

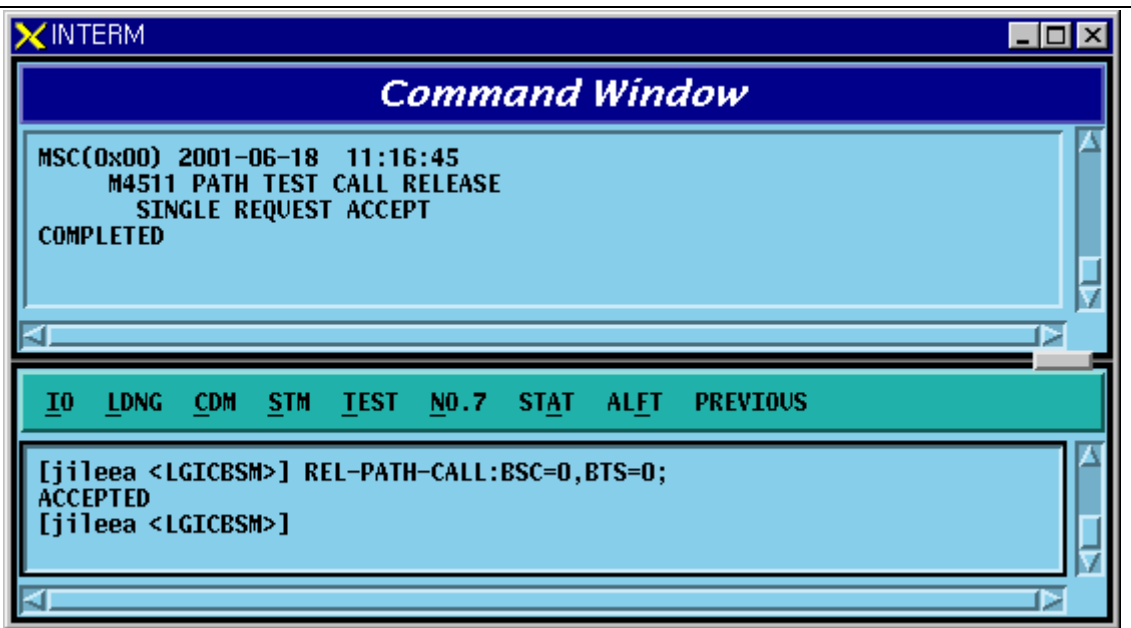


Fig. 4.5-27 Traffic Path Release Command Execution Result Display(Interm Window)

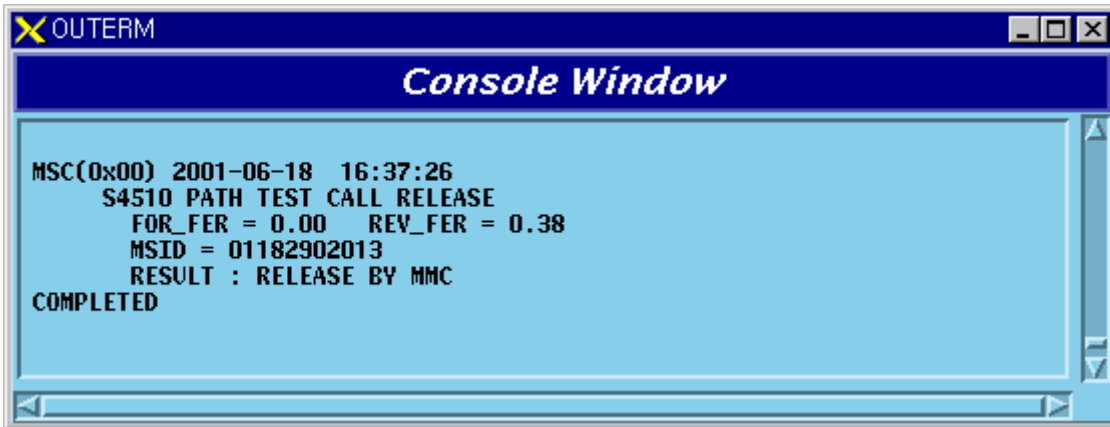


Fig. 4.5-28 Traffic Path Release Command Execution Result Display(Console Window)

4.5.7. Call Trace Testing Function

Mobile Call Trace Function traces the process of call setup for the MS, surveillance of the status after the call setup, the process of call release, and displays the content visibly to BSM after BSM of User's terminal designates a Mobile Station(MS) at random by using a value of MSIN(Mobile Station Identification Number). . The designated Mobile Station(MS) can trace the originating call or terminating call that was set up by the user and if necessary, it sets up Markov call(i.e., a terminating Markov call by paging) for tracing. Mobile call tracing can be performed to all kinds of calls(Voice Call, Data Call, HandOff Call) and can designate maximum two calls simultaneously for tracing. Information provided upon call tracing is as follows:

Tracing Information when Call is set

Resource of Call to be set

System Resource: BSC No, BTS No, Sector No, PN Offset

Attributes of Call: IMSI, ESN, Service Option, Call Type(Voice Call originating, Voice Call terminating, DATA Call initial set, DATA Call Reactivation by MS, DATA Call Reactivation by Network), Terminating number

BTS Resource: CDMA CH(Frequency) No, TC No(RCP#, MCPA#, CE#),
Code CH(Walsh code), Frame Offset

BSC Resource: SLP, VCE Number, CIC(Circuit Identifier Code)

Setup Process

Message display between processors during Call Setup: Visible Display of Call Flow
During Call Setup, display RTD(Round Trip Delay) value and calculated distance by using this.

When Call Failure occurs, display reason value and its meaning

Call Set Time by section

Tracing Information at the phase of calling after Call Setup: Tracing and Display at intervals of 1 ~ 5 seconds.

Elements of Communication Quality

Forward FER(Frame Error Rate): Present FER, Total FER

Backward FER(Frame Error Rate): Present FER, Total FER

Power Control Parameter: TC Gain, Reverse Power Control Threshold

Location Estimate Elements

Present Active PN Offsets Aggregation : BSC No, BTS No, Sector, Cdma Ch, Walsh_ch, TC Id, RTD

Present RTD Value and calculated distance by using this

Tracing Information at the phase of Call Release: Tracing it every time at the normal release or abnormal release

Reason for Call Release

Reason for Call Release and its content: Display reason value and its meaning

Quality Elements of Call

Forward Total FER(Frame Error Rate)

Backward Total FER(Frame Error Rate)

4.5.7.1. Call Trace Start/End Function

Function that starts/ends Call Trace with MS designated at random.

- Command TRC-CALL : IMSI=a, ITEM=b,BSC=c;
 - a: IMSI Number
 - b: Start / Stop
 - c: BSC ID
- Input/Output

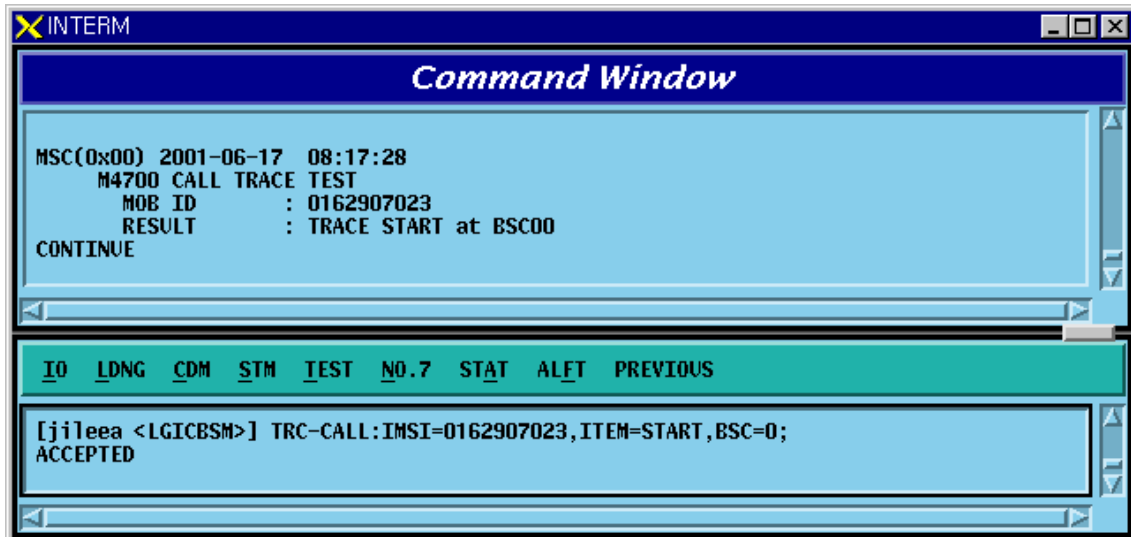


Fig. 4.5-29 Call Trace Start Command Input Screen

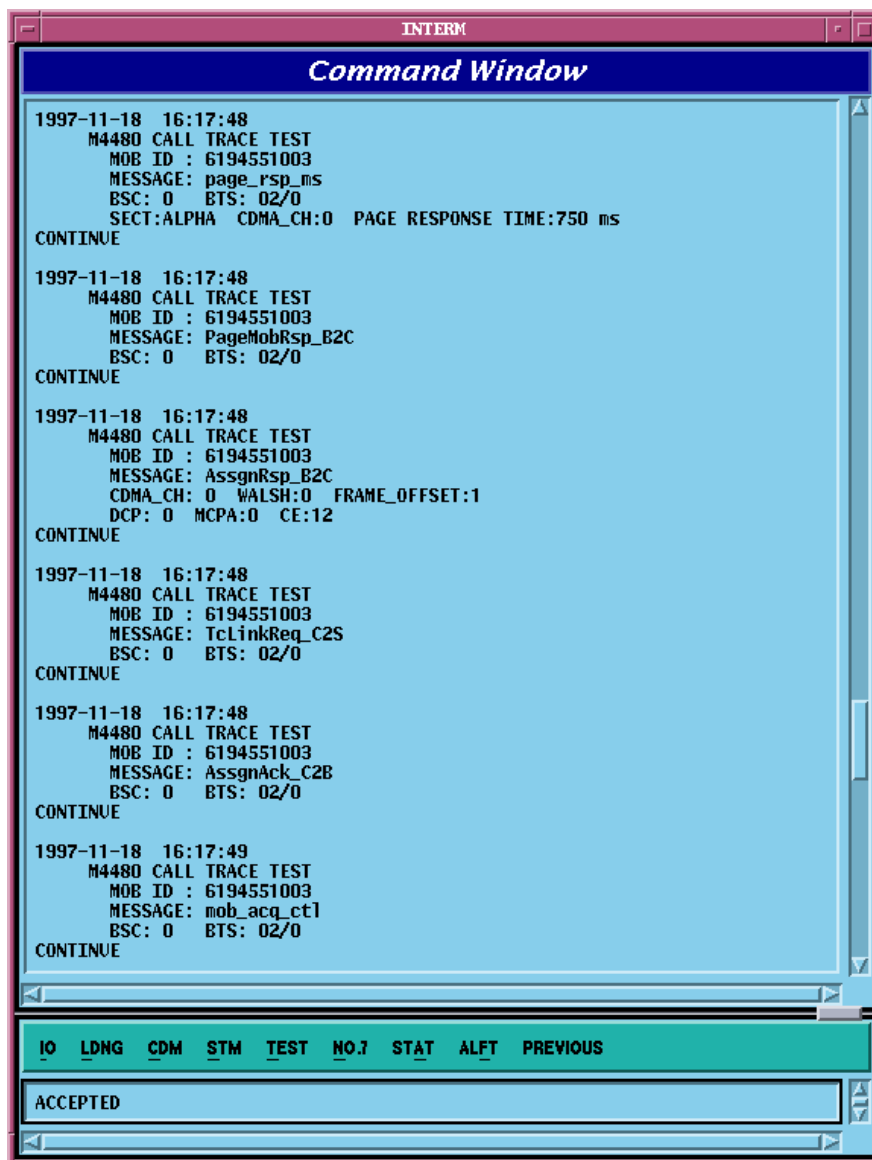


Fig. 4.5-30 Call Trace Display in the Process of Call Set

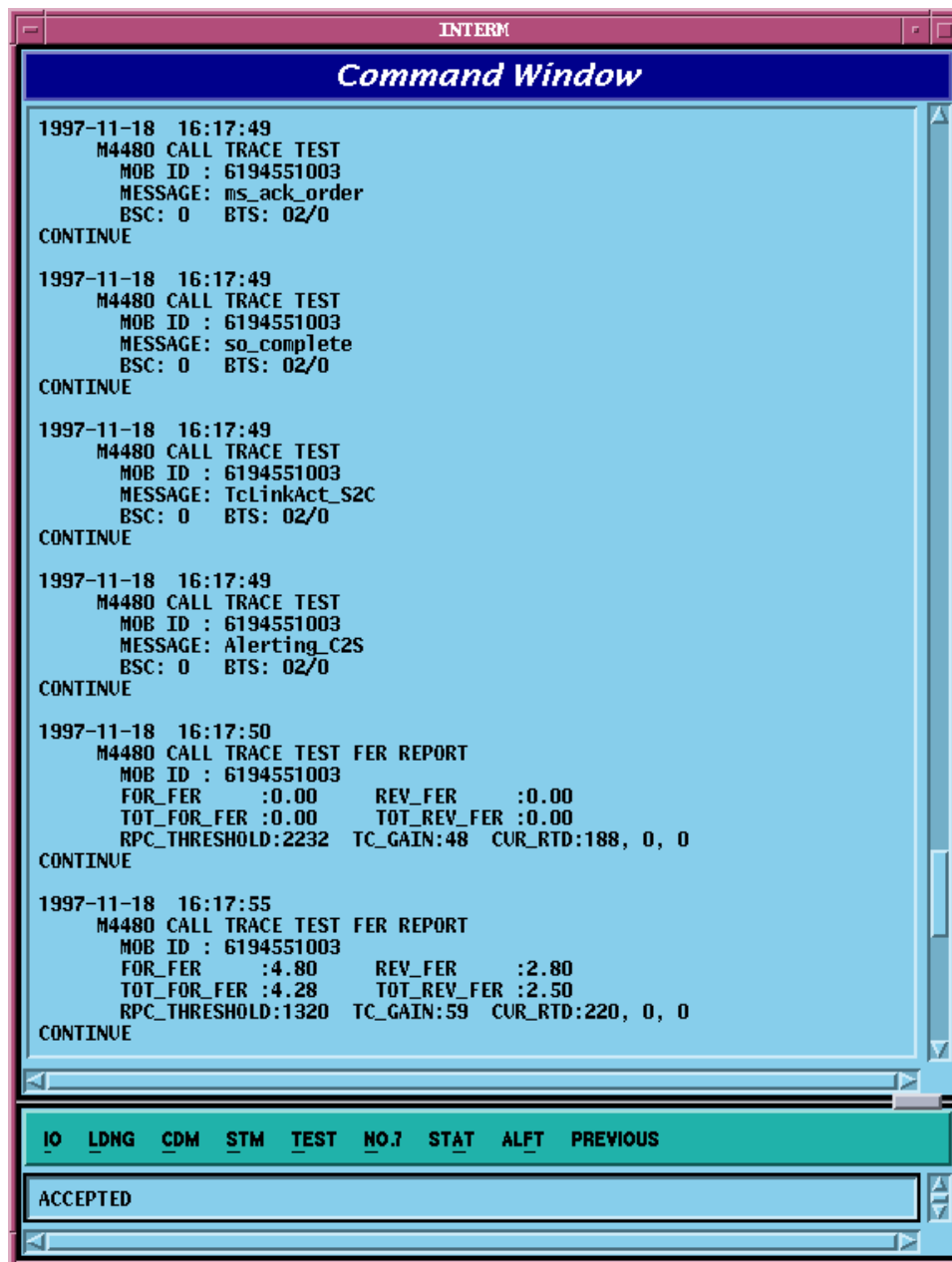


Fig. 4.5-31 Display of Call Set Process and Elements of Communication Quality

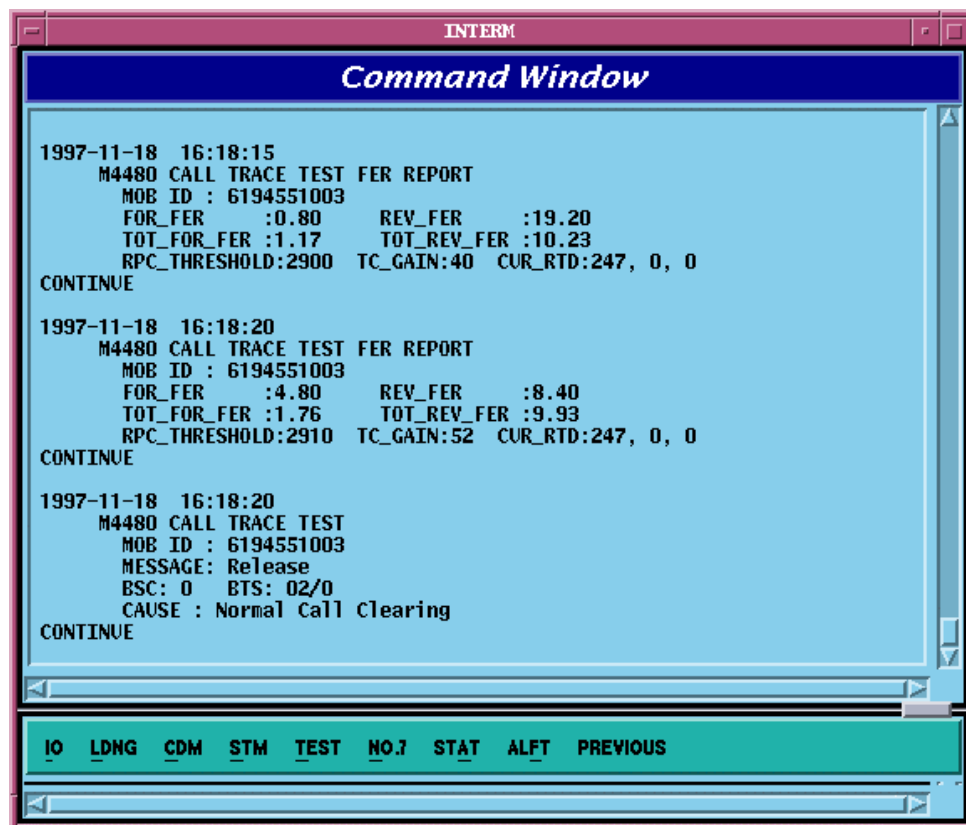


Fig. 4.5-32 Display of Communication Quality and Release Reason

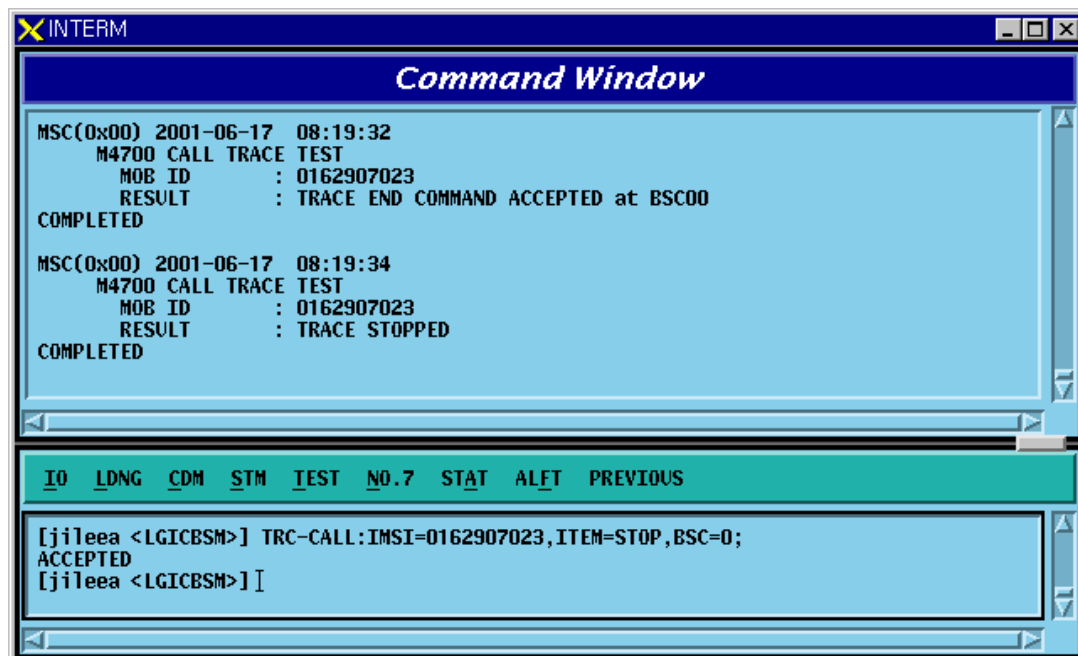


Fig. 4.5-33 Call Trace Stop Result

4.5.7.2. Call Trace MS Display Function

Function to display MS that currently uses the mobile call tracing function.

- Command DIS-TRC-MS;
- Input/Output

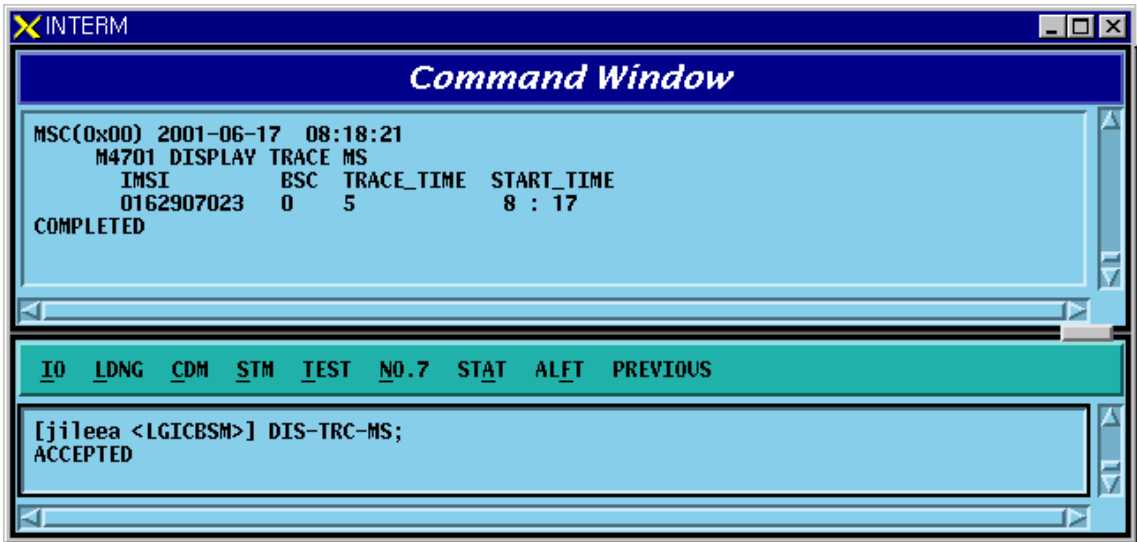


Fig. 4.5-34 Terminal Display in use of Call Trace

4.5.8. Number of Data Call User Display Function (Active/Dormant)

Function to display Number of Data Call by Active/Dormant

- Command DIS-DATA-CALL:PCP=a;
a: PCP Number(0~2)
- Input/Output

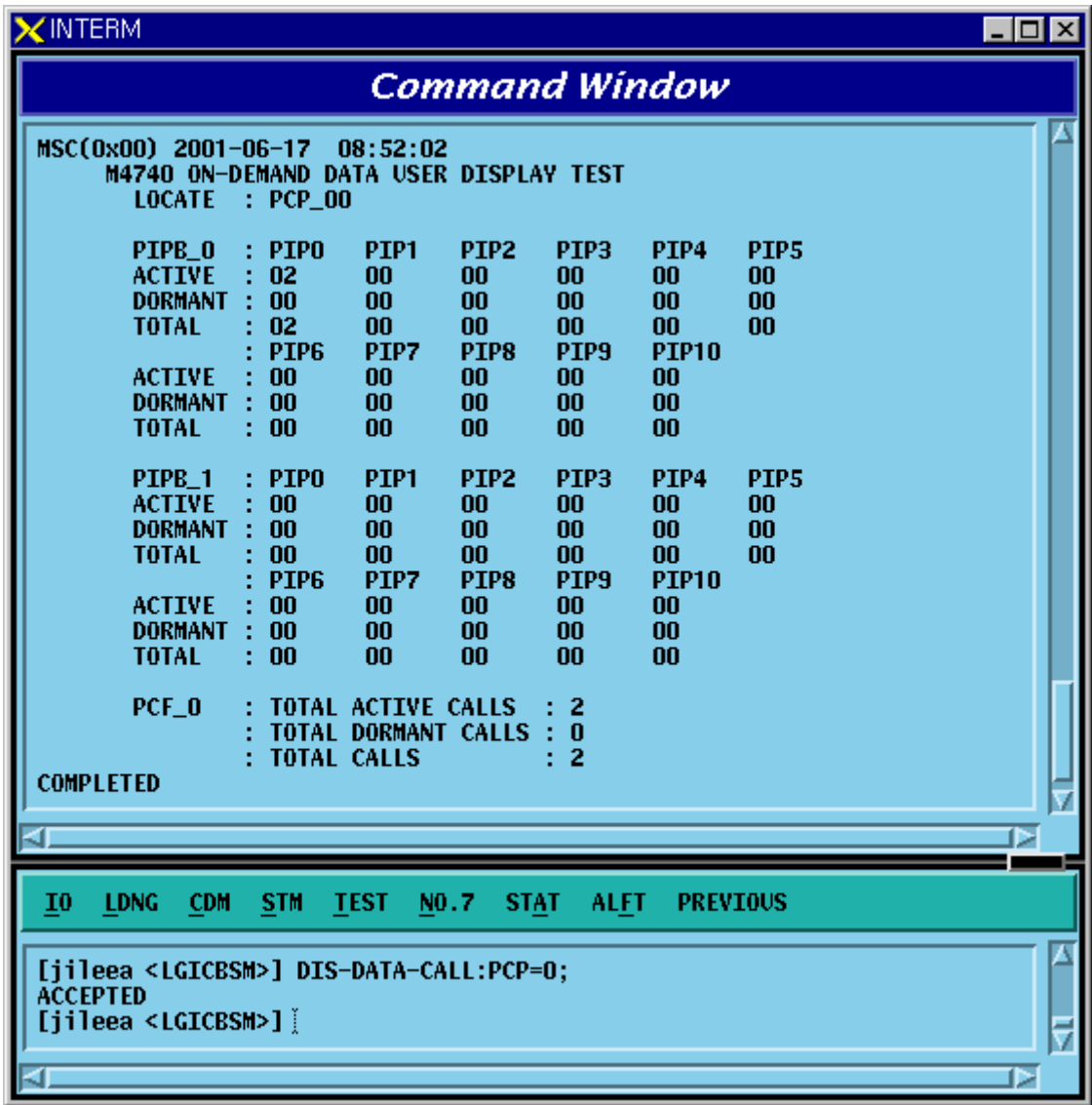


Fig. 4.5-35 Result of the Number of DATA Call User Display

4.5.9. DATA Call User Status Display Function by IMSI

Command DIS-DATA-STS:PCP=a,IMSI=b;

a: PCP Number(0~2)

b: IMSI of MS

- Input/Output

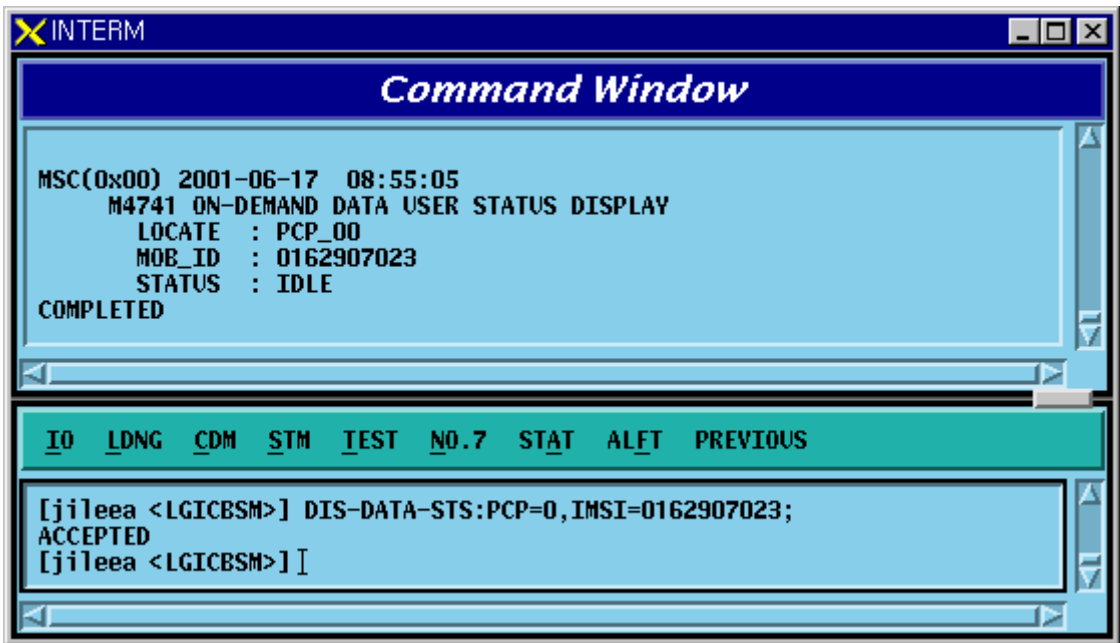


Fig. 4.5-36 Result of DATA Call User Status Display by IMSI

4.5.10. IOS Message Display Function

This function is operated by inputting the IMSI of MS to trace, duration, etc in BSM and displays IOS trace information for all kinds of calls that MS attempts as visible information in text format in the BSM.

- Command TRC-IOS : MS=a, BSC=b, FLAG=c, DURATION=d
 - a: MS Number
 - b: BSC ID(0~11)
 - c: Start/Stop
 - d: Trace Duration Time
- Input/Output

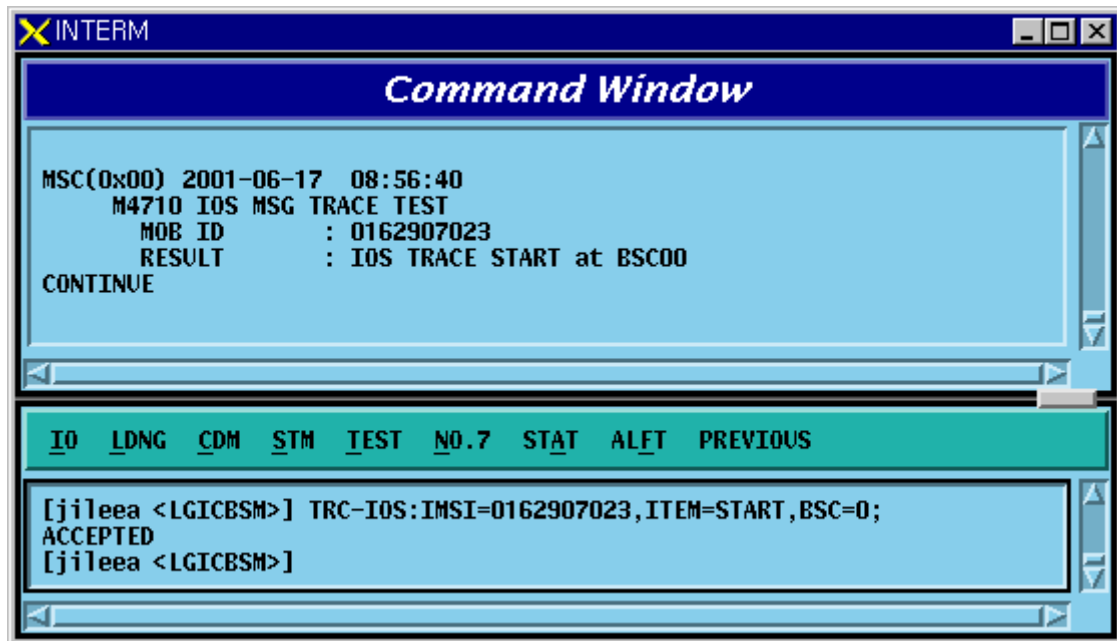


Fig. 4.5-37 IOS Message Display START Result

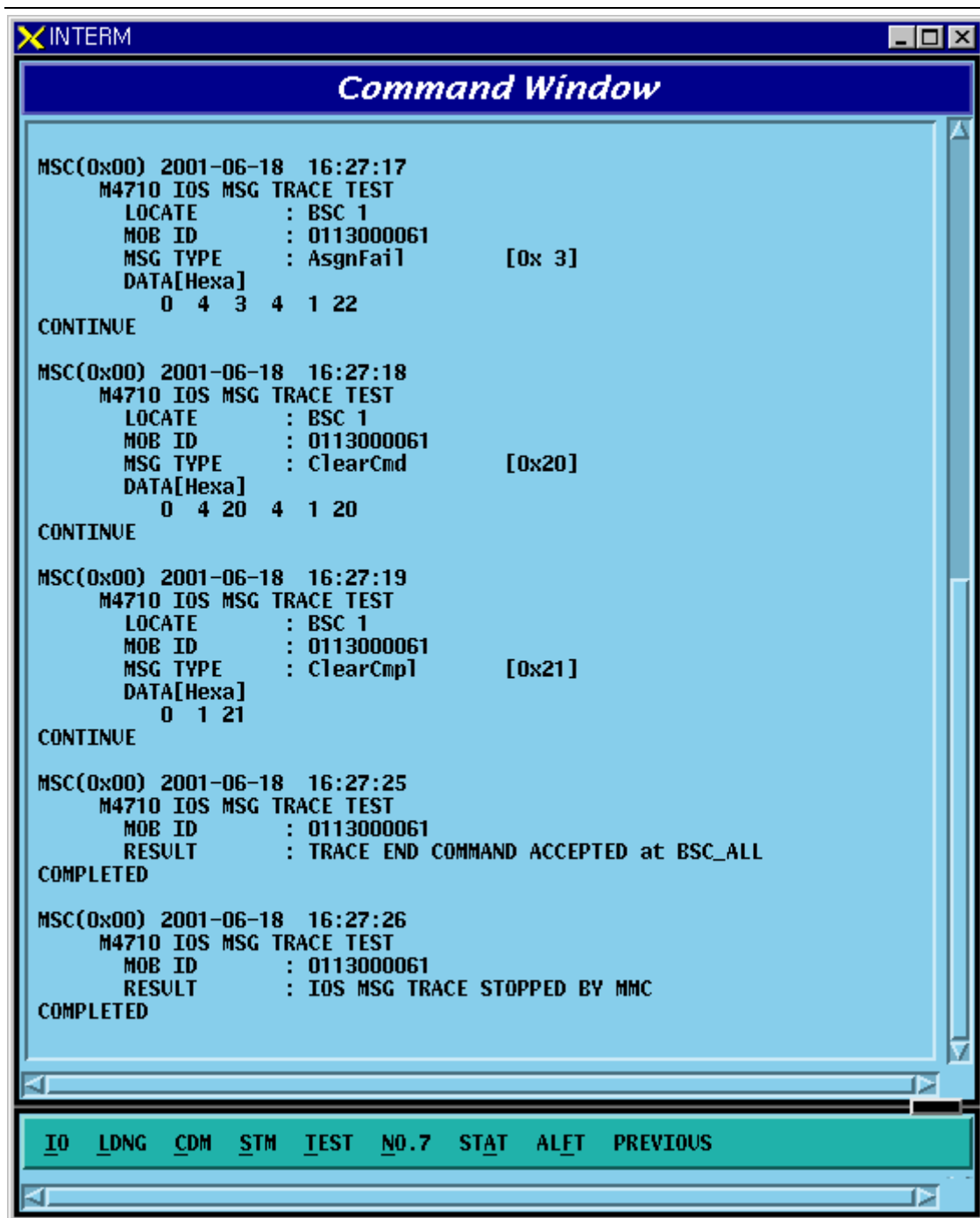


Fig. 4.5-38 IOS Display Message

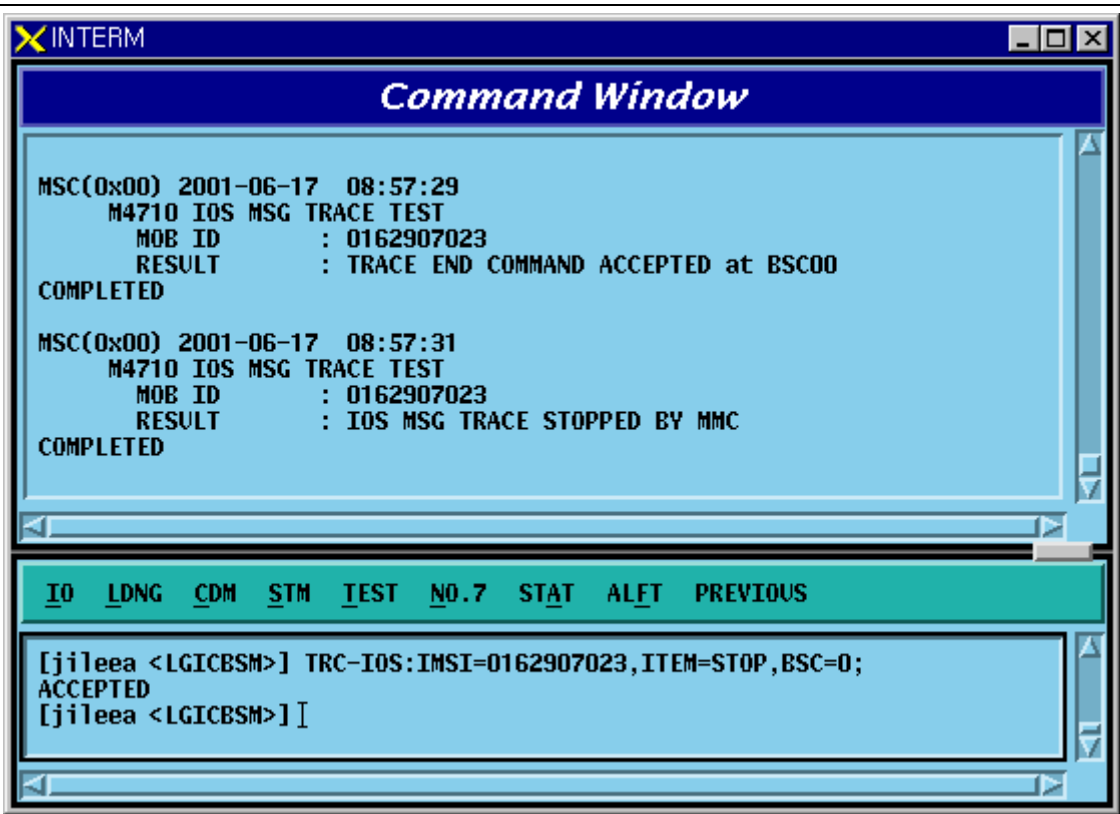


Fig. 4.5-39 STOP Result of IOS Message Display Function

4.5.11. POWER MONITORING Function

Function to check the BTS power control in BSM

- Command DIS-BTS-PWR:BSC=a,BTS=b,ITEM=c,[TIME=d]:
 - a: BSC ID(0~11)
 - b: BTS ID(0~47)
 - c: Stop/Start
 - d: Duration Time(1~100 min)
- Input/Output

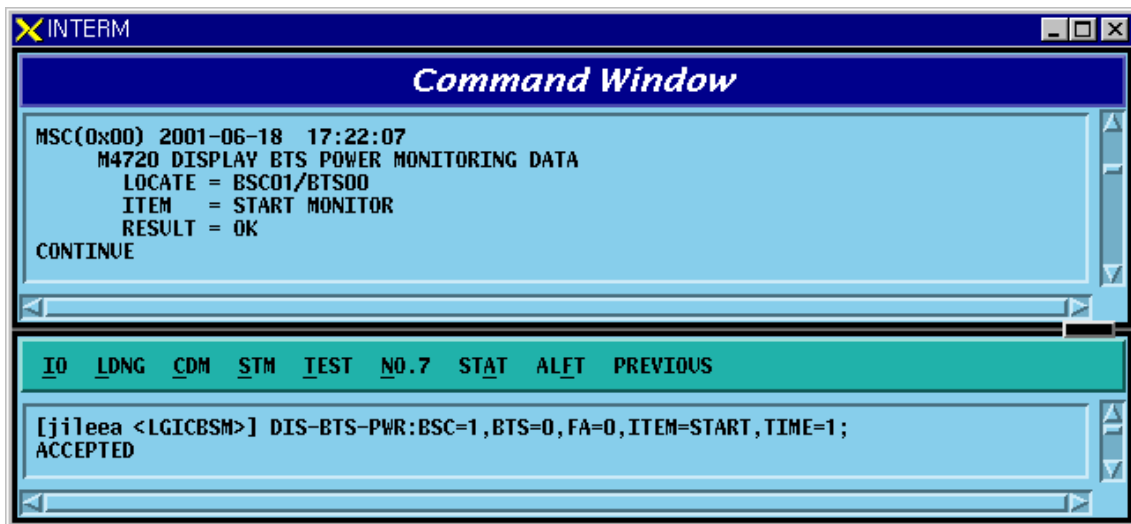


Fig. 4.5-40 Power Monitoring START Result

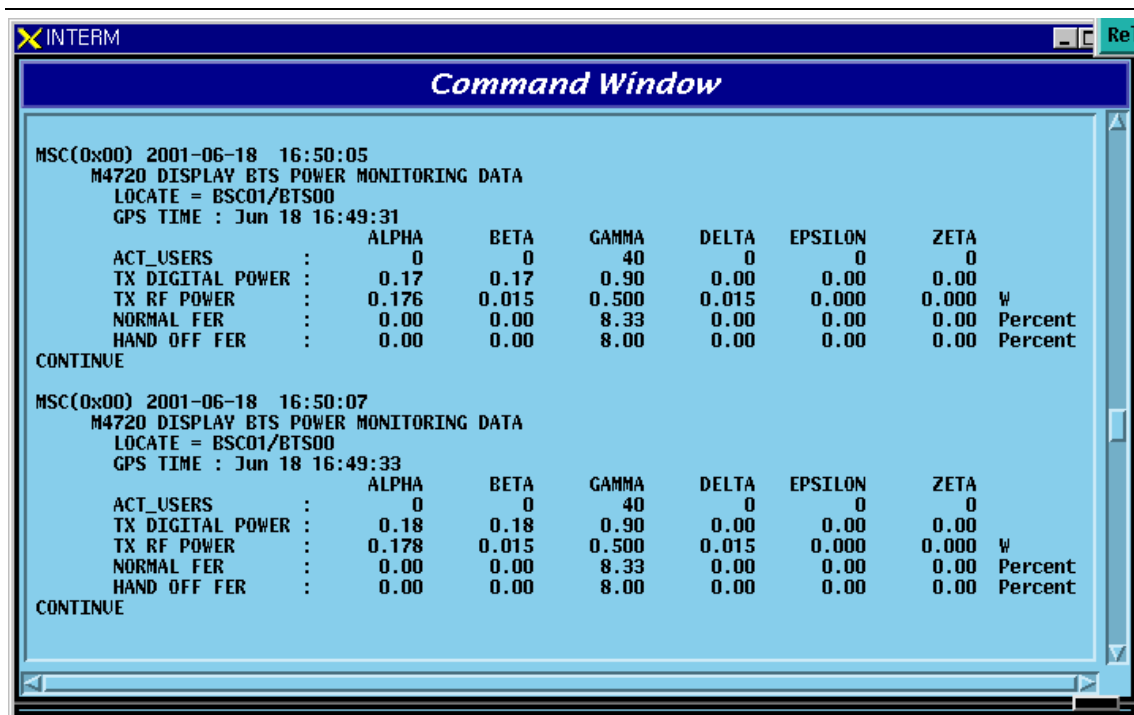


Fig. 4.5-41 Power Monitoring Result

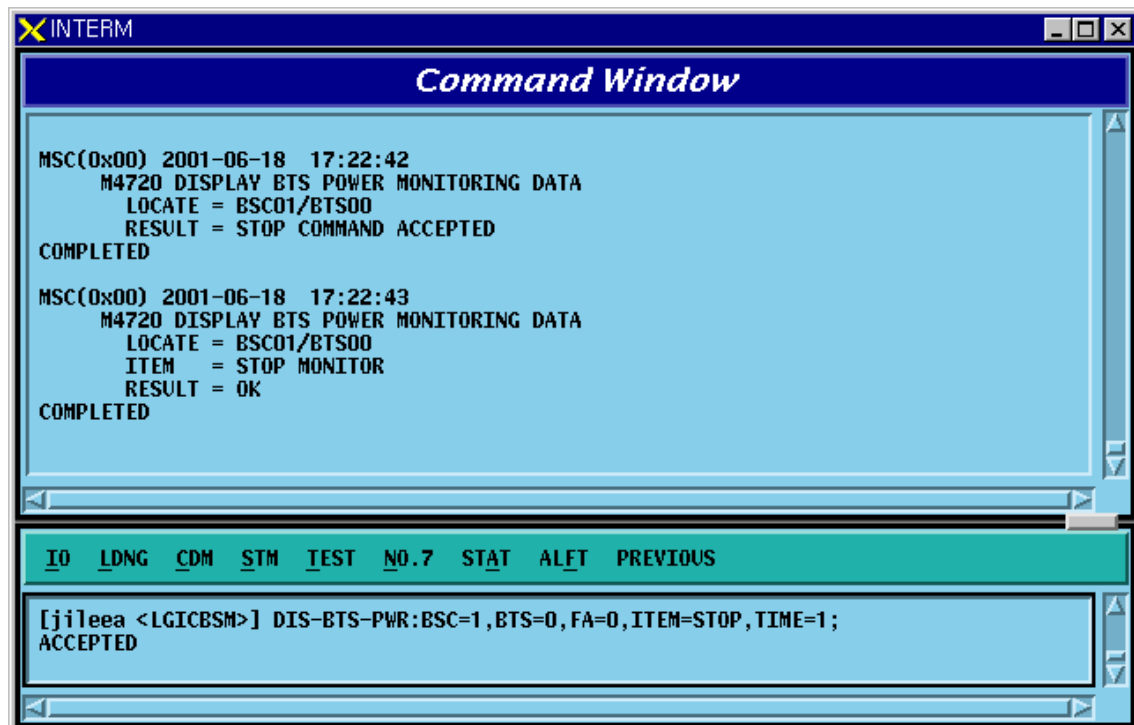


Fig. 4.5-42 Power Monitoring STOP Result

4.6. No.7 Command

The function of BSM No.7 is to manage parameter information necessary for the operator to operate No.7. It is divided into the following function: 1) signaling link operation management and 2) the signaling link maintenance. The former is composed of the following: signaling point management function, signaling link set management function, signaling link management function, signaling terminal management function, signaling data management function, and SCCP management function. The latter is composed of signaling link and signaling terminal test, and signal link inhibit.

4.6.1. Related Command

4.6.1.1. Commands for Signaling Link Operation and Management Function

Table 4.6-1 Commands related to Signaling Point Management

Commands	Description
DIS-SP-INFO	Signaling Point Information Display
CHG-OSP	Change of Intra-Switching Office Signaling Point
CHG-SP	Change of Signaling Point

Table 4.6-2 Commands related to Signaling Link Set

Commands	Description
ACT-LKS	Signaling Link Set Activation
DACT-LKS	Signaling Link Set Deactivation

Table 4.6-3 Commands related to Signaling Link

Commands	Description
CRET-SLK	Signaling Link Create
DEL-SLK	Signaling Link Deletion
ACT-SLK	Signaling Link Activation
DACT-SLK	Signaling Link Deactivation

DIS-SLK-INFO	Signaling Link Information Display
INH-SLK	Signaling Link Barring
ALW-SLK	Signaling Link Barring Release

Table 4.6-4 Commands related to Signaling Terminal

Commands	Description
CRTE-ST	Signaling Terminal Definition(Create)
DEL-ST	Signaling Terminal Deletion
DIS-ST-INFO	Signaling Terminal Information Display

Table 4.6-5 Commands related to Signaling Data Link

Commands	Description
CRTE-SDLK	Signaling Data Link Definition(Create)
DEL-SDLK	Signaling Data Link Deletion
DIS-SDLK-INFO	Signaling Data Link Information Display

Table 4.6-6 Display Commands for SCCP Data

Commands	Description
DIS-SCCP-NET	SCCP Network Configuration Data Display
DIS-SCCP-LSS	SCCP Intra-Switching Office Sub-system Status Data Display

Table 4.6-7 Signaling Link Status Display Commands

Commands	Description
DIS-SLK-STS	Signaling Link Status Display
DIS-ST-STS	Signaling Terminal Status Display
DIS-LKS-STS	Signaling Link Set Status Display

Table 4.6-8 Commands related to Timer

Commands	Description
DIS-MTP2-TMR	MTP L2 Timer Display
CHG-MTP2-TMR	MTP L2 Timer Change
DIS-MTP3-TMR	MTP L3 Timer Display
CHG-MTP3-TMR	MTP L3 Timer Change
DIS-SCCP-TMR	SCCP Timer Change
CHG-SCCP-TMR	SCCP Timer Change

4.6.1.2. Commands for Signaling Link Maintenance Function

Table 4.6-9 Test Related Commands

Commands	Description
TEST-SLK	Signaling Link Test
TEST-ST	Signaling Terminal Test
DIS-No7-CYC	Test Cycle Display
CHG-No7-CYC	Test Cycle Change

Table 4.6-10 Status Suppression Related Commands

Commands	Description
DIS-INH-NO7	Displayable Status Message Display
ALW-NO7-MSG	Status Message Display Possible
INH-NO7-MSG	Status Message Display Suppression

4.6.2. Signaling Link Operation Management Function

4.6.2.1. Signaling Point Information Display

Display the Status of Signaling Point of local Switching Office and that of Intra-Switching Office.

Command DIS-SP-INFO:BSC_ID=a

a = BSC Number (00 ~ 11)

Input DIS-SP-INFO:BSC_ID=0;

Output

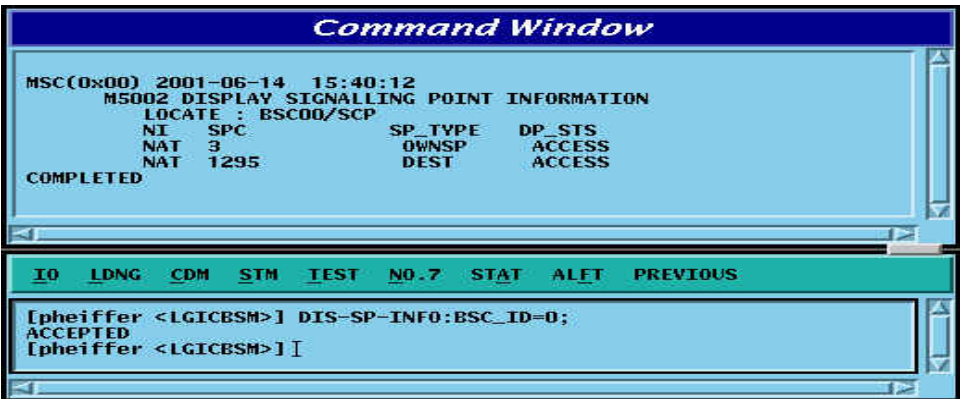


Fig. 4.6-1 Signaling Point Information Display

4.6.2.2. Change of Intra-Switching Office Signaling Point

It changes Information for Intra-Switching Office Signaling Point.

Command CHG-OSP:BSC=a,OSP_NUM=b;

a = BSC Number(00 ~ 11)

b= OSP Number (00 ~ 65535)

Input CHG-OSP:BSC_ID=0,OSP_NUM=5;

Output

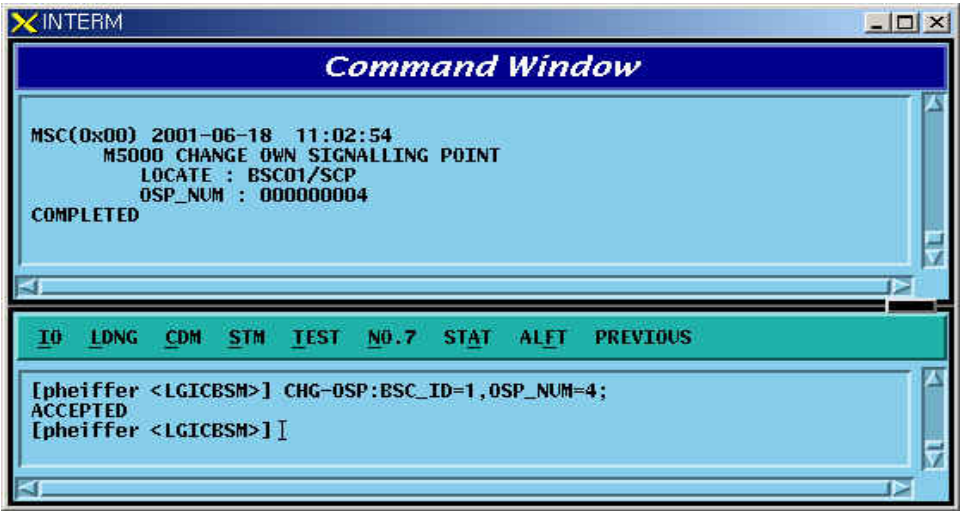


Fig. 4.6-2 Change of Intra-Switching Office Signaling Point

4.6.2.3. Change of Local Switching Office Signaling Point

It changes Signaling Point of Local Switching Office.

Command CHG-SP-INFO:BSC_ID=a, SP_NUM=b

b = SP Number (00 ~ 65535)

Input CHG-SP-INFO:BSC_ID=0,SP_NUM=1038

Output

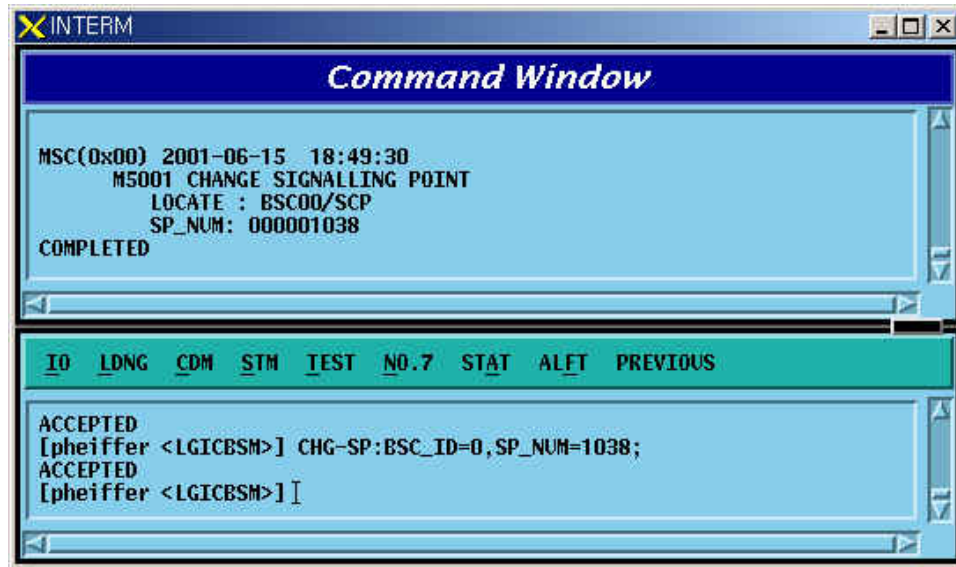


Fig. 4.6-3 Change of Remote Switching Office Signaling Point

4.6.2.4. Activation of Signaling Link Set

Signaling Link Set indicates an aggregation of signaling links(Max 16 units). Activation of Signaling Link Set is to put all the defined Signaling Links in a in-service status.

Command ACT-LKS:BSC_ID=a

a = BSC Number (00 ~ 11)

Input ACT-LKS:BSC_ID=0;

Output

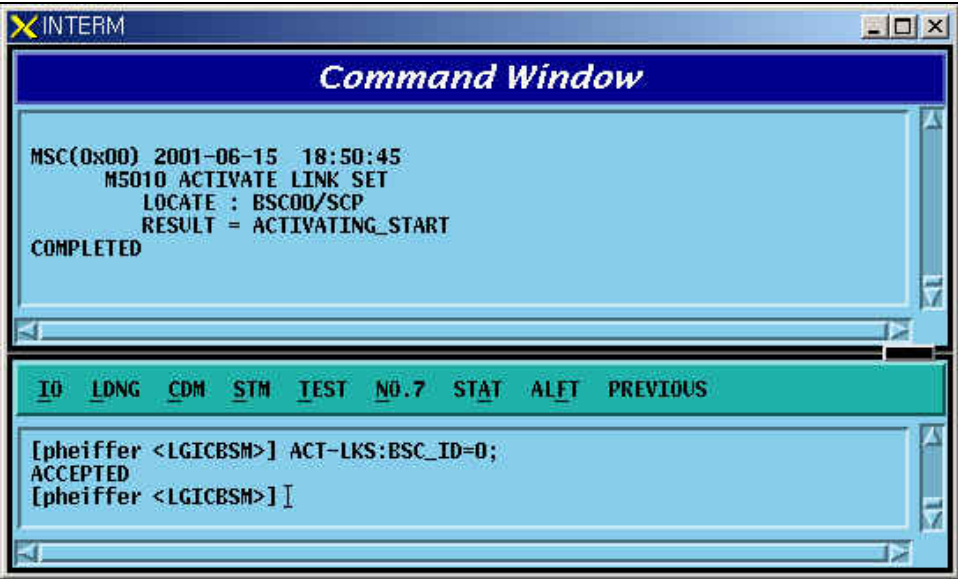


Fig. 4.6-4 Activation of Signaling Link Set

4.6.2.5. Deactivation of Signaling Link Set

Function that puts all the defined Signaling Links in out-of-service status

Command DACT-LKS:BSC_ID=a;

a = BSC Number (00 ~ 01)

Input DACT-LKS:BSC_ID= a;

Output

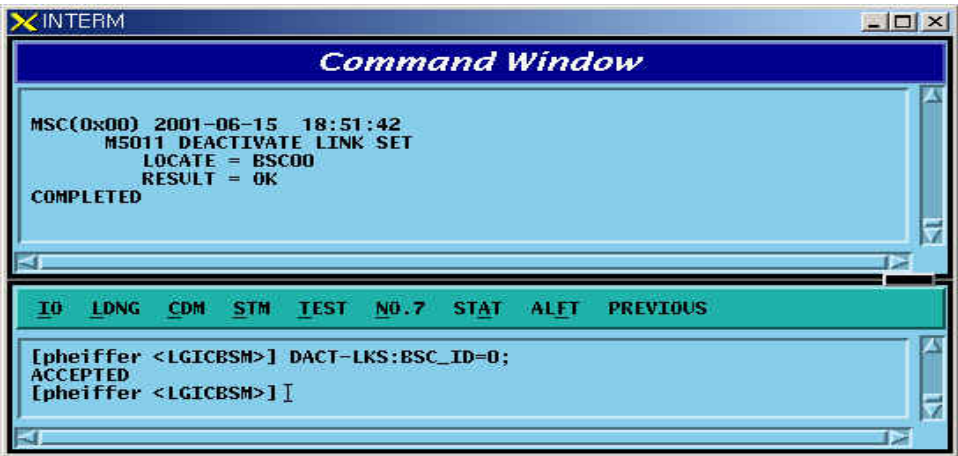


Fig. 4.6-5 Deactivation of Signaling Link Set

4.6.2.6. Signaling Link Generation

Signaling Link is the concept combining Signaling Data Link with Signaling Terminal. It connects Intra-Switching Office Signaling Point to local switching Office Signaling Point, and can define 16 units of Signaling Link. The definition of Signaling Link is used to expand the number of Signaling Links. Before Signaling Link is defined, first of all, Signaling Terminal and Signaling Data Link to be defined as Signaling Link should have been defined.

Command CRTE-SLK:BSC=a, SLK=b, VMP=c, TRK=d, TS_NO = e, ST_ID =f;

a = BSC Number (00 ~ 11)

b = Signalling Link Code (00 ~ 15)

c = VMP (00 ~ 07)

d = Trunk Number (00 ~ 16)

e = Time Slot Number (00 ~ 31)

f = Signalling Terminal (1 ~ 16)

Input CRTE-SLK:BSC=0, SLK =5, VMP = 00, TRK = 5 TS_NO=16, ST_ID = 5;

Output

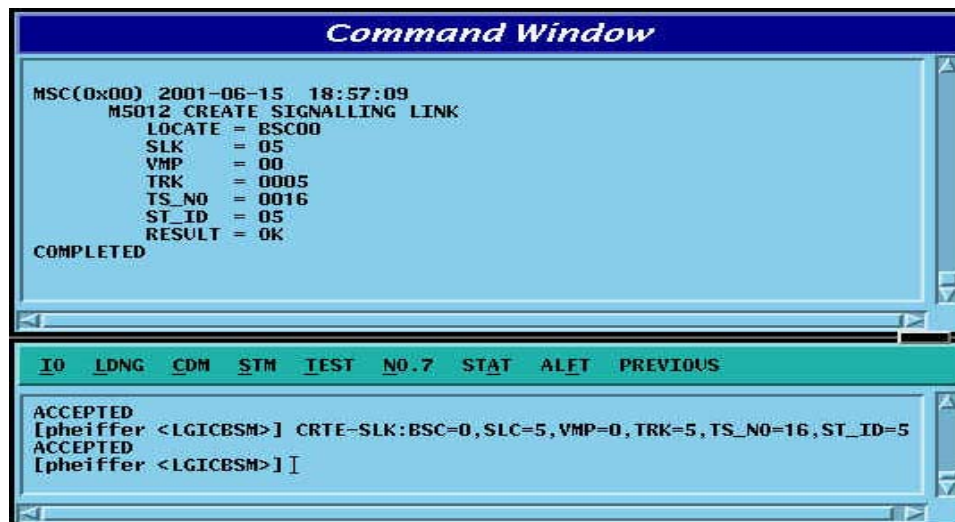


Fig. 4.6-6 Signaling Link Create

4.6.2.7. Signaling Link Deletion

Function to delete the defined Signaling Link. Before the Signaling Link is deleted, the corresponding Signaling Link should have been successfully deactivated.

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

a = BSC Number (00 ~ 11)

b = Signalling Link Code (00 ~ 15)

Input DEL-SLK:BSC=0, SLC =3;

Output

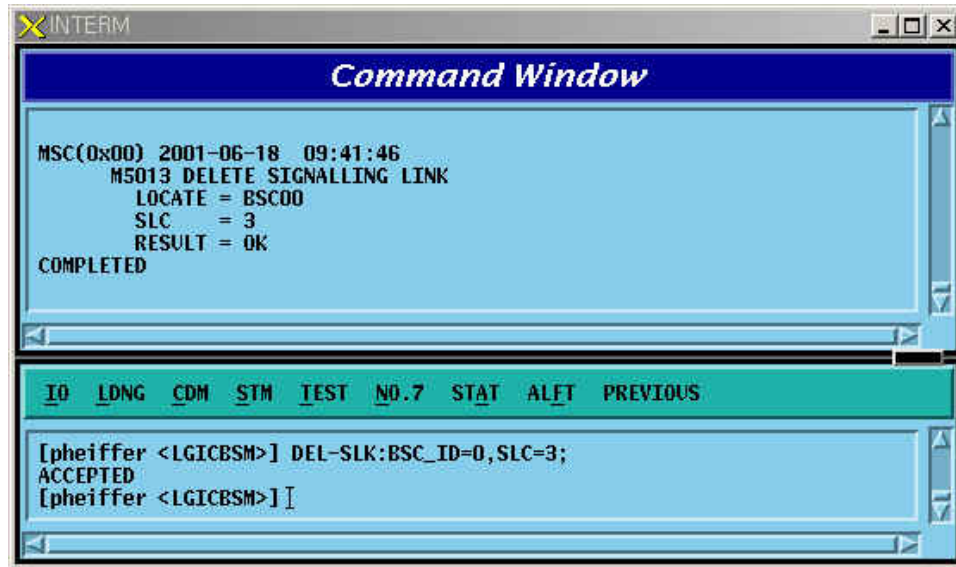


Fig. 4.6-7 Deletion of Signaling Link

4.6.2.8. Signaling Link Activation

Function to activate a defined Signaling Link. Before activated, the corresponding Signaling Link should have been successfully defined.

Command ACT-SLK:BSC_ID=a, SLC;

a = BSC Number (00 ~ 11)

b = Signalling Link Code (00 ~ 15)

Input ACT-SLK:BSC_ID=0, SLC=2;

Display

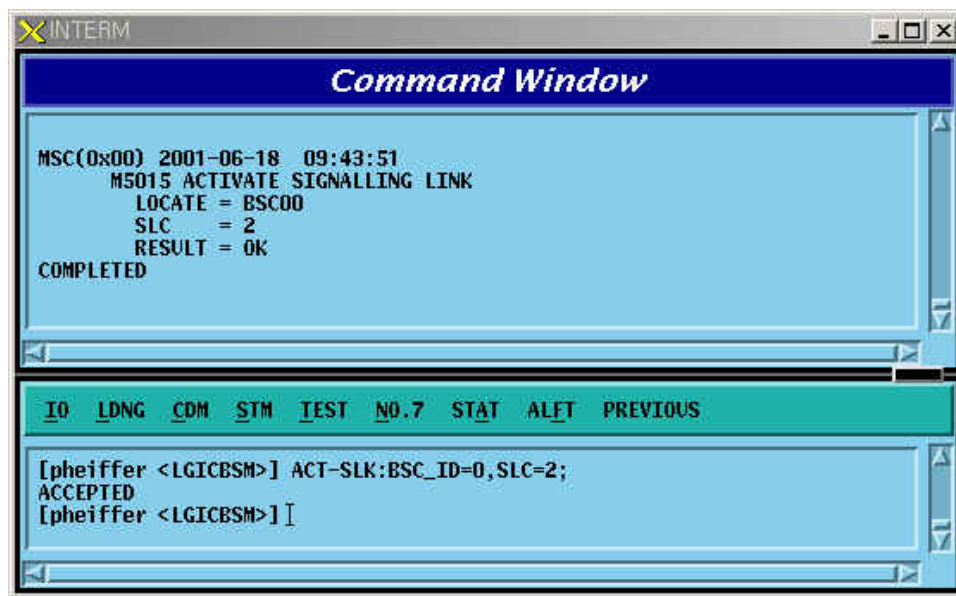


Fig. 4.6-8 Activation of Signaling Link

4.6.2.9. Signaling Link Deactivation

Function to deactivate the activated Signaling Link.

Command DACT-SLK:BSC=a, SLC=b;

a = BSC Number (00 ~ 11)

b = Signalling Link Code (00 ~ 15)

Input DACT-SLK:BSC_ID=0, SLC = 2;

Output

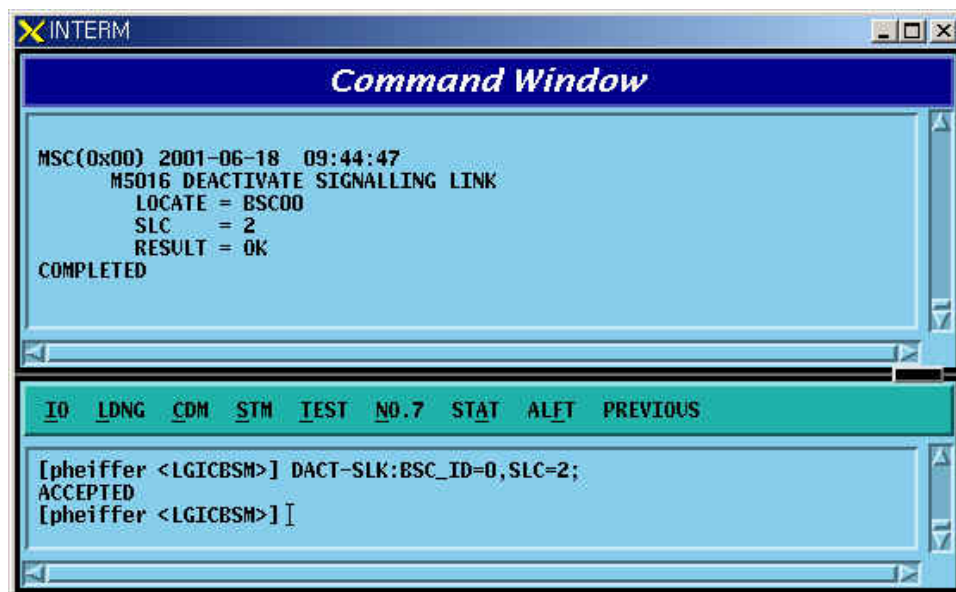


Fig. 4.6-9 Deactivation of Signaling Link

4.6.2.10. Signaling Link Information Display

Function to display information on Signaling Terminal, Signaling Data Link and Bit_Rate connected to Signaling Link. It can display information on entire Signaling Links and on Signaling Link designated.

Command DIS-SLK-INFO:BSC_ID=a;
 a = BSC Number (00 ~ 15)
Input DIS-SLK-INFO:BSC_ID = 0;
Output

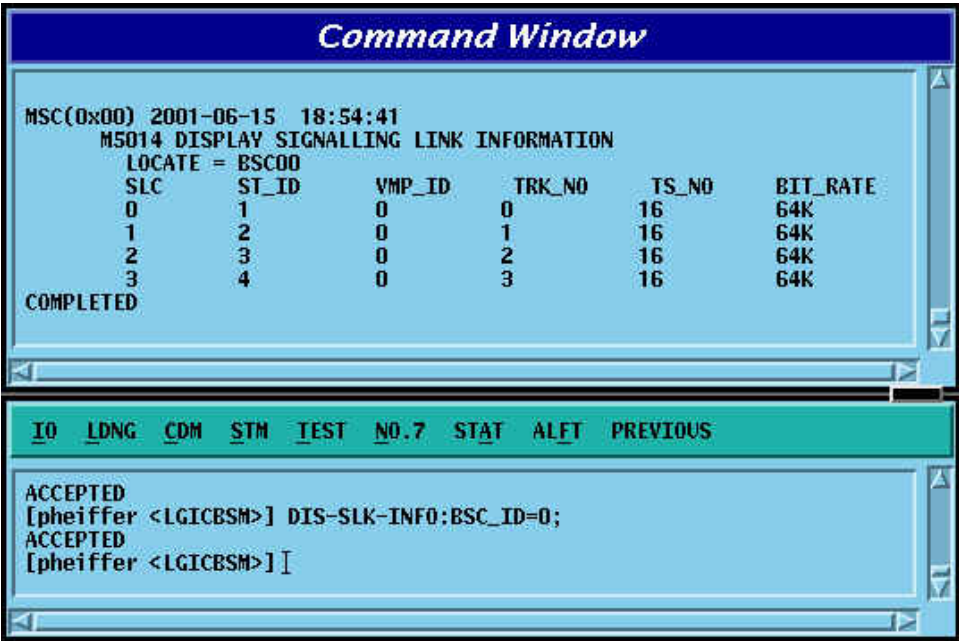


Fig. 4.6-10 Signaling Link Information Display

4.6.2.11. Signaling Link Inhibition

It inhibits the use of presently defined Signaling Link.

Command INH-SLK:BSC_ID=0, SLC =0;
 a = BSC Number (00 ~ 11)
 b = Signalling Link Code (00 ~ 15)
Input INH-SLK:BSC_ID=0, SLC=0;
Output

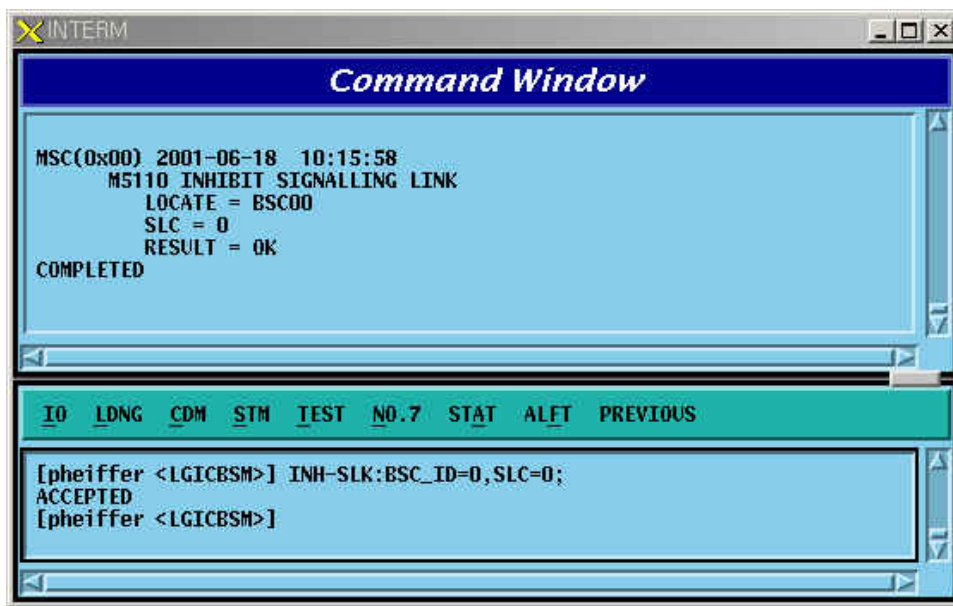


Fig. 4.6-11 Signaling Link Inhibit

4.6.2.12. Signaling Link Allow

Signaling Link Allow is a function that allows the management of Signaling Link Status inhibited in the management of Signaling Link and then change to the status of availability.

Command ALW-SLK:BSC_ID=0, SLC =0;

a = BSC Number (00 ~ 11)

b = Signalling Link Code (00 ~ 15)

Input ALW-SLK:BSC_ID = 0, SLC = 0;

Output

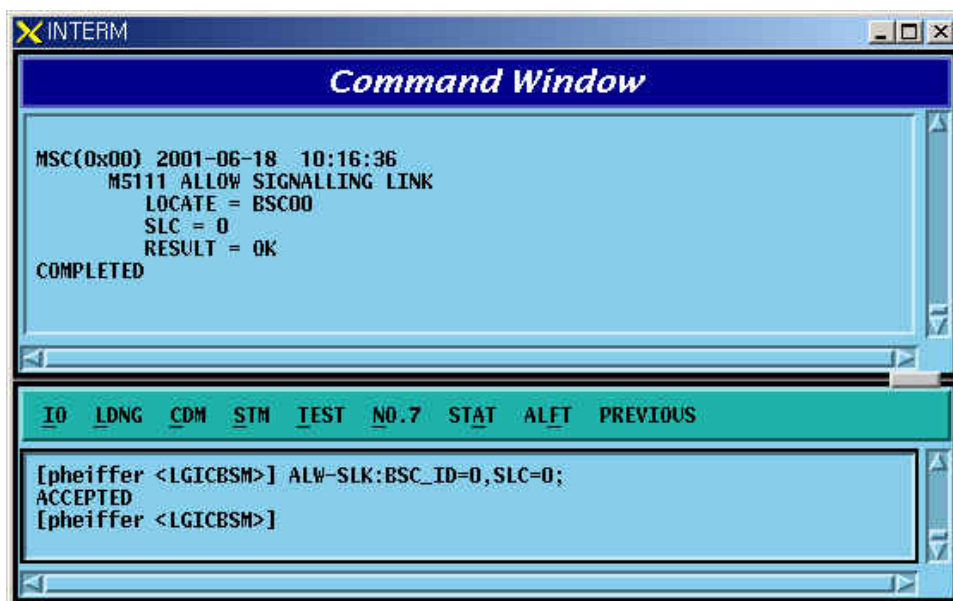


Fig. 4.6-12 Signal Link Allow

4.6.2.13. Signal Terminal Addition

Signal Terminal indicates physical name of a Channel of STPA and can define 16 units of Signaling Terminal at a maximum. It is used to expand Signaling Terminal.

Command CRTE-ST:BSC=a, ST_ID=b;

a = BSC Number (00 ~ 15)

b = Signalling Terminal (01 ~ 16)

Input CRTE-ST:BSC_ID=0,ST_ID = 4;

Output

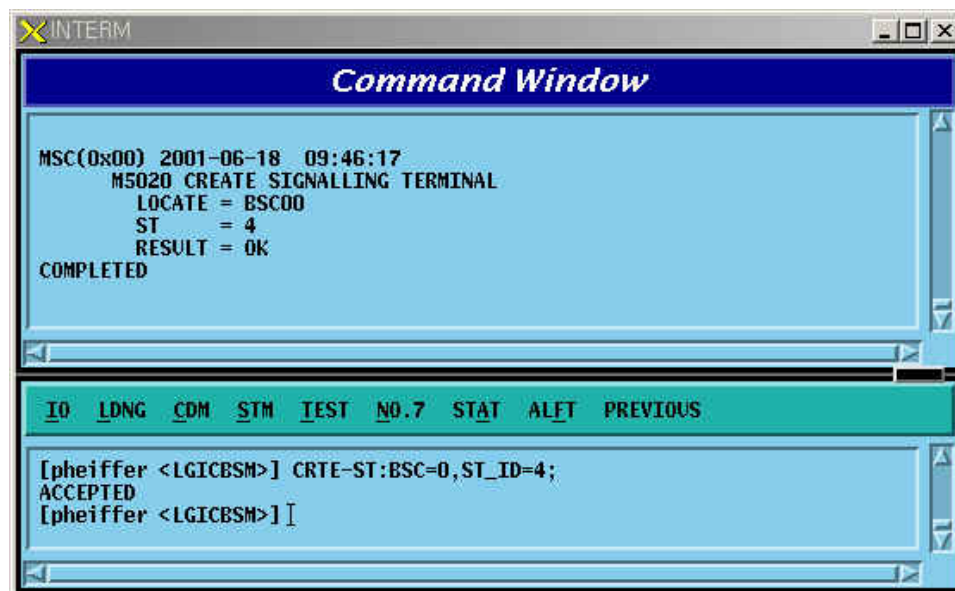


Fig. 4.6-13 Signaling Terminal Generation

4.6.2.14. Signaling Terminal Deletion

It is used when Signaling Terminal H/W has problems or other faults occur. Before Signaling Terminal is deleted, make sure that the corresponding Signaling Terminal is connected to Signaling Link.

Command DEL-ST:BSC=a, ST_ID =b;

a = BSC Number (00 ~ 11)

b = Signalling Terminal (01 ~ 16)

Input DEL-ST:BSC_ID=0,ST_ID = 5;

Output

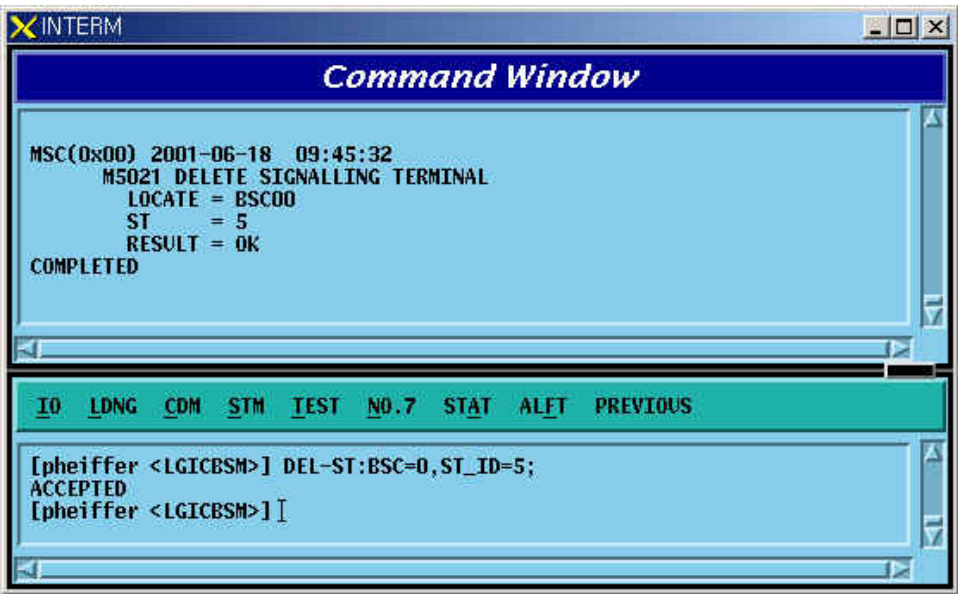


Fig. 4.6-14 Signaling Terminal Deletion

4.6.2.15. Signaling Terminal Information Display

Function to display information about if it is linked with signaling link to a specific Signaling Terminal or all the Signaling Terminals.

Command DIS-ST-INFO:BSC_ID =a;

a = BSC Number (00 ~ 11)

Input DIS-ST-INFO:BSC_ID = 0;

Output

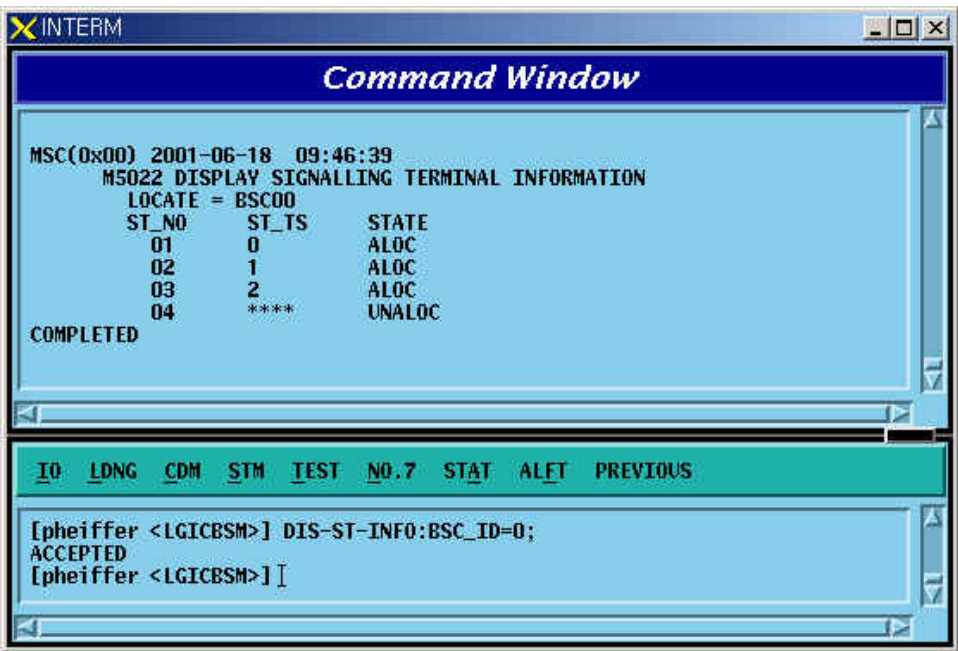


Fig. 4.6-15 Display of Signaling Terminal Information

4.6.2.16. Signaling Data Link Addition

Signaling Data Link indicates Trunk Number to allocate as Signaling Link and is used to expand Signaling Data Link.

Command CRTE-SDLK: BSC =a, VMP_ID=b, TRK= c ,TS_NO=d;

a = BSC Number (00 ~ 11)

b = VMP Number(00 ~ 07)

c = TRUNK Number(00 ~ 16)

d = Time Slot Number(00 ~ 31)

Input CRTE-SDLK: BSC_ID=0, VMP_ID=1, TRK=0 , TS_NO=16;

Output

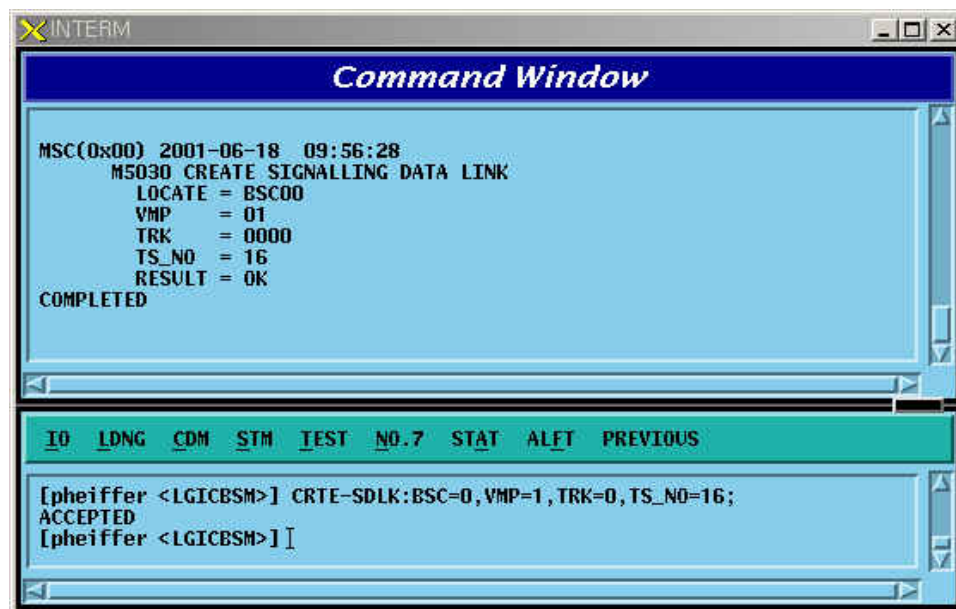


Fig. 4.6-16 Signaling Data Link Generation

4.6.2.17. Signaling Data Link Deletion

It is used when Signaling Data Link H/W is defective or other problems occur. Before deleting the Signaling Data Link, make sure that corresponding Signaling Data Link is allocated to Signal Link and then delete.

Command DEL-SDLK;BSC=a, VMP=b, TRK=c, TS_NO=d;

a = BSC Number (00 ~ 11)

b = VMP Number(00 ~ 07)

c = TRUNK Number(00 ~ 16)

d = Timer Slot Number(00 ~ 31)

Input DEL-SDLK:BSC=0, VMP=0, TRK= 5, TS_NO = 16;

Output

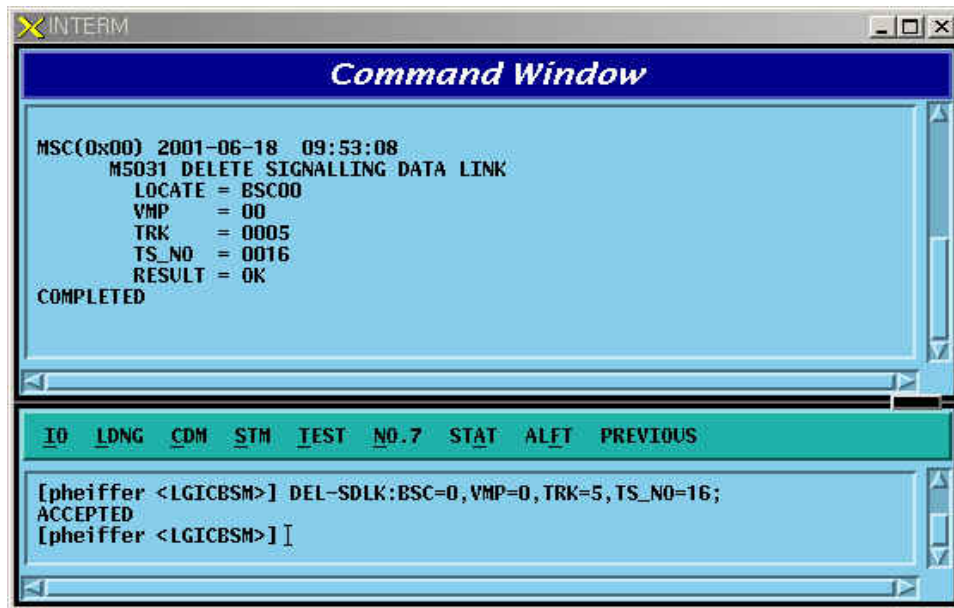


Fig. 4.6-17 Signaling Data Link Deletion

4.6.2.18. Signaling Data Link Information Display

Function to display information on the defined Signaling Data Link and the status connected to Signaling Link.

Command DIS-SDLK-INFO: BSC_ID = a;

a = BSC Number (00 ~ 11)

Input DIS-SDLK-INFO: BSC_ID=0;

Output

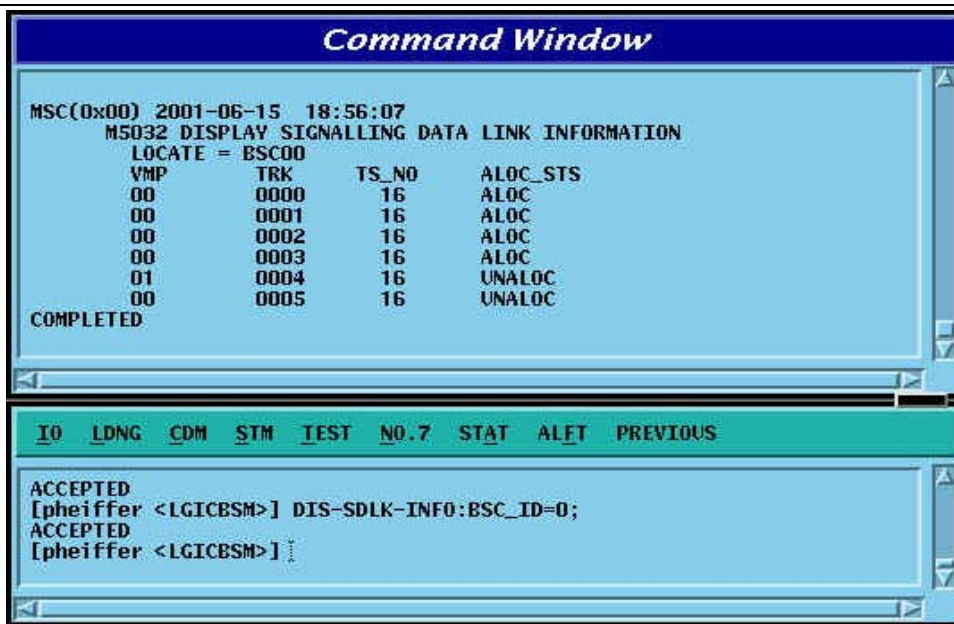


Fig. 4.6-18 Signaling Data Link Information Display

4.6.2.19. SCCP Network Configuration Data Display

Function to display SCCP Network Configuration Data for Intra-Switching Office Signaling Point, local Switching Office Signaling Point, and each sub-system.

Command DIS-SCCP-NET:BSC_ID=a;

a = BSC Number (00 ~ 11)

Input DIS-SCCP-NET:BSC_ID=0;

Output

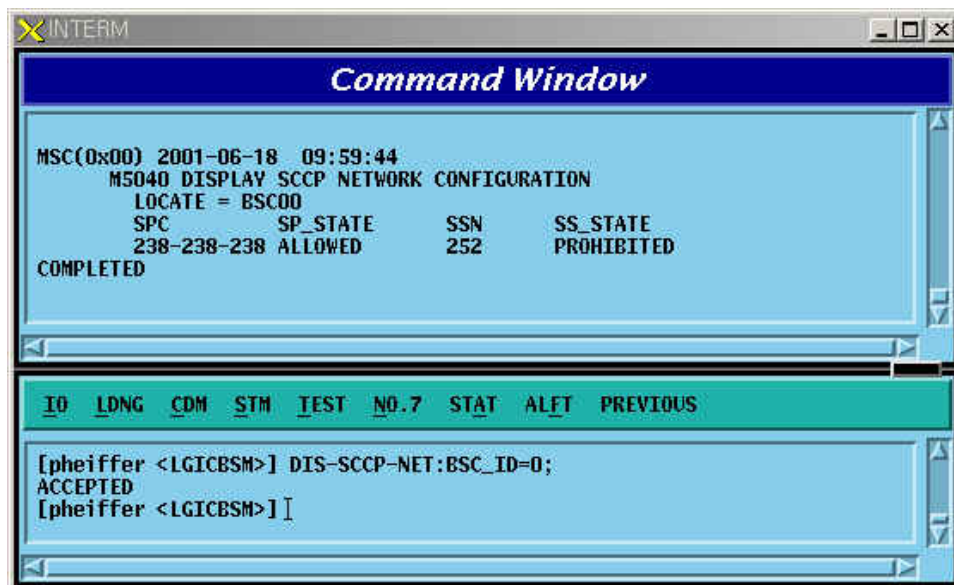


Fig. 4.6-19 SCCP Network Configuration Data Display

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

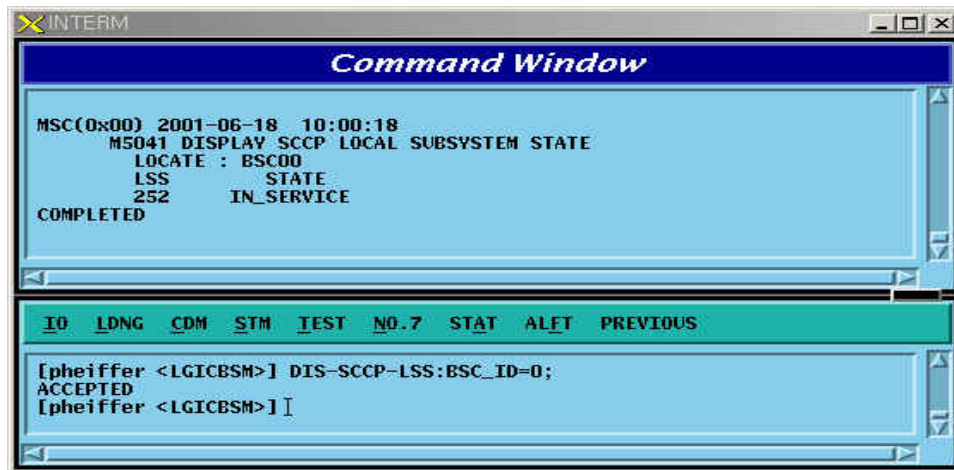


Fig. 4.6-20 SCCP Local Subsystem State Data Display

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