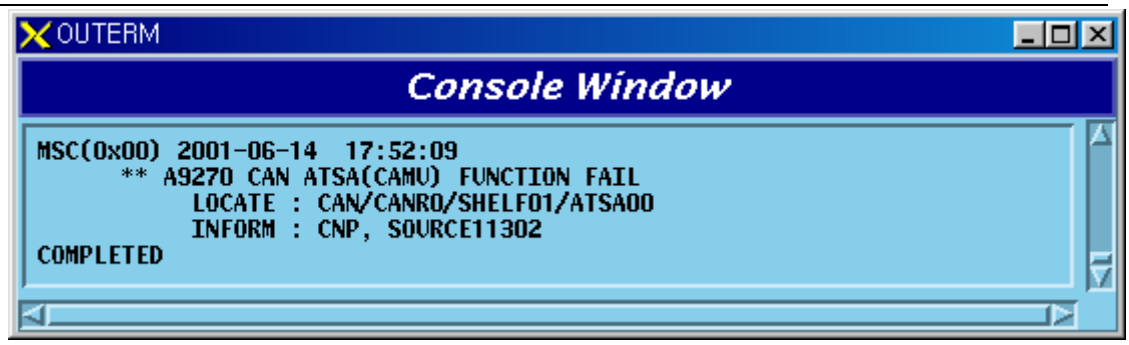

Fig. 5.1-15 CAN ATSA Function Fail

2) When ATSA board is removed

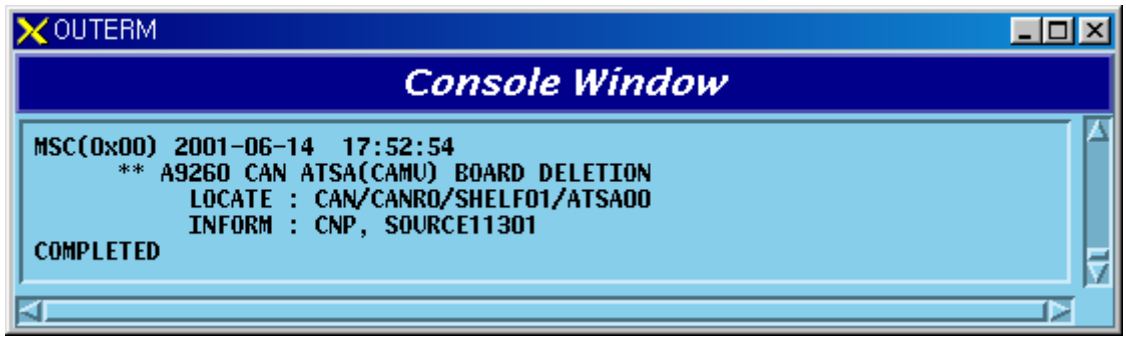

Fig. 5.1-16 CAN ATSA Board Open Fail

5.1.1.1.1.6. PRI Board

1) When A-Side of the duplicated PRI is normal and functional problems occur on the B-Side board

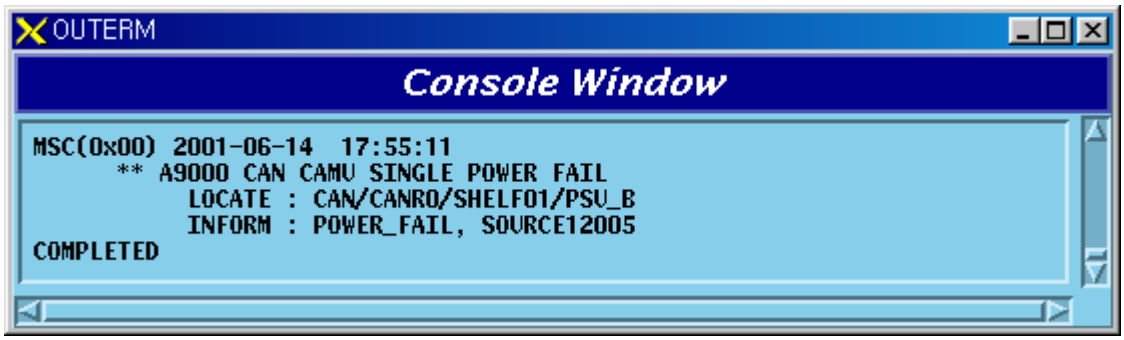

Fig. 5.1-17 CAMB PRI Single Power Fail

2) When functional problems occur on the A-Side after functional problems occur on the B-Side of the duplicated PRI

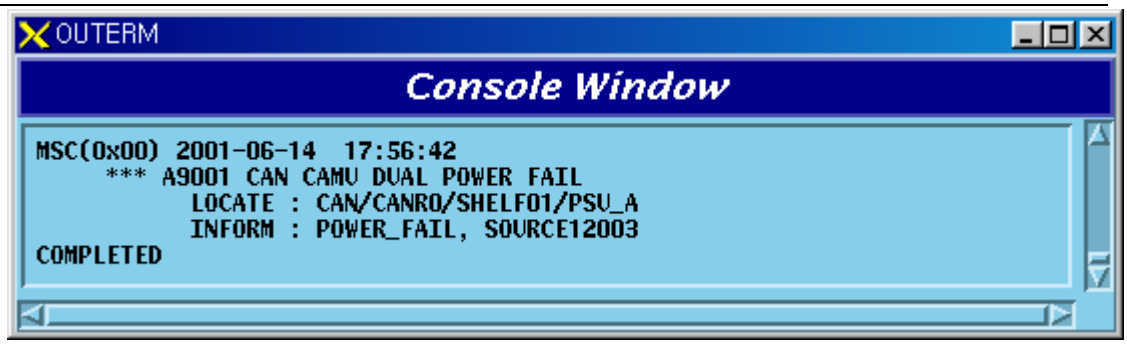

Fig. 5.1-18 CAMB PRI Dual Power Fail

3) When A-Side of the duplicated PRI is normal and B-Side board is removed

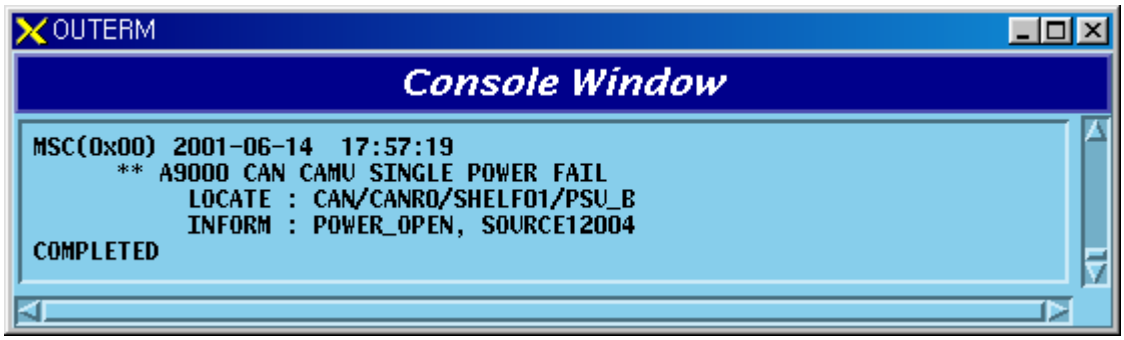

Fig. 5.1-19 CAMB PRI Single Power Open Fail

4) When A-Side is removed after B-Side of the duplicated PRI is removed

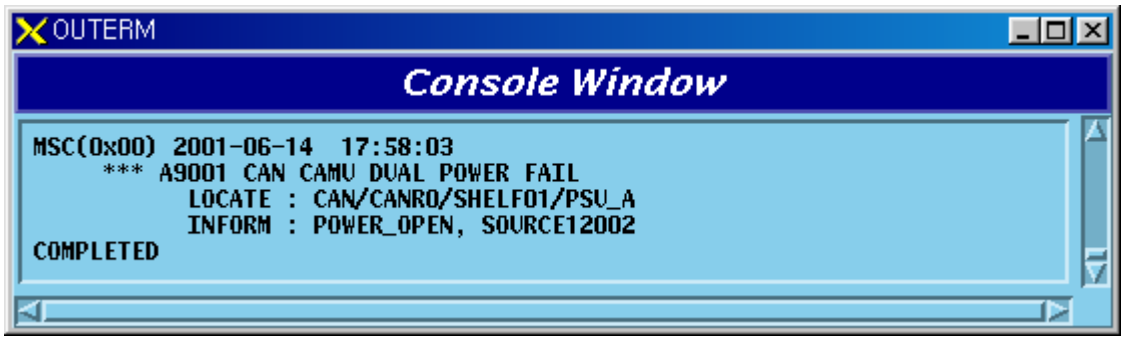

Fig. 5.1-20 CAMB PRI Dual Power Open Fail

5.1.1.1.1.7. Others

1) When CAMB Alarm Cable is removed

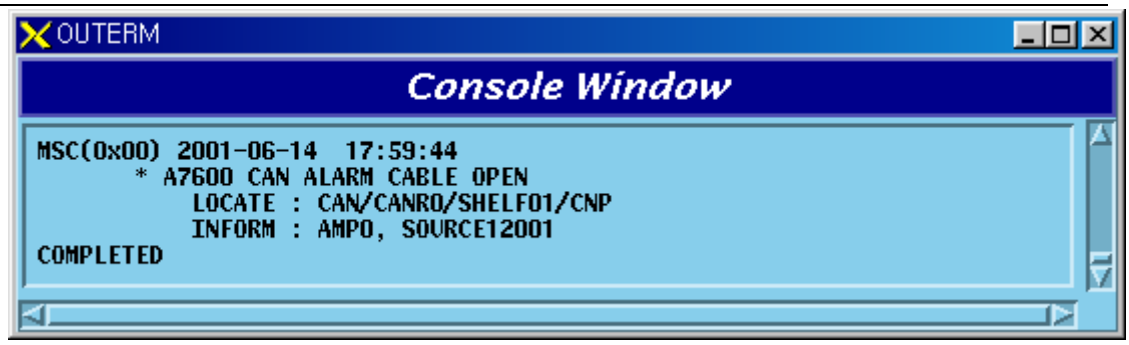

Fig. 5.1-21 CAN Alarm Cable Open

5.1.1.1.2. CPNB

5.1.1.1.2.1. PNP Processor

1) When A-Side of the duplicated PNP is normal and functional problems occur on the B-Side board

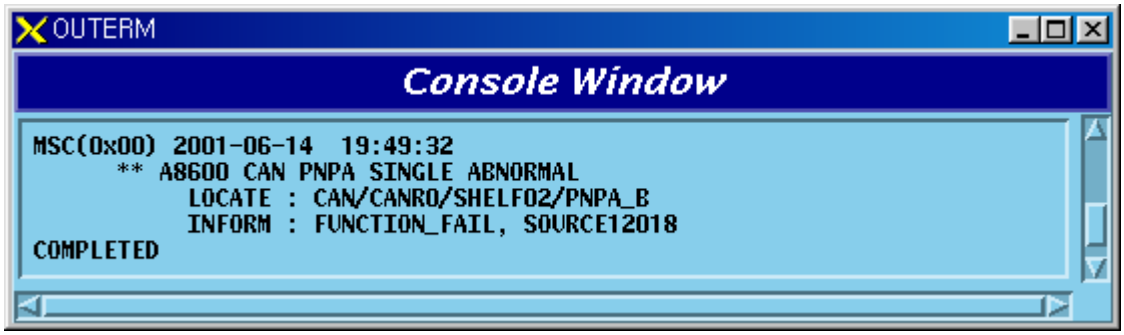

Fig. 5.1-22 CAN PNP Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated PNP has a functional problem

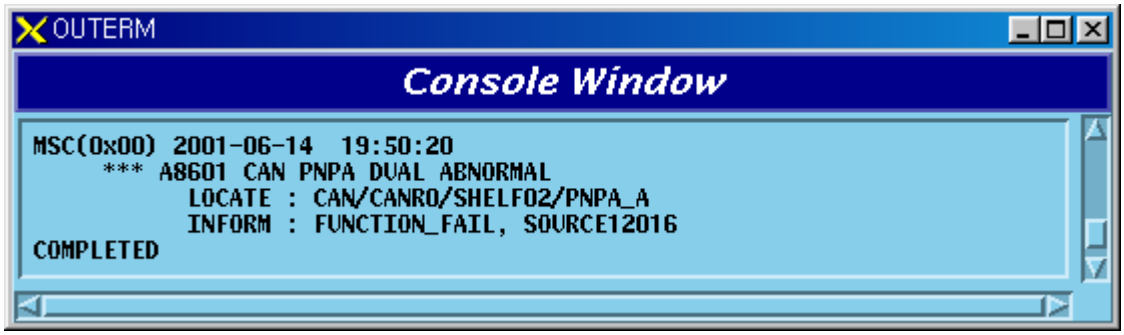

Fig. 5.1-23 CAN PNP Dual Function Fail

3) When A-Side of the duplicated PNP is normal and B-Side board is removed

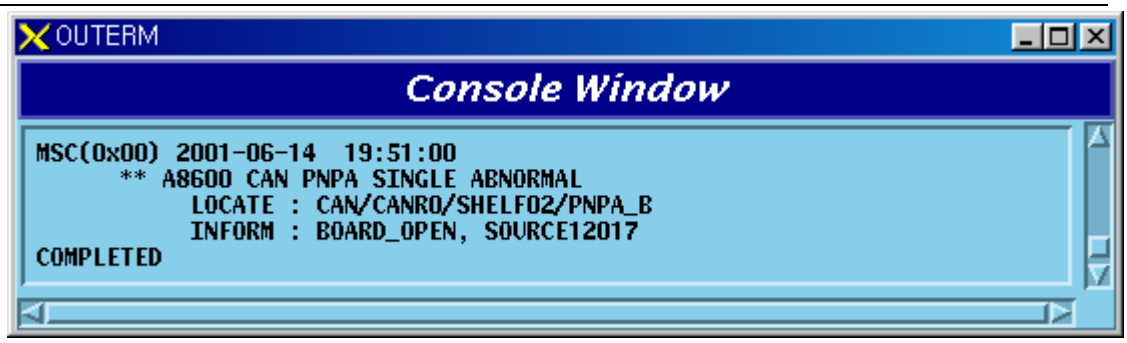

Fig. 5.1-24 CAN PNP Single Board Open Fail

4) When A-Side is removed after B-Side of the duplicated PNP is removed

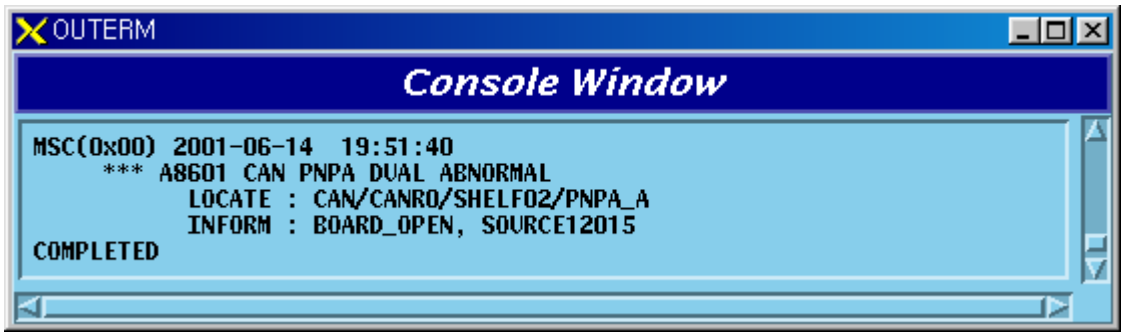

Fig. 5.1-25 CAN PNP Dual Board Open Fail

5.1.1.1.2.2. ASCA Board

1) When A-Side of the duplicated ASCA is normal and functional problems occur on the B-Side board

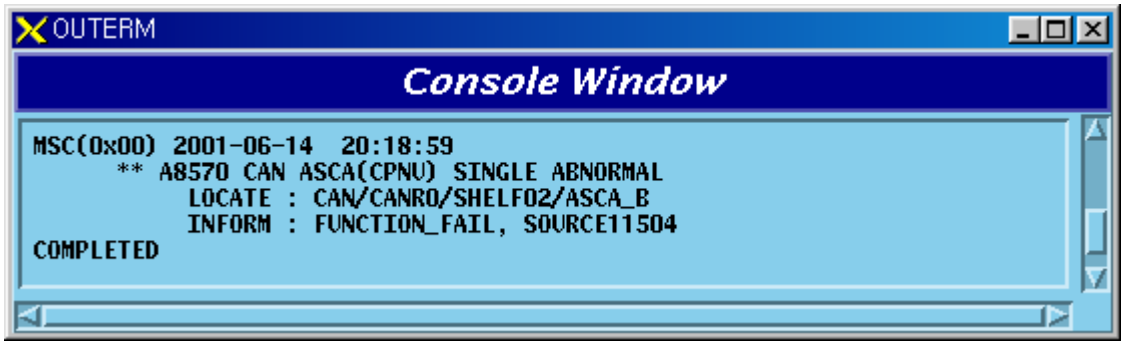

Fig. 5.1-26 CPNB ASCA Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated ASCA has a functional problem

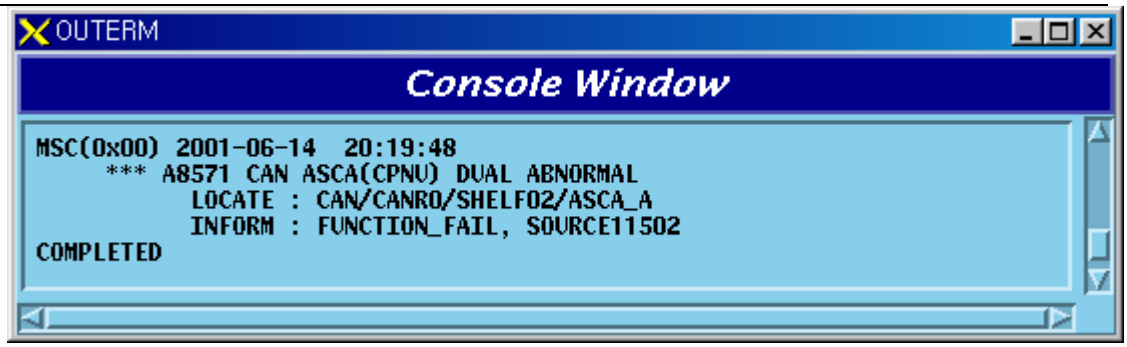

Fig. 5.1-27 CPNB ASCA Dual Function Fail

3) When A-Side of the duplicated ASCA is normal and B-Side board is removed

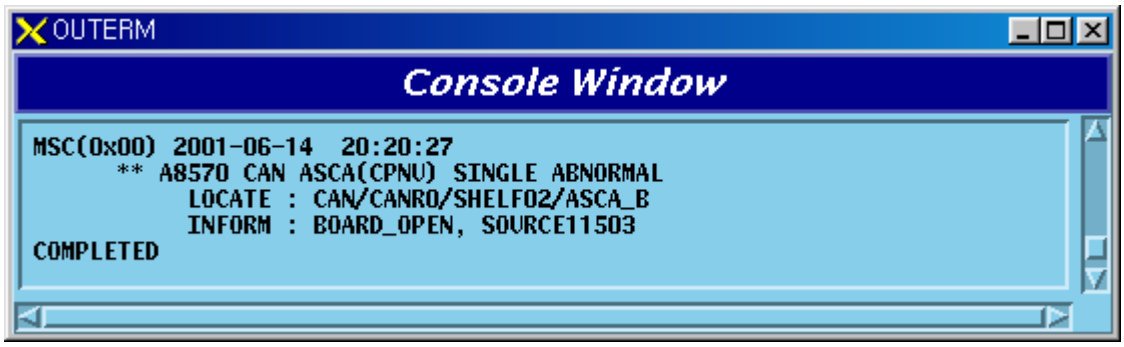

Fig. 5.1-28 CPNB ASCA Single Board Open Fail

4) When A-Side is removed after B-Side of the duplicated ASCA is removed

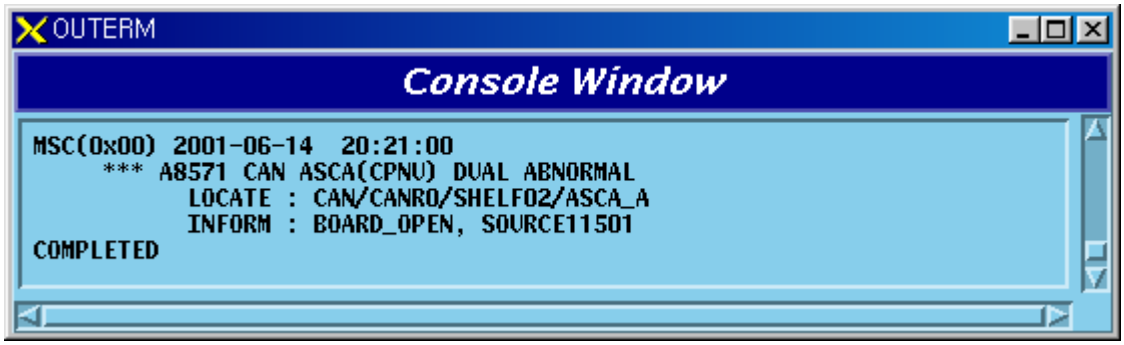

Fig. 5.1-29 CPNB ASCA Dual Board Open Fail

5.1.1.1.2.3. ASIA Board

1) When A-Side of the duplicated ASIA is normal and functional problems occur on the B-Side board

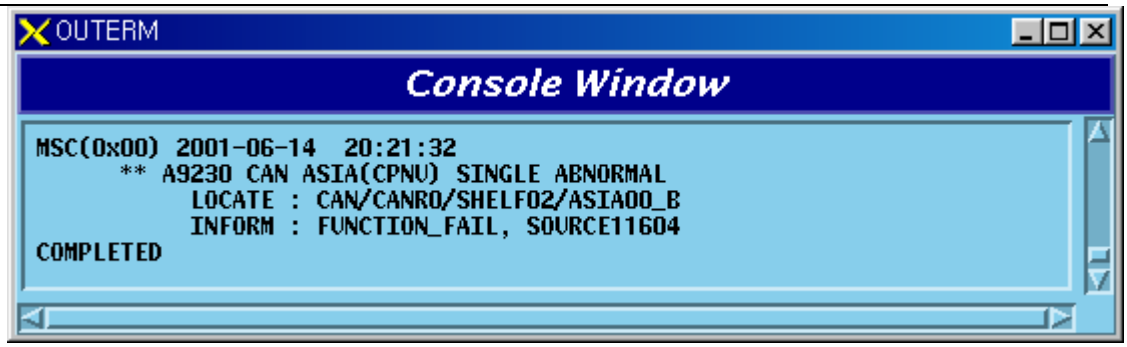

Fig. 5.1-30 CPNB ASIA Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated ASIA has a functional problem

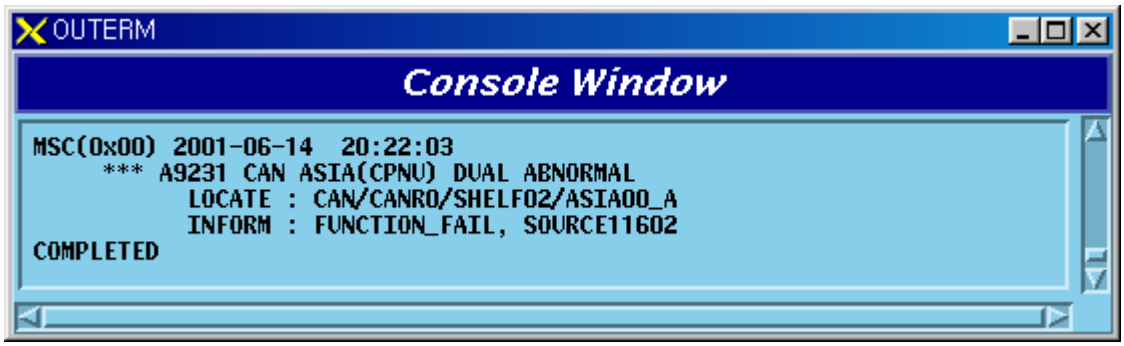

Fig. 5.1-31 CPNB ASIA Dual Function Fail

3) When A-Side of the duplicated ASIA is normal and B-Side board is removed

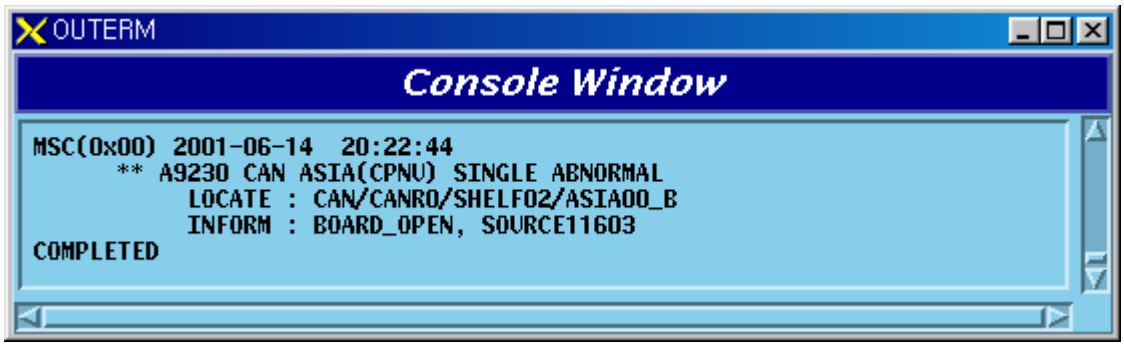

Fig. 5.1-32 CPNB ASIA Single Board Open Fail

4) When A-Side is removed after B-Side of the duplicated ASIA is removed

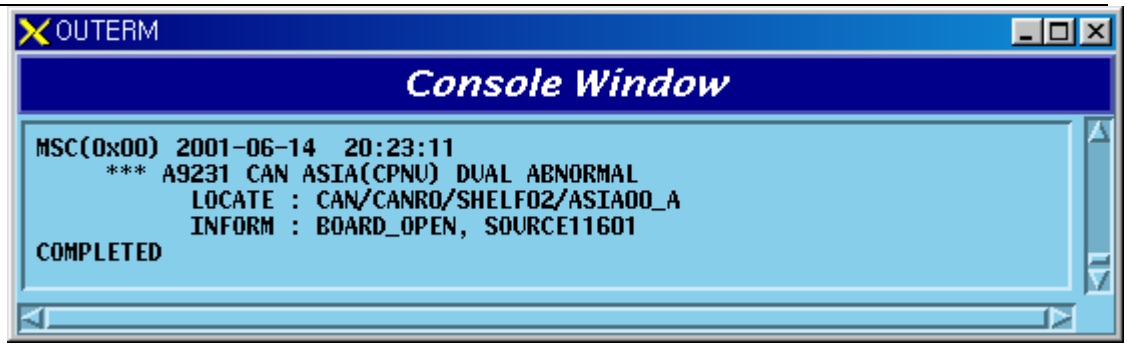

Fig. 5.1-33 CPNB ASIA Dual Board Open Fail

5.1.1.1.2.4. PRI Board

1) When A-Side of the duplicated PRI is normal and functional problems occur on the B-Side board

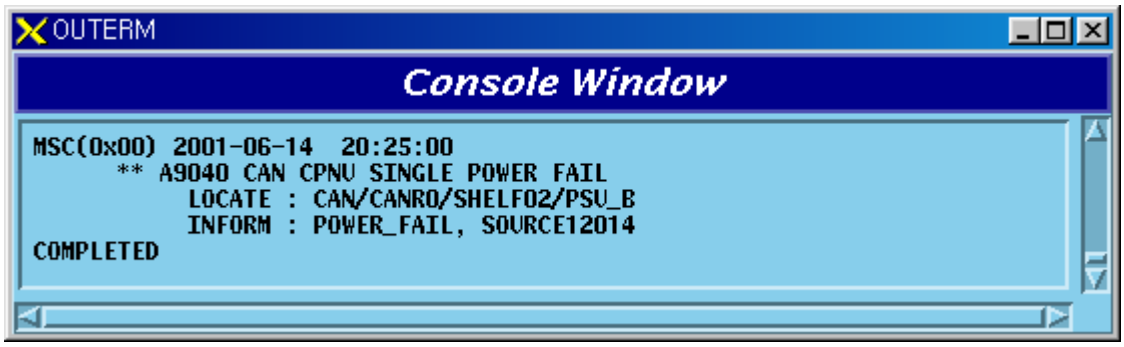

Fig. 5.1-34 CPNB PRI Single Power Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated PRI has a functional problem

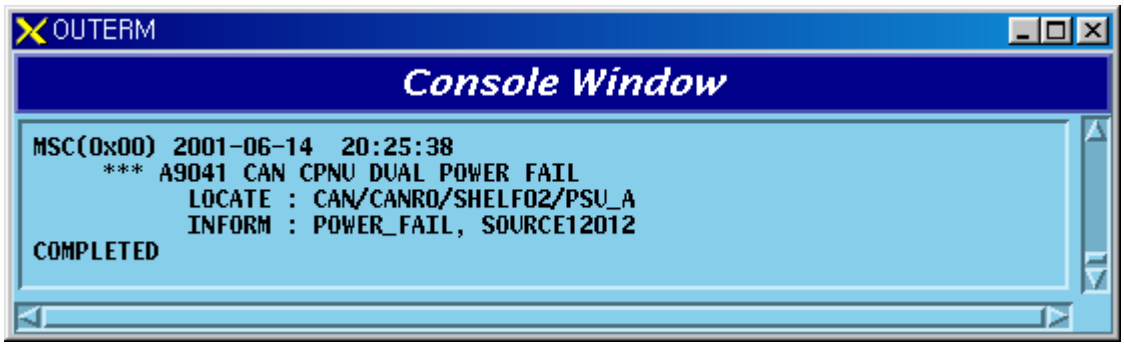

Fig. 5.1-35 CPNB PRI Dual Power Fail

3) When A-Side of the duplicated PRI is normal and B-Side board is removed

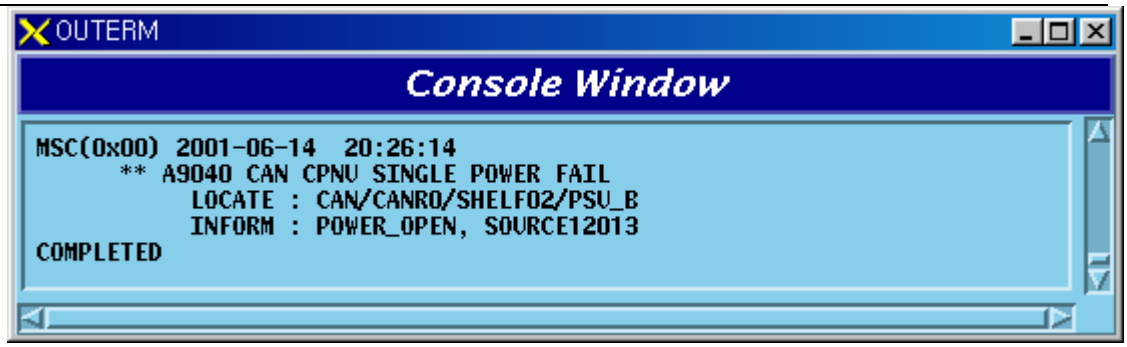

Fig. 5.1-36 CPNB PRI Single Power Open Fail

4) When A-Side is removed after B-Side of the duplicated PRI is removed

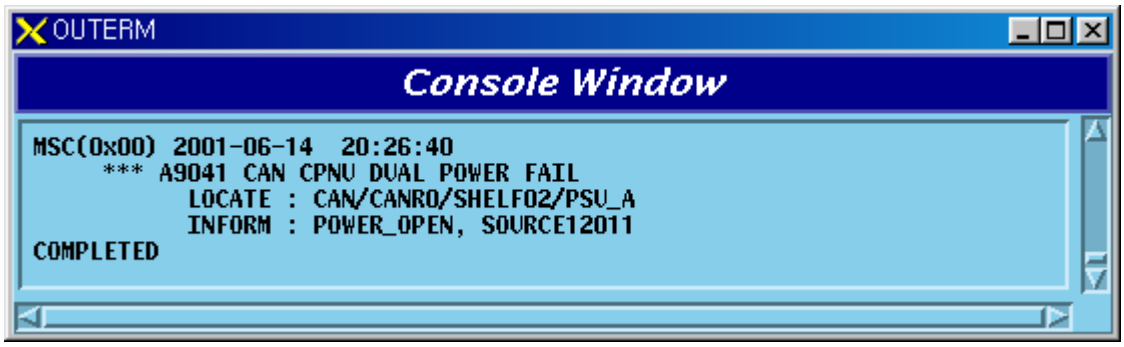

Fig. 5.1-37 CPNB PRI Dual Power Open Fail

5.1.1.1.2.5. Others

1) CPNB Alarm Cable is removed

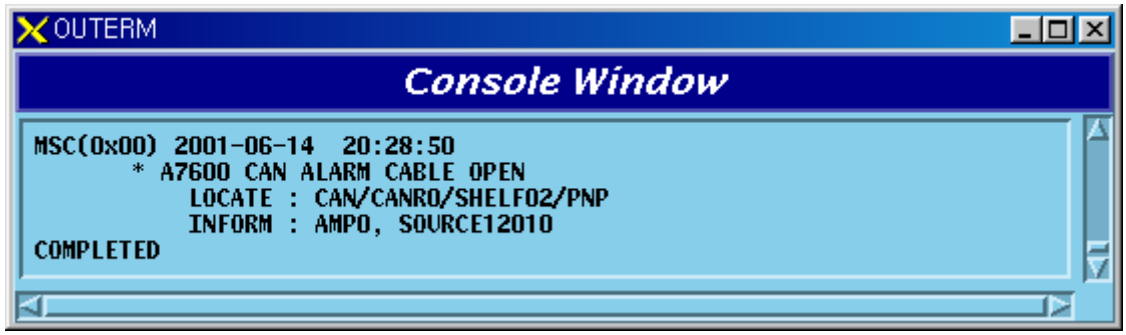

Fig. 5.1-38 CPNB Alarm Cable Open

5.1.1.1.3. PCFB(PCP)

5.1.1.1.3.1. PCP Processor

1) When A-Side of the duplicated PCP is normal and functional problems occur on the B-Side board

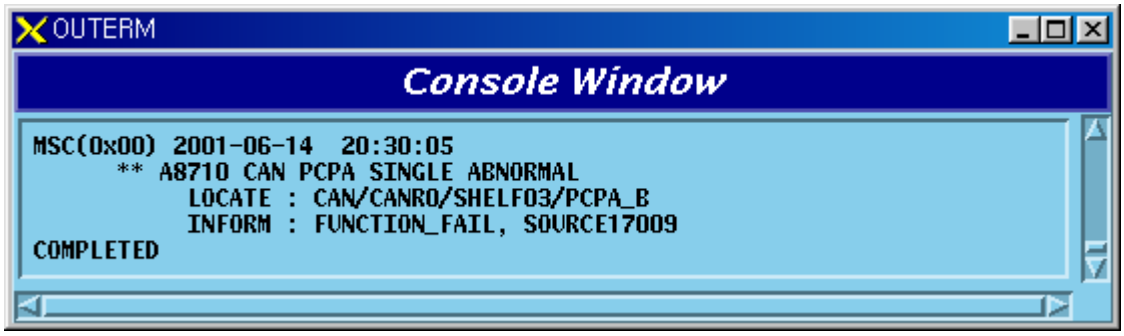

Fig. 5.1-39 PCFB PCP Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated PCP has a functional problem

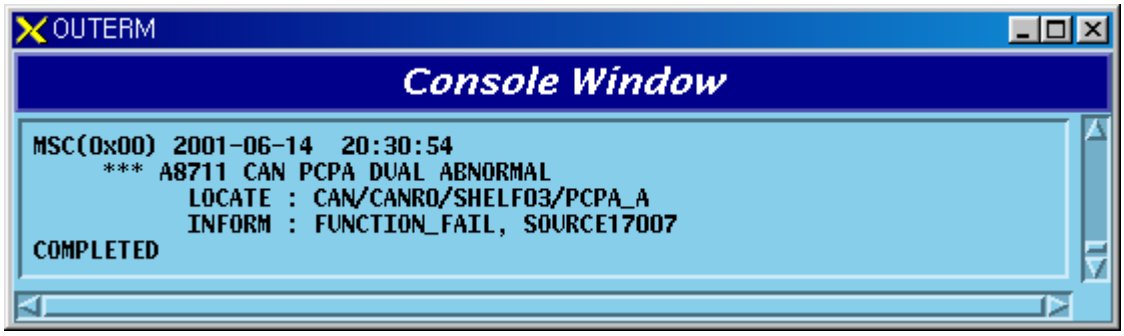

Fig. 5.1-40 PCFB PCP Dual Function Fail

3) When A-Side of the duplicated PCP is normal and B-Side board is removed

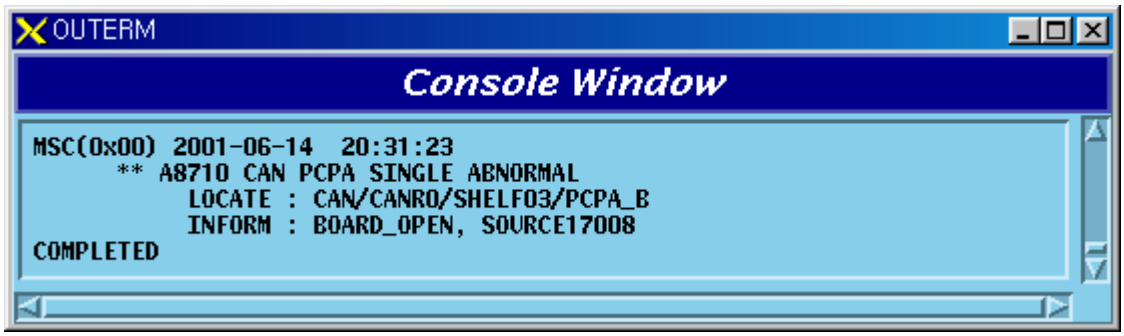

Fig. 5.1-41 PCFB PCP Single Board Open Fail

4) When A-Side is removed after B-Side of the duplicated PCP is removed

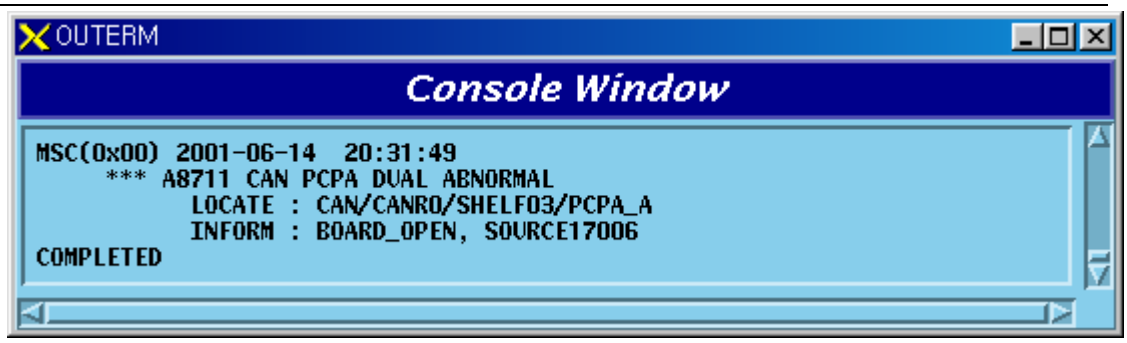

Fig. 5.1-42 PCFB PCP Dual Board Open Fail

5.1.1.1.3.2. BCRA Board

1) When A-Side of the duplicated BCRA is normal and functional problems occur on the B-Side board

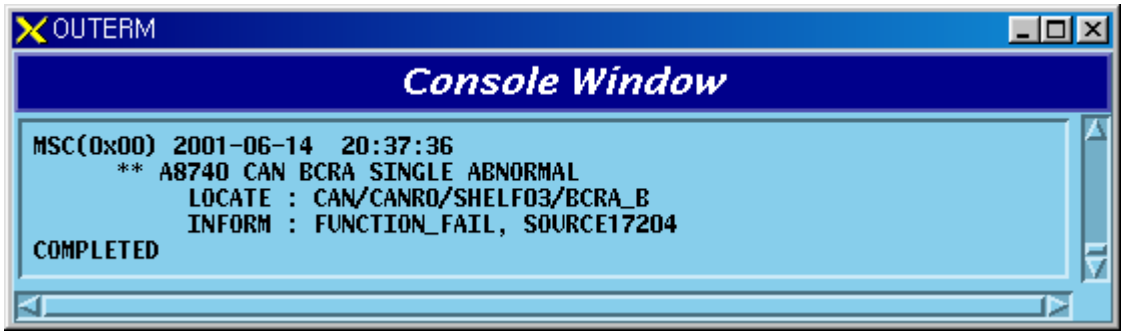

Fig. 5.1-43 CPNB(PCP) BCRA Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated BCRA has a functional problem

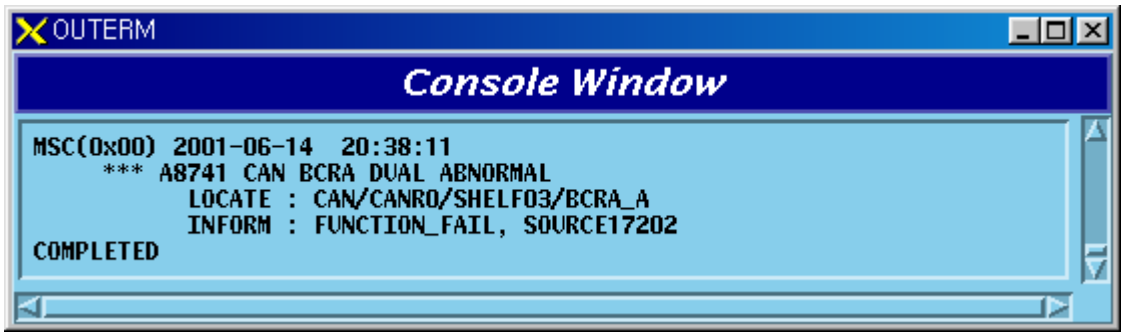

Fig. 5.1-44 CPNB(PCP) BCRA Dual Function Fail

3) When A-Side of the duplicated BCRA is normal and B-Side board is removed

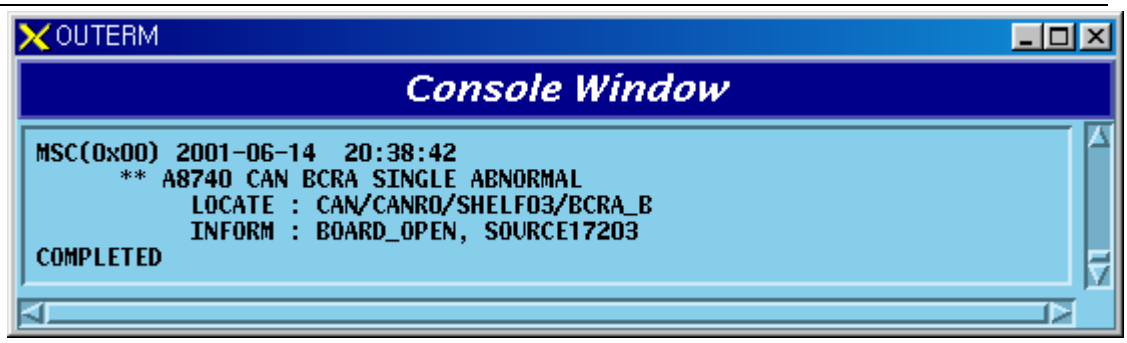

Fig. 5.1-45 CPNB(PCP) BCRA Single Board Open Fail

4) When A-Side is removed after B-Side of the duplicated BCRA is removed

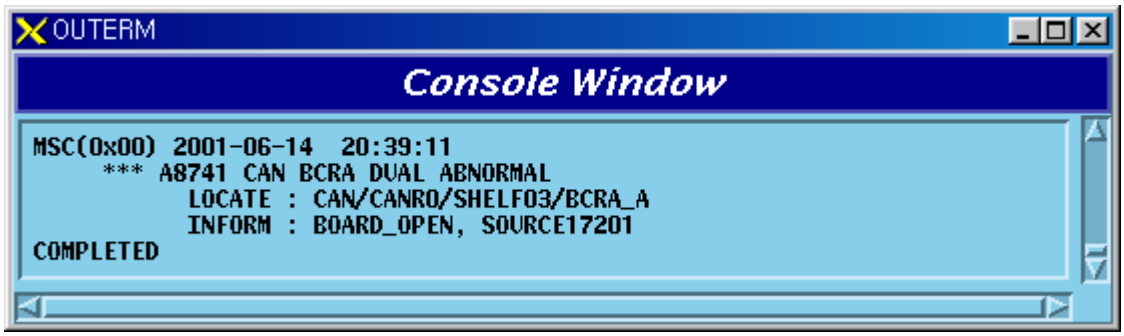

Fig. 5.1-46 CPNB(PCP) BCRA Dual Board Open Fail

5.1.1.1.3.3. UCPA(PIP) Board

1) When functional faults occur on UCPA(PIP) board

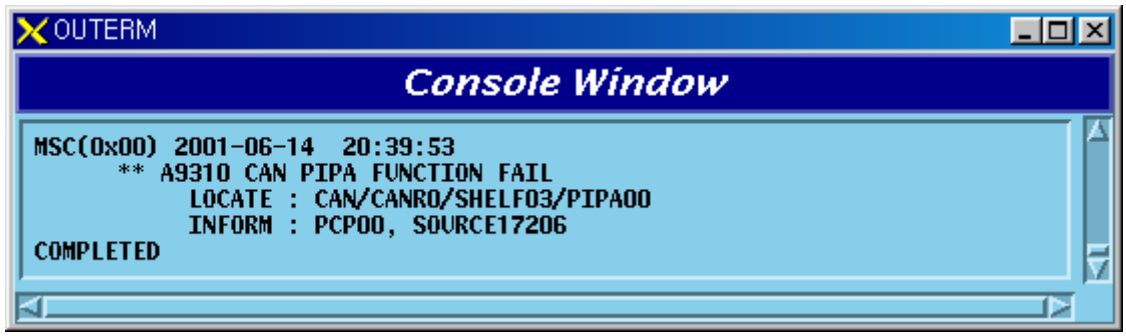

Fig. 5.1-47 CPNB(PCP) PIP Function Fail

2) When UPCA(PIP) board is removed

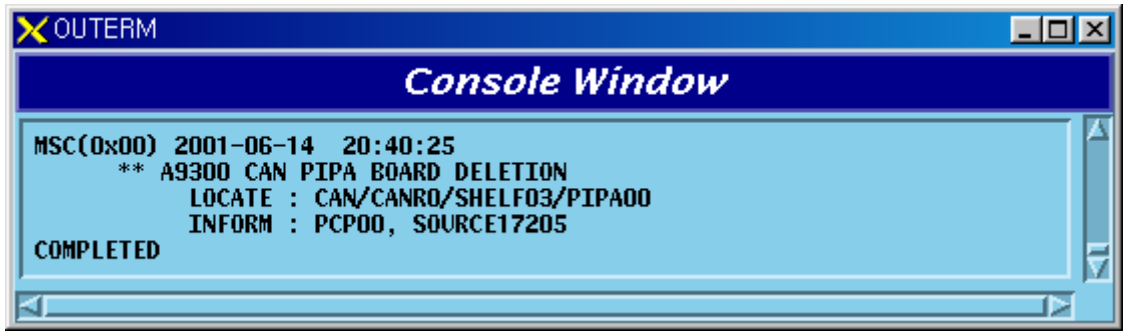

Fig. 5.1-48 CPNB(PCP) PIP Board Open Fail

5.1.1.1.3.4. FERA Board

1) When A-Side of the duplicated FERA is normal and functional problems occur on the B-Side board

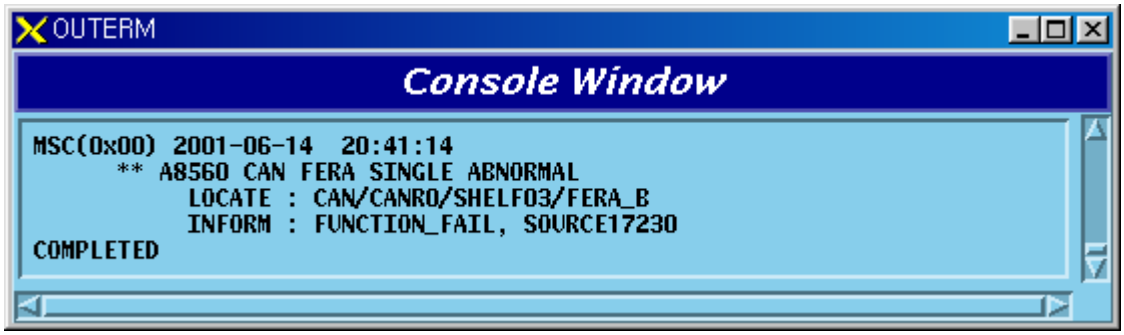

Fig. 5.1-49 CPNB(PCP) FERA Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated FERA has a functional problem

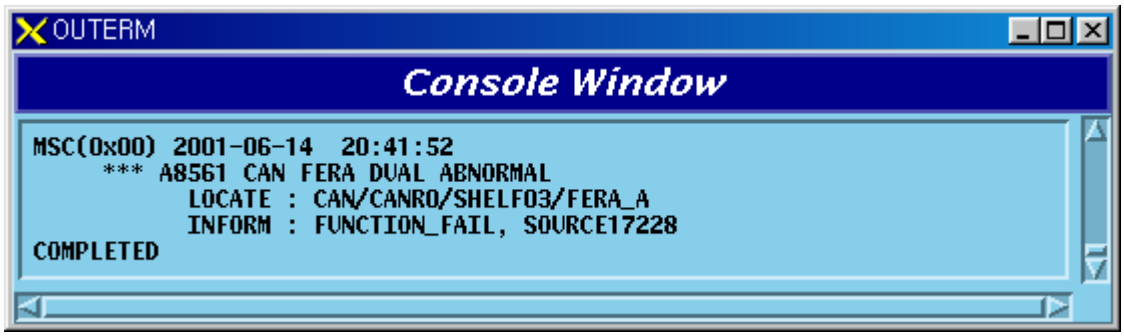

Fig. 5.1-50 CPNB(PCP) FERA Dual Function Fail

3) When A-Side of the duplicated FERA is normal and B-Side board is removed

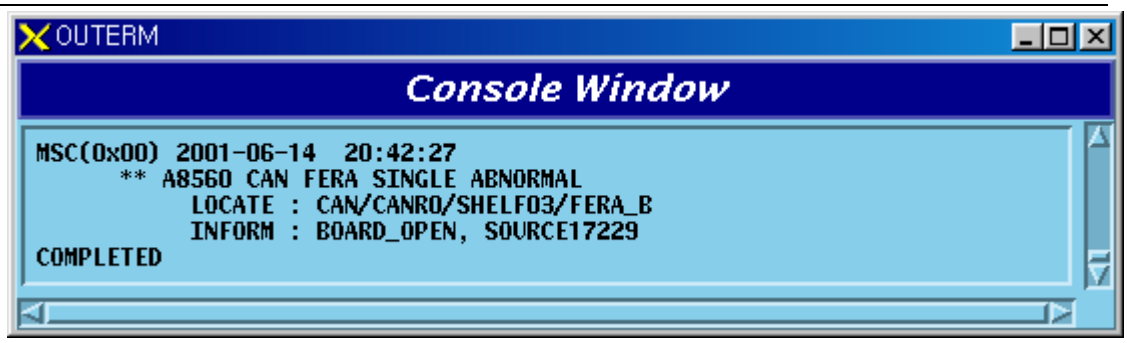

Fig. 5.1-51 CPNB(PCP) FERA Single Board Open Fail

4) When A-Side is removed after B-Side of the duplicated FERA is removed

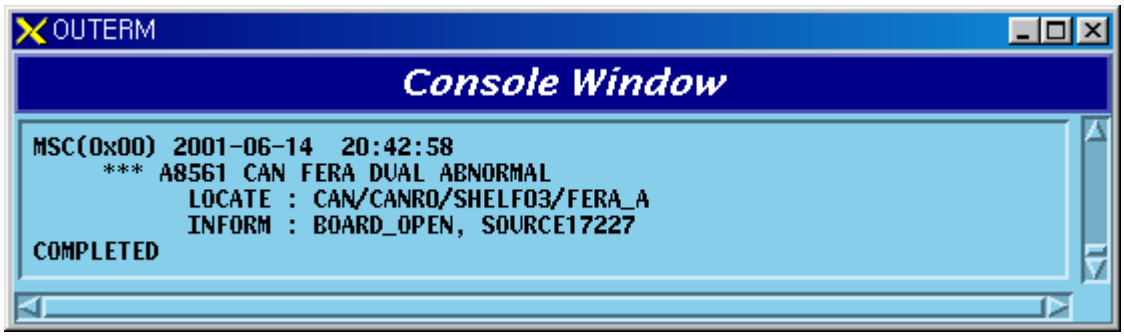

Fig. 5.1-52 CPNB(PCP) FERA Dual Board Open Fail

5.1.1.1.3.5. FETA Board

1) When functional faults occur on FETA board

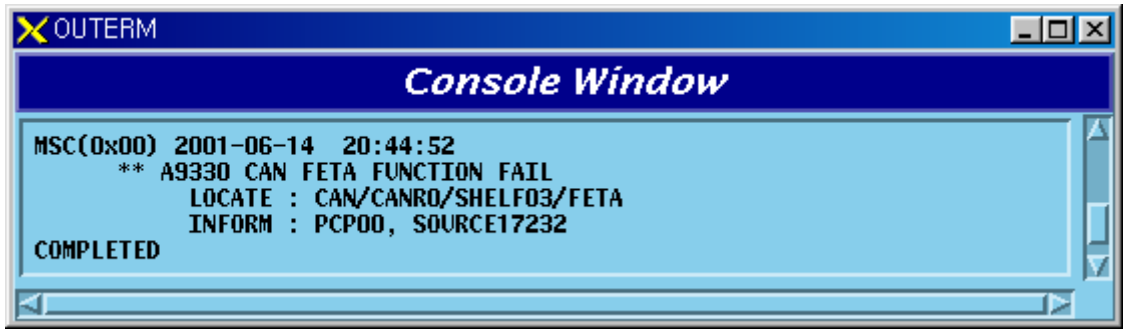

Fig. 5.1-53 CPNB(PCP) FETA Function Fail

2) When FETA board is removed

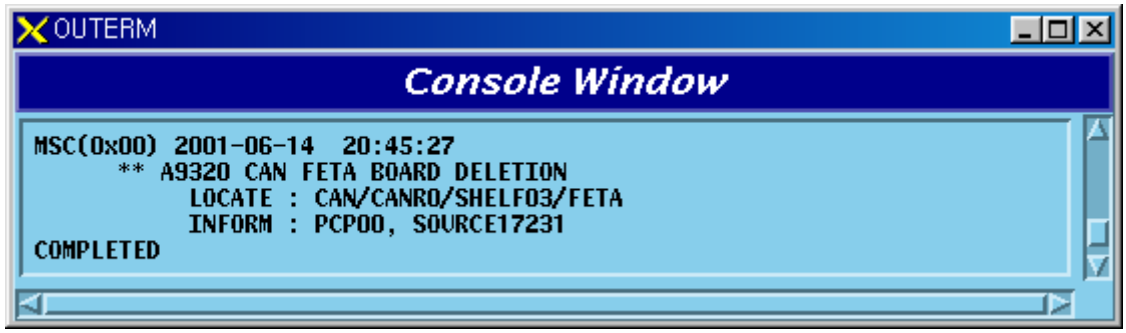

Fig. 5.1-54 CPNB(PCP) FETA Board Open Fail

5.1.1.1.3.6. PRI Board

1) When A-Side of the duplicated PRI is normal and functional problems occur on the B-Side board

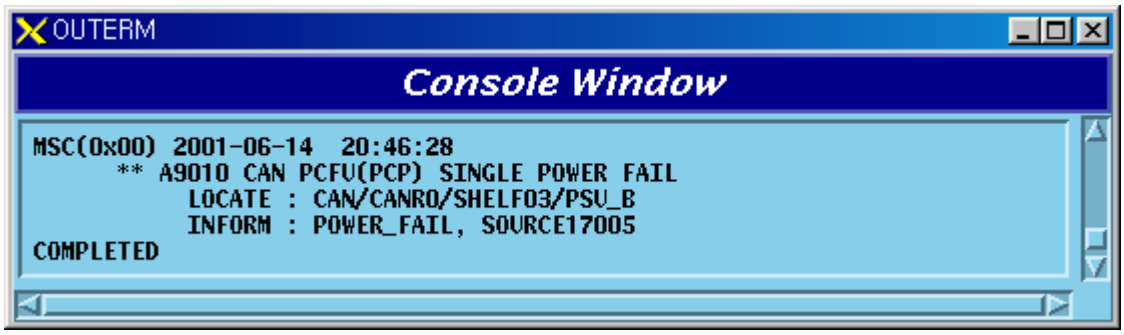

Fig. 5.1-55 CPNB(PCP) PRI Single Power Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated PRI has a functional problem

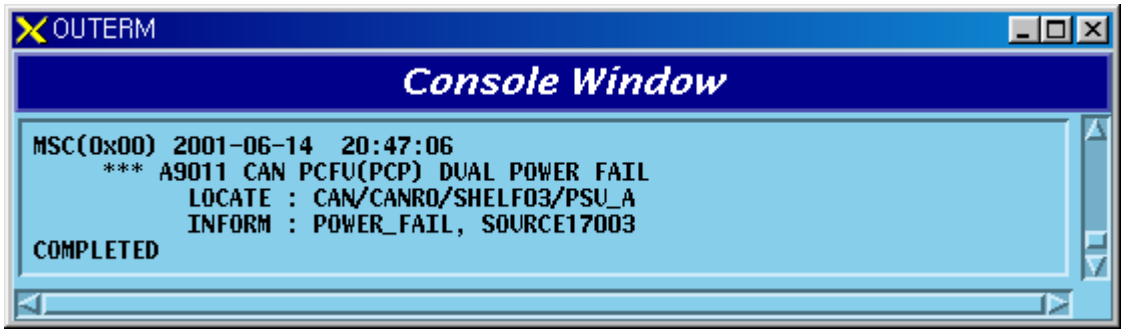

Fig. 5.1-56 CPNB(PCP) PRI Dual Power Fail

3) When A-Side of the duplicated PRI is normal and B-Side board is removed

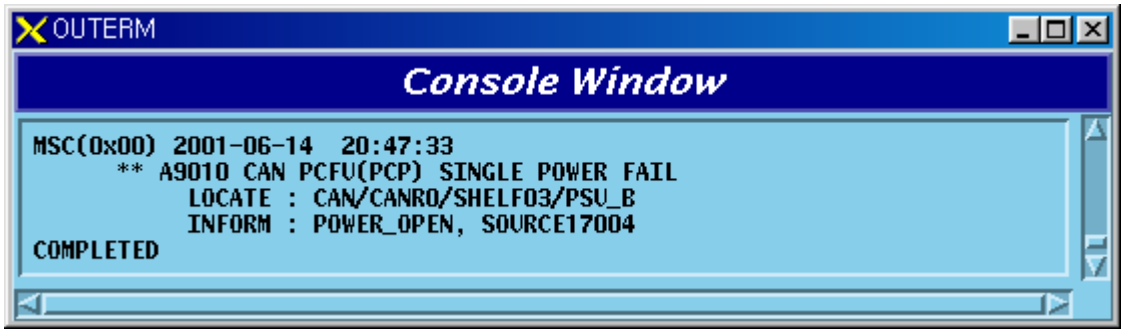

Fig. 5.1-57 CPNB(PCP) PRI Single Power Open Fail

4) When A-Side is removed after B-Side of the duplicated PRI is removed

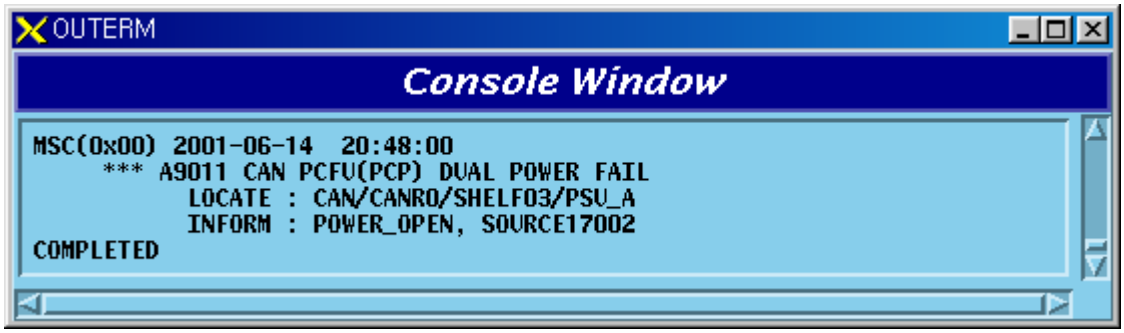

Fig. 5.1-58 CPNB(PCP) PRI Dual Power Open Fail

5.1.1.1.3.7. Others

1) When PCFU(PCP) Alarm Cable is removed

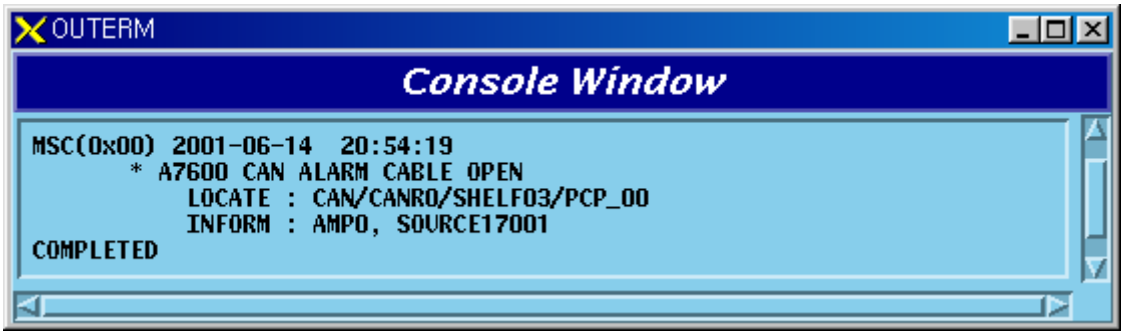

Fig. 5.1-59 CPNB(PCP) Alarm Cable Open

2) When faults occur in the link between FERA B-Side and FETA after the link between FERA A-Side and FETA operates normally (maximum 3 links exist)

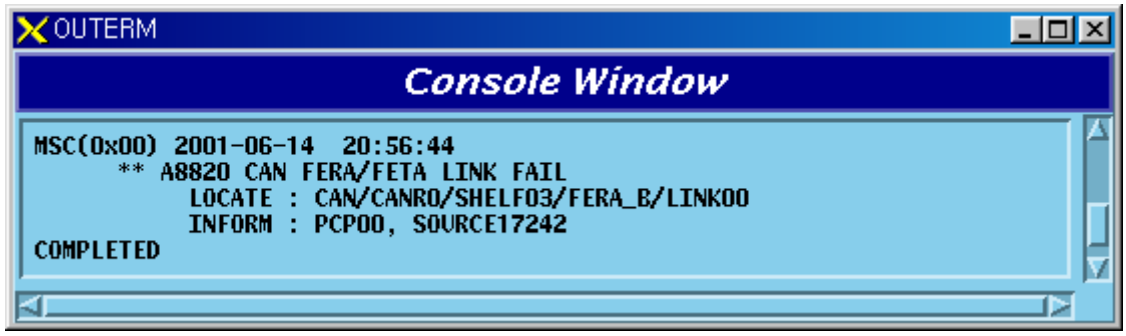

Fig. 5.1-60 LINK Fail between CPNB(PCP) FERA and FETA

3) When faults occur in the link between FERA A-Side and FETA after faults occur in the link between FERA B-Side and FETA(maximum 3 links exist)

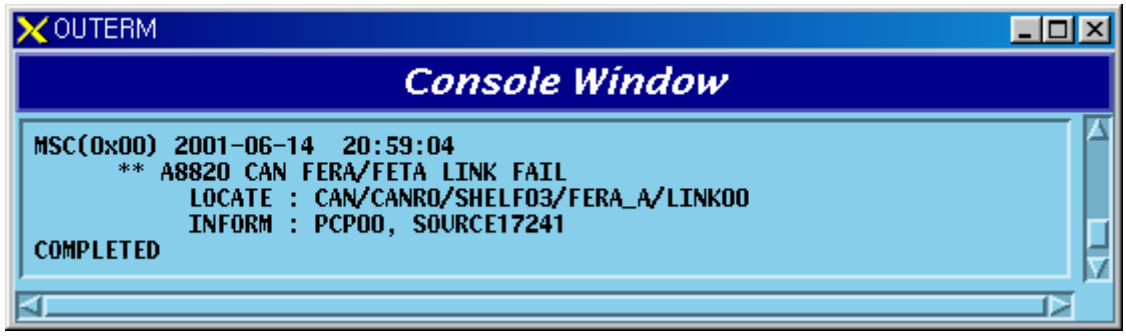

Fig. 5.1-61 LINK Fail between CPNB(PCP) FERA and FETA

4) When faults occur in the link between FETA and PDSN(maximum3 links exist)

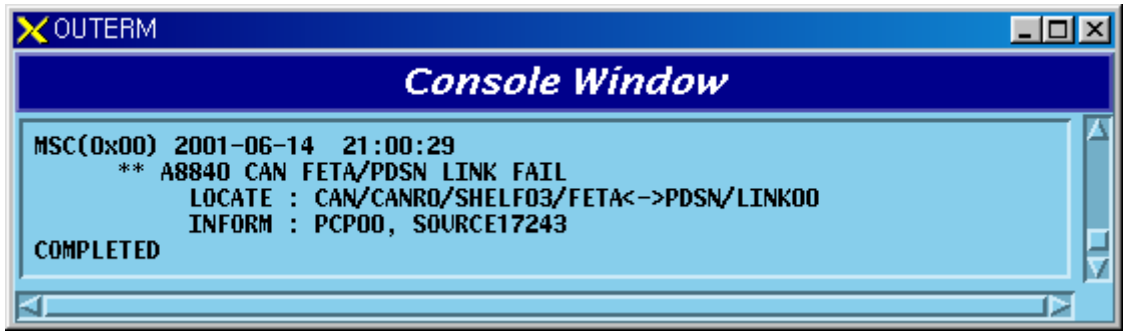

Fig. 5.1-62 LINK Fail between CPNB(PCP) FETA and PDSN

5) When 1pps Clock is not provided for PCP normally

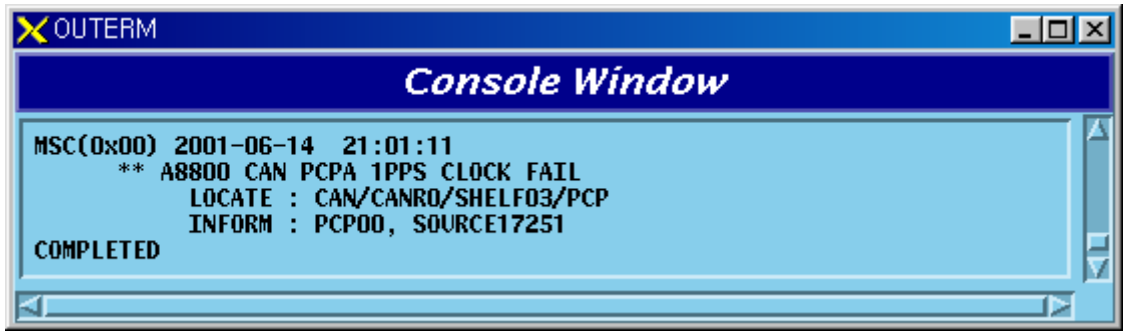

Fig. 5.1-63 PCFB PCP 1pps Clock Fail

6) When 10MHz Clock is not provided for PCP normally

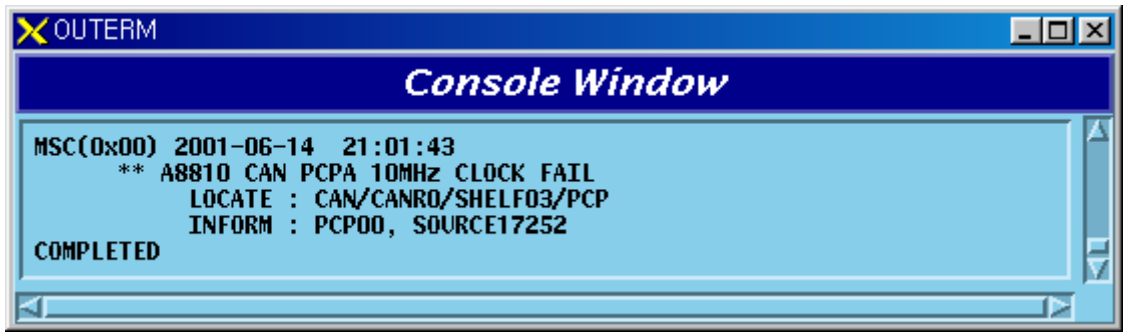

Fig. 5.1-64 PCFB PCP 10MHz Clock Fail

5.1.1.1.4. PCFB(PMP)

5.1.1.1.4.1. PMP Processor

1) When A-Side of the duplicated PMP is normal and functional problems occur on the B-Side board

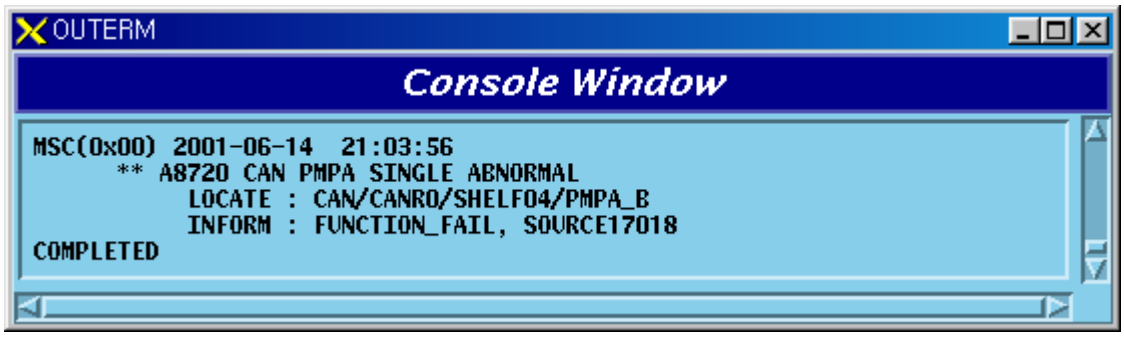

Fig. 5.1-65 PCFB(PMP) PMP Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated PMP has a functional problem

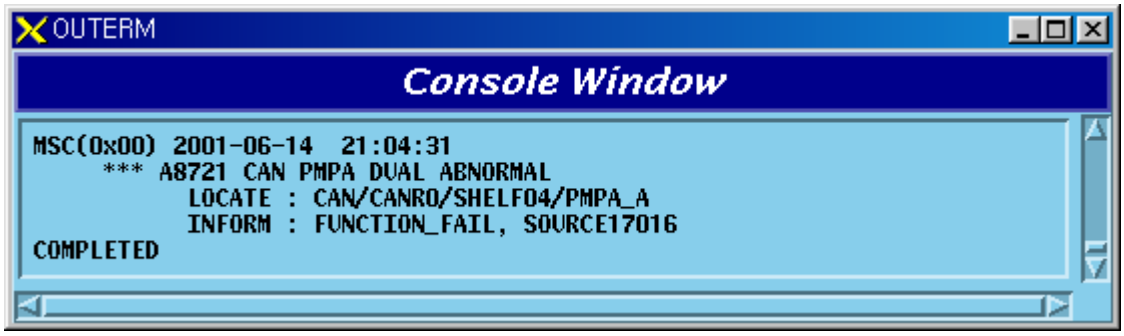

Fig. 5.1-66 PCFB(PMP) PMP Dual Function Fail

3) When A-Side of the duplicated PMP is normal and B-Side board is removed

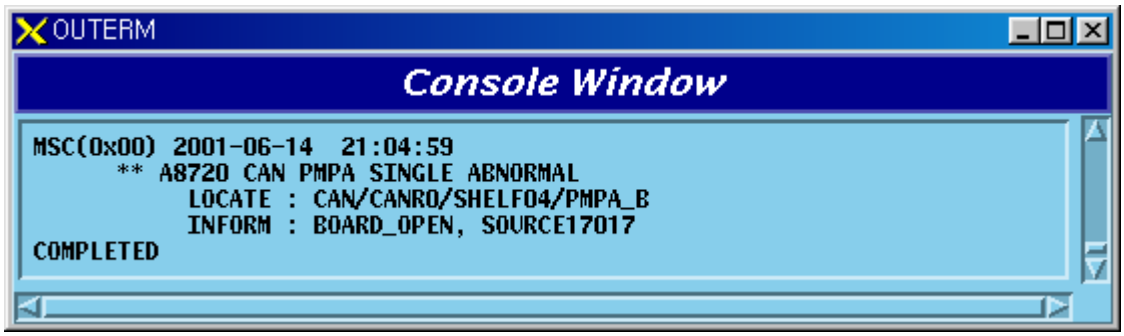

Fig. 5.1-67 PCFB(PMP) PMP Single Board Open Fail

4) When A-Side is removed after B-Side board of the duplicated PMP is removed

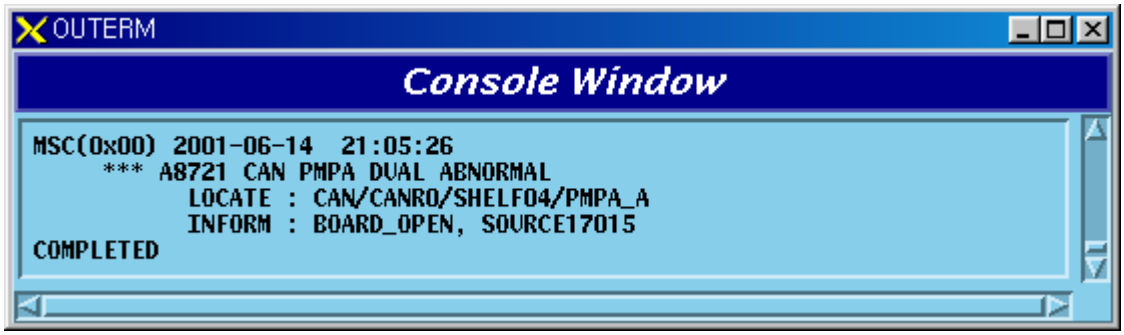

Fig. 5.1-68 PCFB(PMP) PMP Dual Board Open Fail

5.1.1.1.4.2. BCRA Board

See BCRA of PCFU(PCP).

5.1.1.1.4.3. UCPA(PIP) Board

See UCPA(PIP) of PCFU(PCP).

5.1.1.1.4.4. FERA Board

See FERA of PCFU(PCP).

5.1.1.1.4.5. FETA Board

See FETA of PCFU(PCP).

5.1.1.1.4.6. PRI Board

See PRI of PCFU(PCP).

5.1.1.1.4.7. Others

See others of PCFU(PCP).

5.1.1.1.5. TGDB

5.1.1.1.5.1. GPSR Board

1) When A-Side of the duplicated GPSR is normal and functional problems occur on the B-Side board

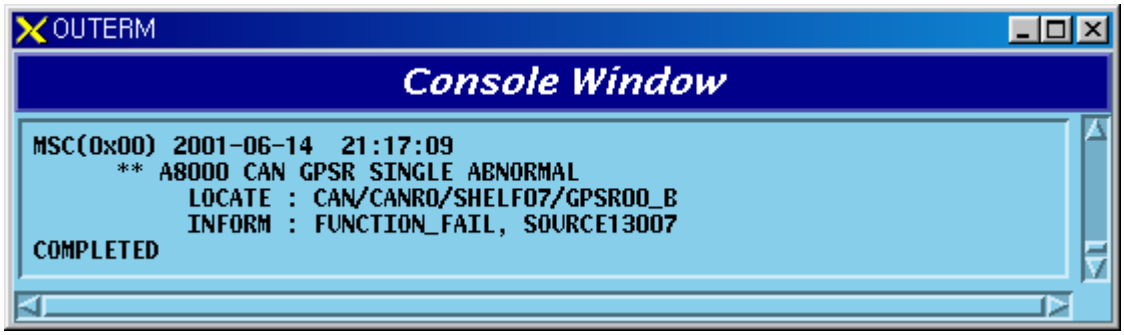

Fig. 5.1-69 TGDB GPSR Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated GPSR has a functional problem

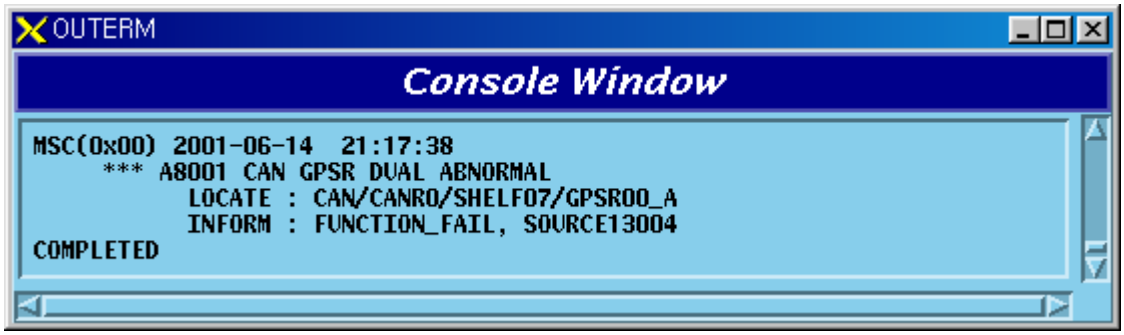

Fig. 5.1-70 TGDB GPSR Dual Function Fail

3) When A-Side of the duplicated GPSR is normal and faults occur on the B-Side power

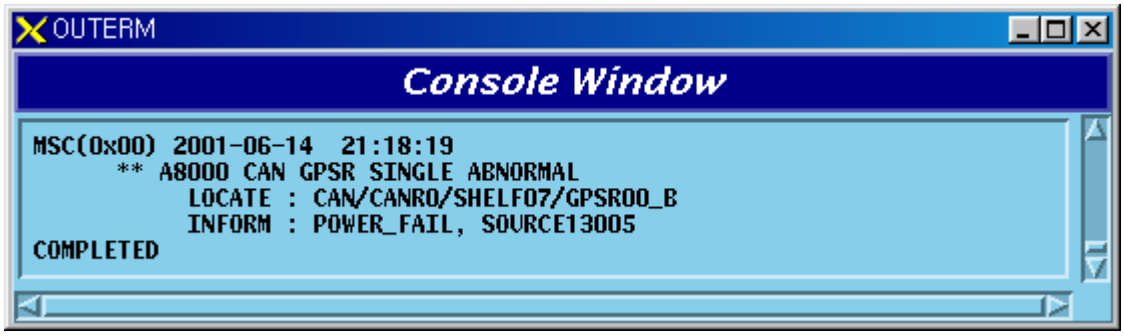

Fig. 5.1-71 TGDB GPSR Single Power Fail

4) When a problem occurs on the A-Side power after B-Side power of the duplicated GPSR has a problem

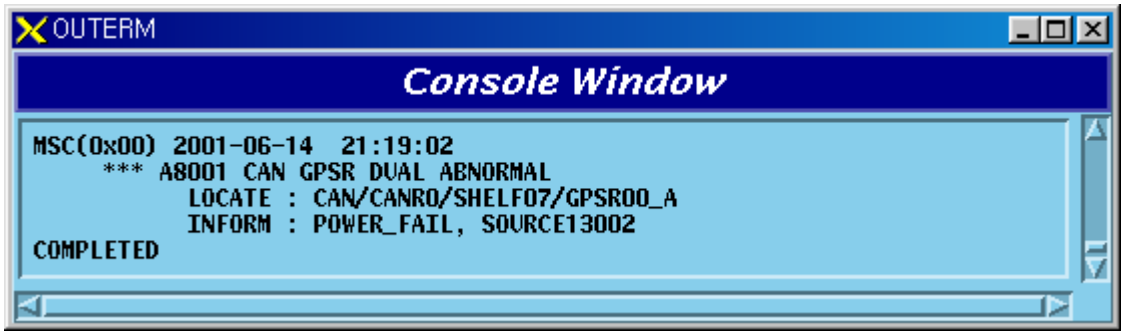

Fig. 5.1-72 TGDB GPSR Dual Power Fail

5) When A-Side of the duplicated GPSR is normal and B-Side board is removed

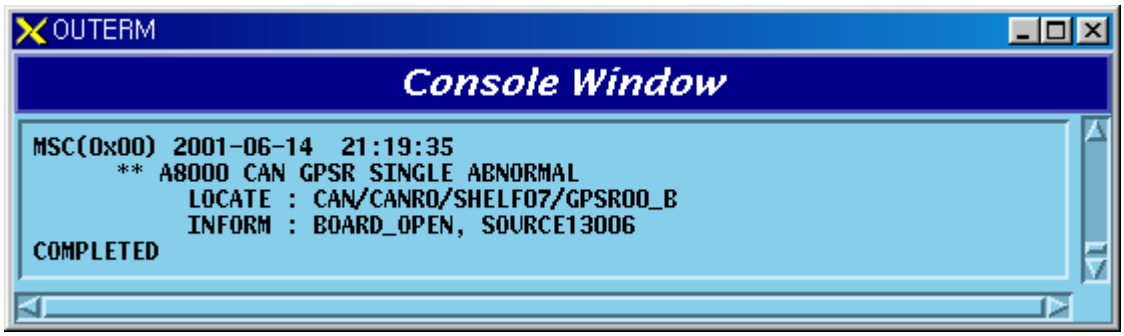

Fig. 5.1-73 TGDB GPSR Single Board Open Fail

6) When A-Side is removed after B-Side of the duplicated GPSR is removed

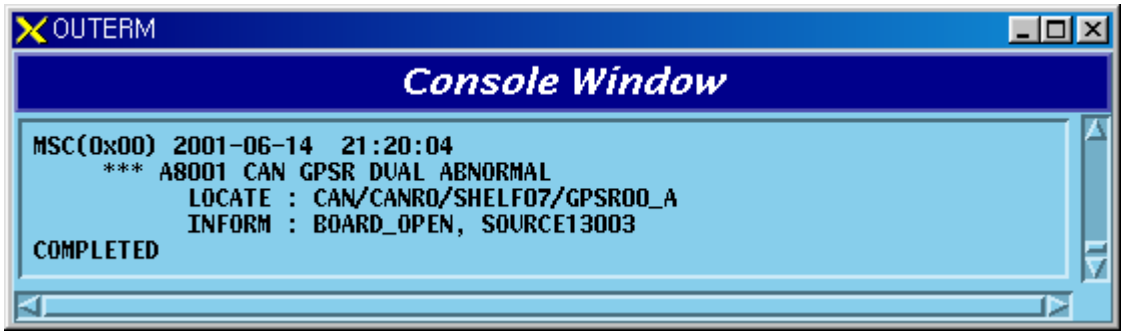

Fig. 5.1-74 TGDB GPSR Dual Board Open Fail

5.1.1.1.5.2. GPSD Board

1) When A-Side of the duplicated GPSD is normal and functional problems occur on the B-Side board

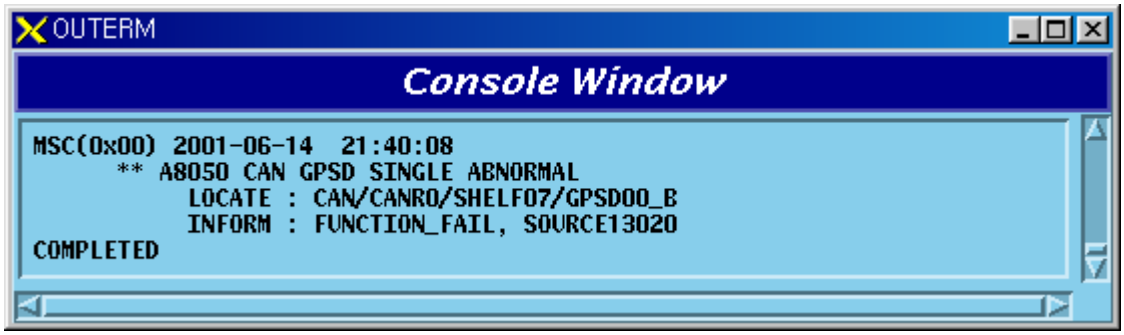

Fig. 5.1-75 TGDB GPSD Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated GPSD has a functional problem

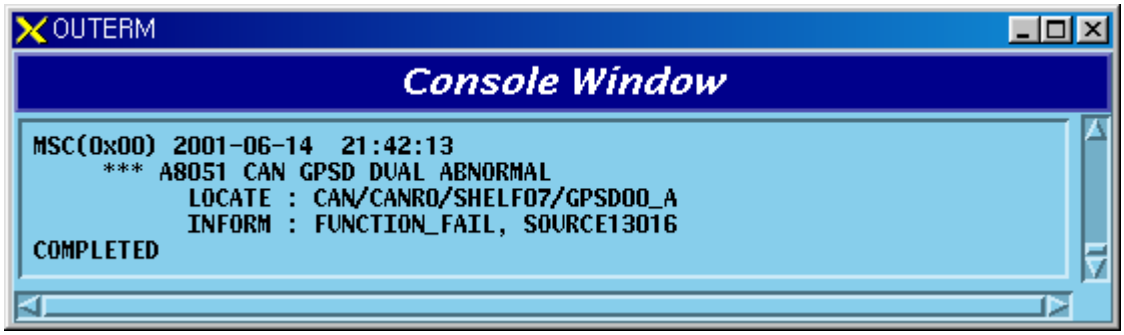

Fig. 5.1-76 TGDB GPSD Dual Function Fail

3) When A-Side of the duplicated GPSD is normal and faults occur on the B-Side power

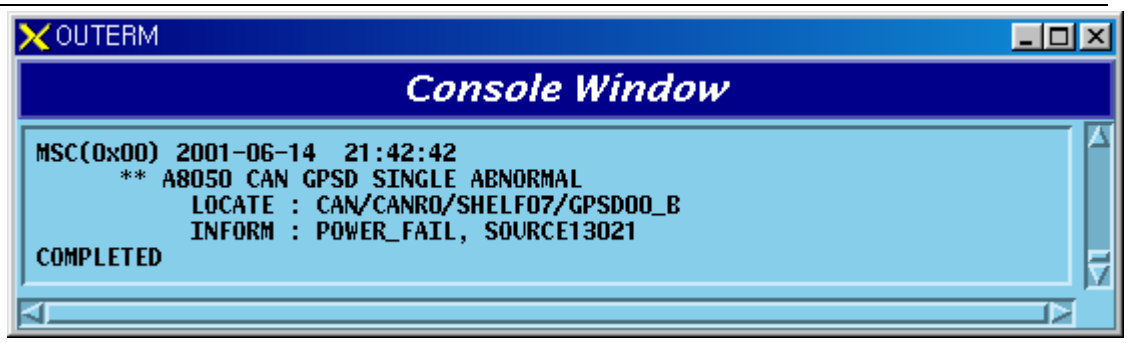

Fig. 5.1-77 TGDB GPSD Single Power Fail

4) When faults occur on the A-Side power after faults occur on the B-Side power of the duplicated GPSD

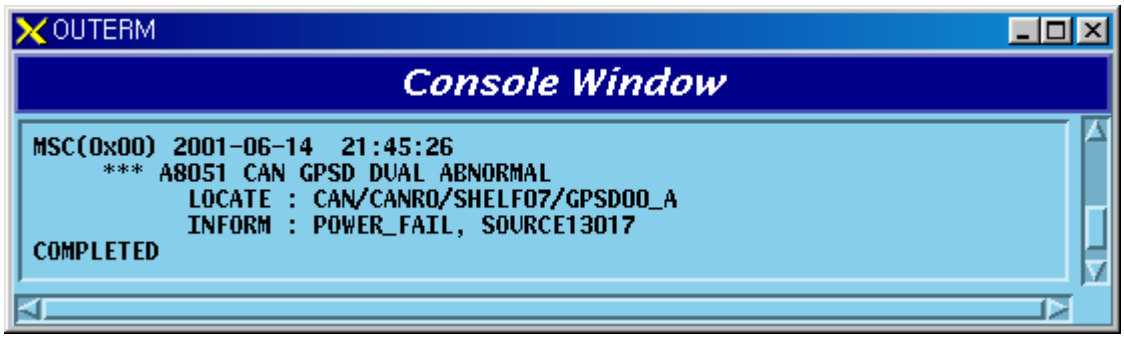

Fig. 5.1-78 TGDB GPSD Dual Power Fail

5.1.1.1.5.3. AMP Processor

1) When faults occur in AMP Processor or a problem occurs in TCP/IP link between BSM and AMP

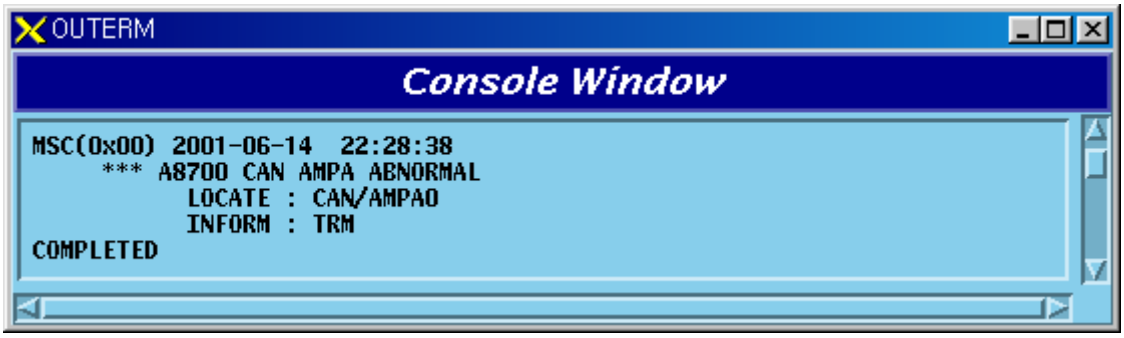

Fig. 5.1-79 TGDB AMP Abnormal

5.1.1.1.5.4. Others

1) When a problem occurs in GPSR Alarm Cable

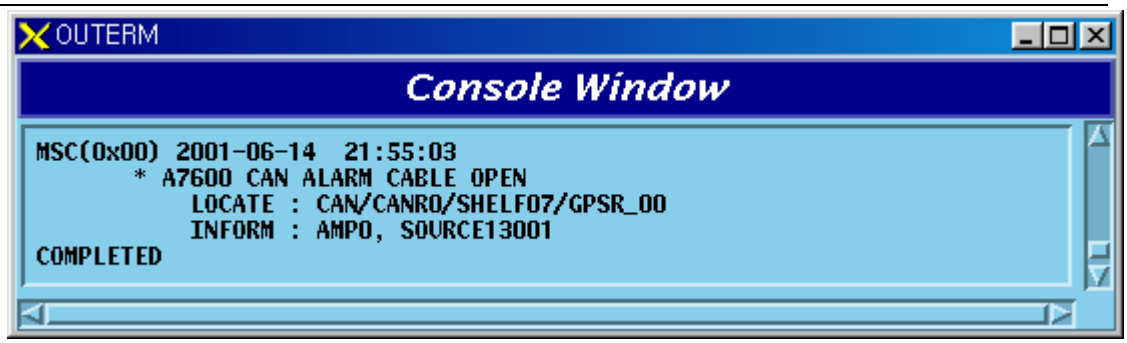

Fig. 5.1-80 TGDB GPSR Alarm Cable Open

2) When a problem occurs in GPSD Alarm Cable

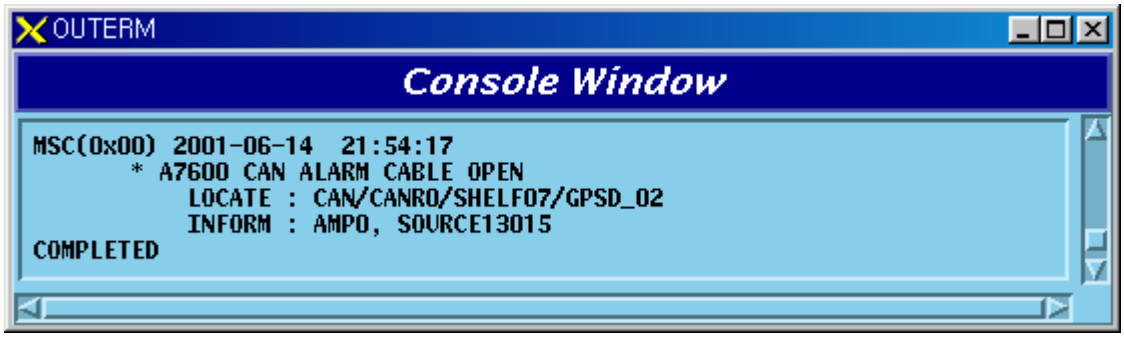

Fig. 5.1-81 TGDB GPSD Alarm Cable Open

3) When a problem occurs in GPSR Control Cable

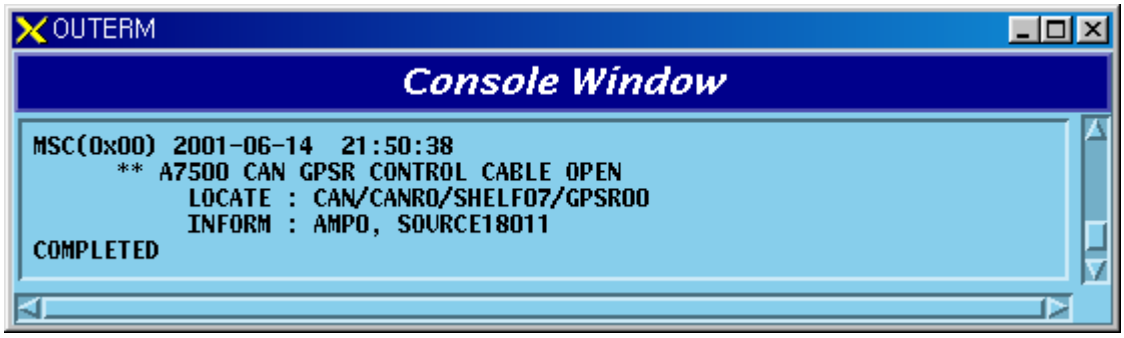

Fig. 5.1-82 TGDB GPSR Control Cable Open

5.1.1.1.6. FAN and Others

1) When a problem occurs in CAN FAN

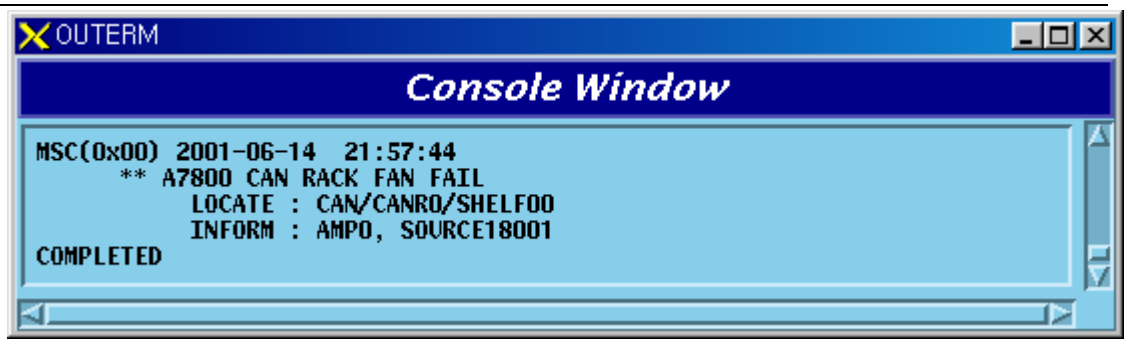

Fig. 5.1-83 CAN Rack FAN Fail

5.1.1.2. BSC Occurrence Alarm Message

5.1.1.2.1. CCSB

5.1.1.2.1.1. CCP Processor

1) When A-Side of the duplicated CCP is normal and functional problems occur on the B-Side board

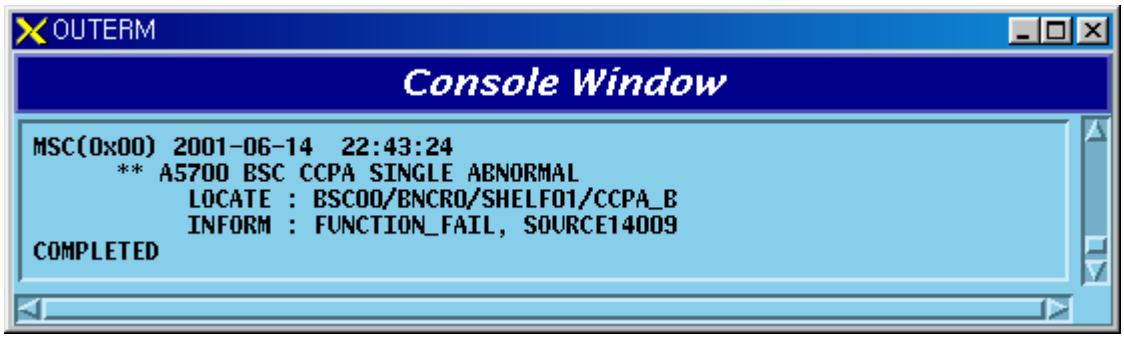

Fig. 5.1-84 CCSB CCP Single Function Fail

2) When functional problems occur on the A-Side after B-Side of the duplicated CCP has a functional problem

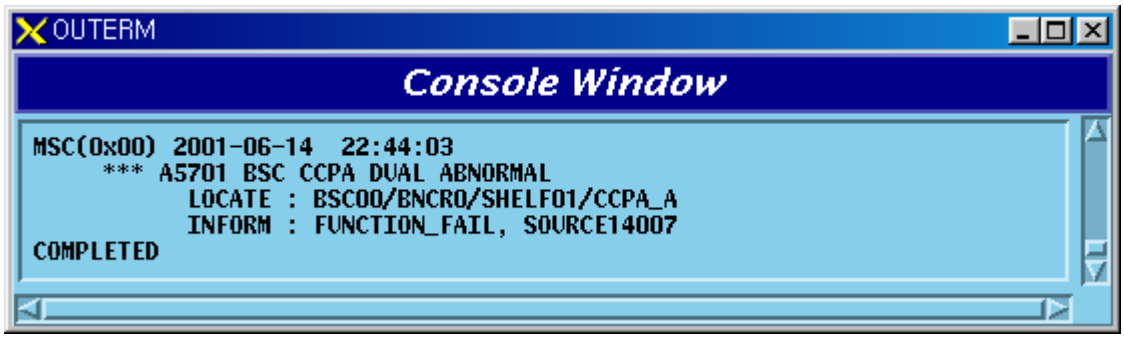

Fig. 5.1-85 CCSB CCP Dual Function Fail

3) When A-Side of the duplicated CCP is normal and B-Side board is removed