

CONNECTION - PORT

FUNCTIONAL DESIGN

28 MARCH 1979.

CONNECTION-PORT-DIALOG DEFINITION

THE CONNECTION-PORT-DIALOG IS A SYSTEM COMPOSED OF

- A PAIR OF CONNECTION-PORTS AND
- A SINGLE TELEPHONE LINE BETWEEN THEM

EACH CONNECTION-PORT IS INTERFACED TO THE TELEPHONE LINE THROUGH A MODEM IN ACCORDANCE WITH RS-232C.

A CONNECTION-PORT-DIALOG MAY BE

- OPEN, i.e., • DEDICATED, TWS: $\left. \begin{array}{l} \text{DSR} \\ \text{CTS} \\ \text{DCD} \end{array} \right\} \text{ON}$ CONTINUOUS CARRIER
- MAN/AUTO DIAL-IN: DSR ON
- MAN DIAL-OUT: DSR ON
- AUTO DIAL-OUT: $\left. \begin{array}{l} \text{DSR} \\ \text{COS} \end{array} \right\} \text{ON}$ CR (CALL REQUEST OCCURS BE ON IN PENDING STATE)

L2 (DISTANT STATION STATUS)
(RS-366 IDENTIFICATION)

- PENDING, i.e., INTERMEDIATE STATE BETWEEN OPEN AND CLOSED

- CLOSED, i.e., $\left. \begin{array}{l} \text{RTS} \\ \text{DTR} \end{array} \right\} \text{OFF}$

DSR ~ DATA SET READY
CTS ~ CLEAR TO SEND
DCD ~ DATA CARRIER DETECT
RTS ~ REQUEST TO SEND
DTR ~ DATA TERMINAL READY

CURRENTLY

TWDI IS NOT DEFINED AS PART OF THE BDLG STATION GROUP.

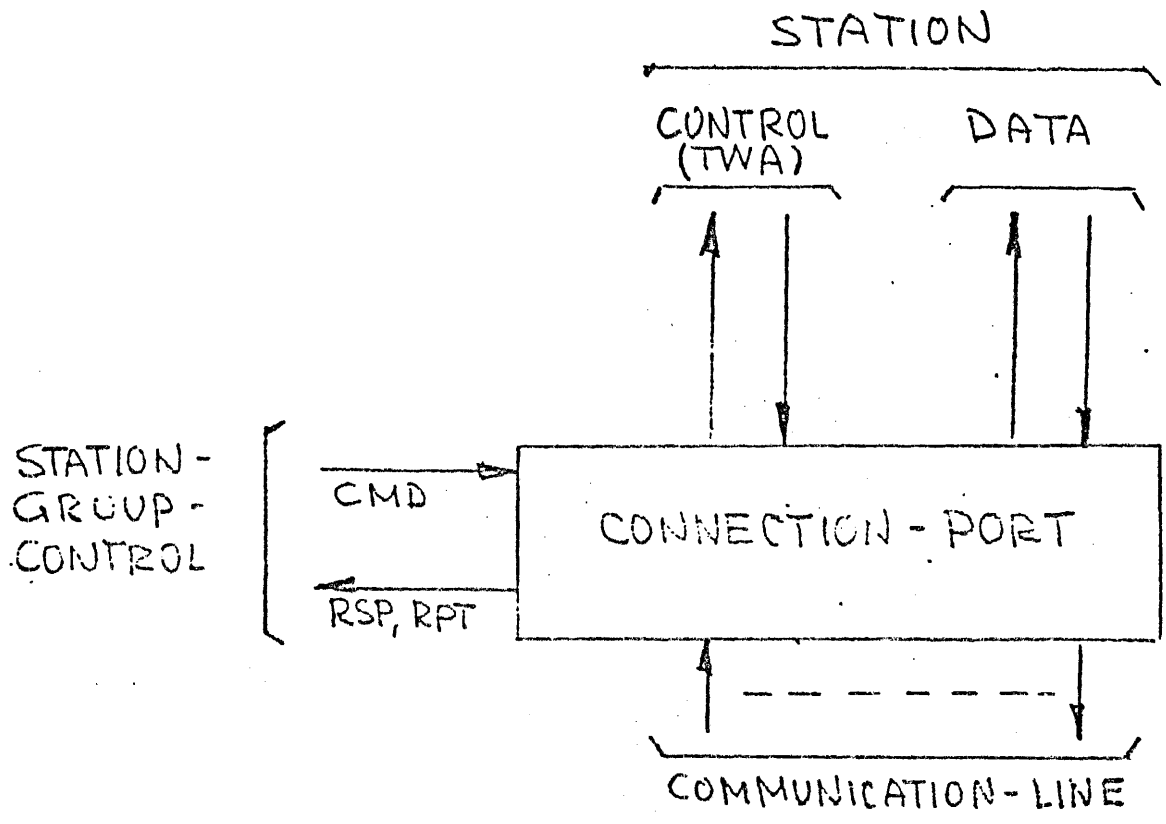


FIGURE 7.1-1 CONNECTION-PORT-INTERFACES

| SIGNAL NAME | CONNECT. PIN NUMBER | CIRCUIT DESIGNATION | |
|--|---------------------|---------------------|-----------------|
| | | RS-232-C | CCITT V.24/V.28 |
| PROTECTIVE GROUND | 1 | AA | 101 |
| SIGNAL GROUND | 7 | AB | 102 |
| TRANSMITTED DATA | 2 | BA | 103 |
| RECEIVED DATA | 3 | BB | 104 |
| REQUEST TO SEND | 4 | CA | 105 |
| CLEAR TO SEND | 5 | CB | 106 |
| DATA SET READY | 6 | CC | 107 |
| DATA TERMINAL READY | 20 | CD | 108.2 |
| RING INDICATOR | 22 | CE | 125 |
| RECEIVE LINE SIGNAL DETECTOR | 8 | CF | 109 |
| DATA SIGNAL RATE SELECTOR (DTE SOURCE) | 23 | CH | 111 |
| TRANSMITTED SIGNAL ELEMENT TIMING | 15 | DB | 112 |
| RECEIVED SIGNAL ELEMENT TIMING | 17 | DD | 115 |
| SELECT STANDBY | (1) | | 116 |
| (1) PIN NUMBER IN ACCORDANCE WITH TELEPHONE COMPANY SPECIFICATION, e.g., UK USES PIN 24. | | | T NOT IN RS 232 |

| SIGNAL NAME | CONNECT. PIN NUMBER | CIRCUIT DESIGNATION | |
|--------------------------------|---------------------|---------------------|------------|
| | | RS-366 | CCITT V.25 |
| PROTECTIVE GROUND | 1 | AA | 212 |
| SIGNAL GROUND | 7 | AB | 201 |
| CALL REQUEST | 4 | CRQ | 202 |
| DATA LINE OCCUPIED (with hook) | 22 | DLO | 203 |
| CALL ORIGINATION STATUS | 13 | CO9 | 204 |
| ABANDON CALL AND RETRY | 3 | ACR | 205 |
| PRESENT NEXT DIGIT | 5 | PND | 210 |
| DIGIT PRESENT | 2 | DPR | 211 |
| LOW ORDER BINARY DIGIT | 14 | NB1 | 206 |
| SECOND ORDER BINARY DIGIT | 15 | NB2 | 207 |
| THIRD ORDER BINARY DIGIT | 16 | NB4 | 208 |
| HIGH ORDER BINARY DIGIT | 17 | NB8 | 209 |
| POWER INDICATOR | 6 | PWI | 213 |

CONNECTION PORT

DATA SET (MODEM)

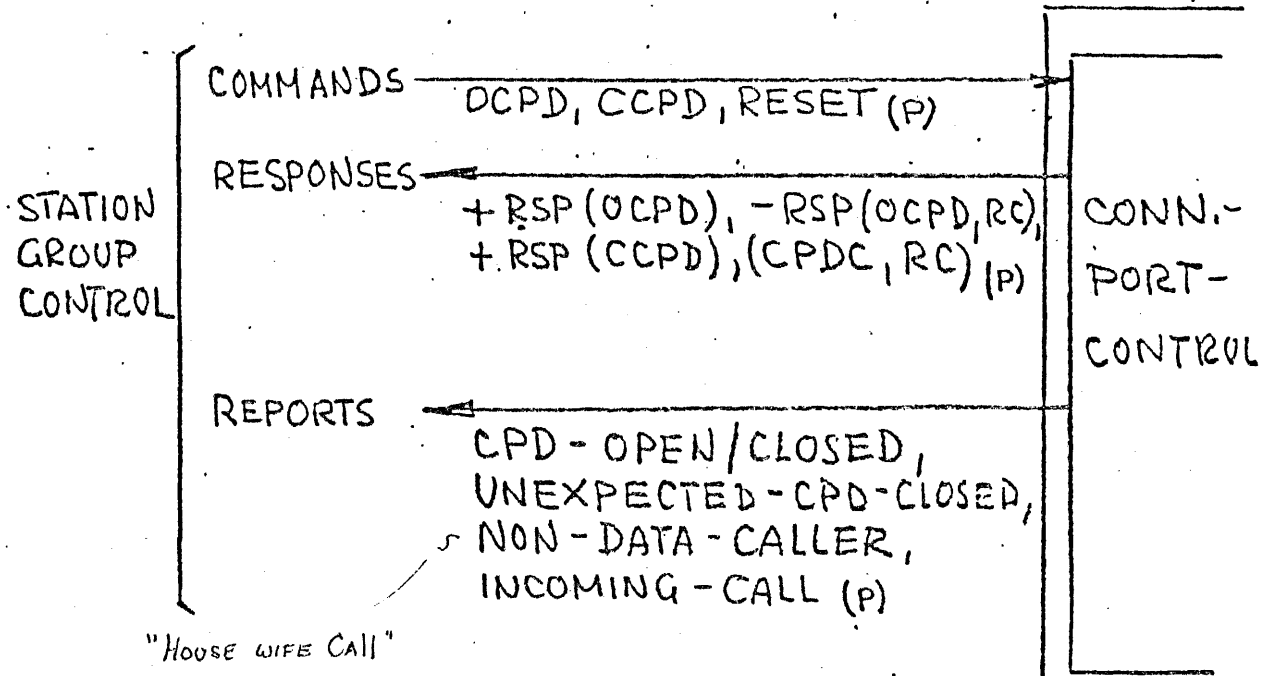
AUTOMATIC CALL UNIT (ACU)

Particularly used in England
U.K. uses Pin 24-??
Pin 116

Signal quality Detector not currently used (Probably larval)

FIGURE 7.1-2 COMMUNICATION LINE INTERFACE RS-232-C, RS-366, V.24, V.28, & V.25

OCPD - open connection
 Port - Dialer



incoming call
 Takes priority
 over a Dial
 operation

PARAMETERS:

- MODEM
 - CH (DATA RATE SELECTOR)
 - SS (SELECT STANDBY),
 - CONNECTION-TYPE,
 - DSR-RSP-TIMER (T1)-VALUE,
 - CTS-RSP-TIMER (T2)-VALUE,
 - DCD-OFF-DELAY-TIMER (T3)-VALUE
- ACU
 - TELEPHONE-NUMBER,
 - DIAL-RETRY-COUNT,
 - RETRY-DELAY-TIMER (T4)-VALUE,
 - ACU-RSP-TIMER (T5)-VALUE,
 - SET-DIGIT-DELAY-TIMER (T6)-VALUE,
 - DPR-DELAY-TIMER (T7)-VALUE

CONN.-
 PORT

FIGURE 7.1-3 STATION-GROUP-CONTROL INTERFACE

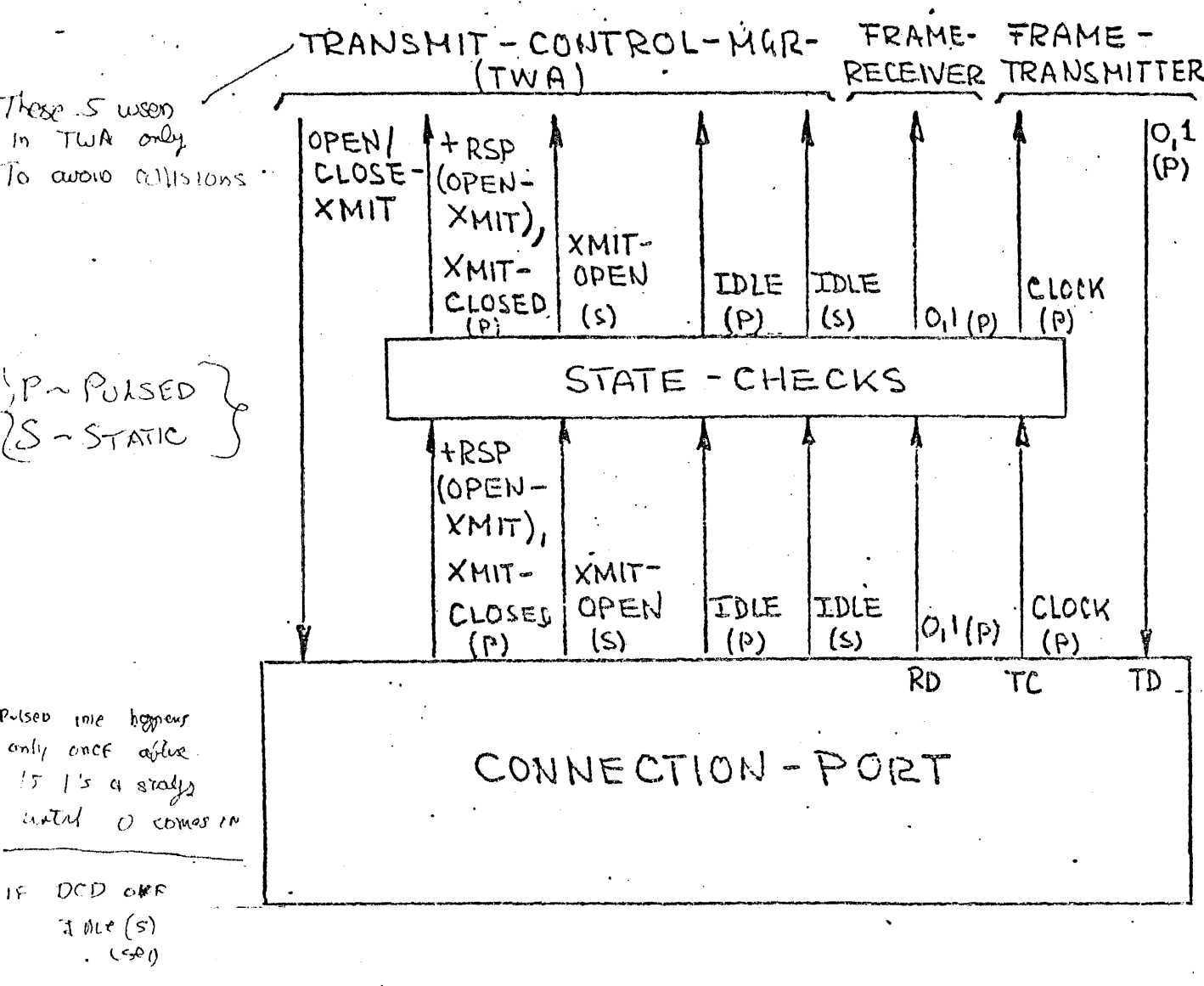


FIGURE 7.1-3. STATION INTERFACE

a question
 brought up is by definition,
 there is detection of 15 1/A (only)
 but what of loss of carrier on receive (like don't receive)

this affects various hardware implementations differently

necessary
 to determine
 action

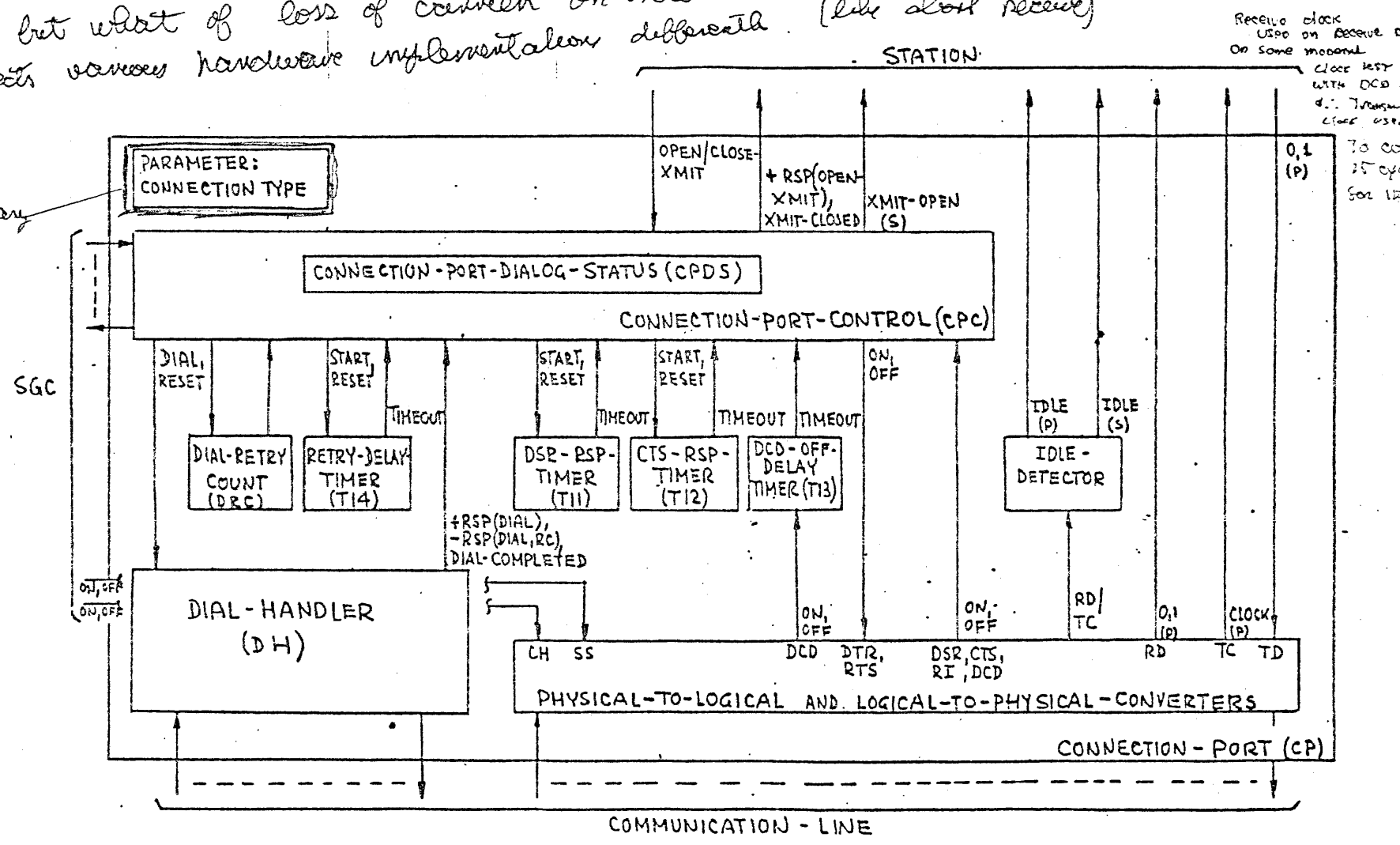


FIGURE 7.1-4 CONNECTION-PORT FUNCTION BLOCK DIAGRAM

OJD uses a #
 as a program w
 embedded characters
 to force different delays & waits
 (for supplement as shown)

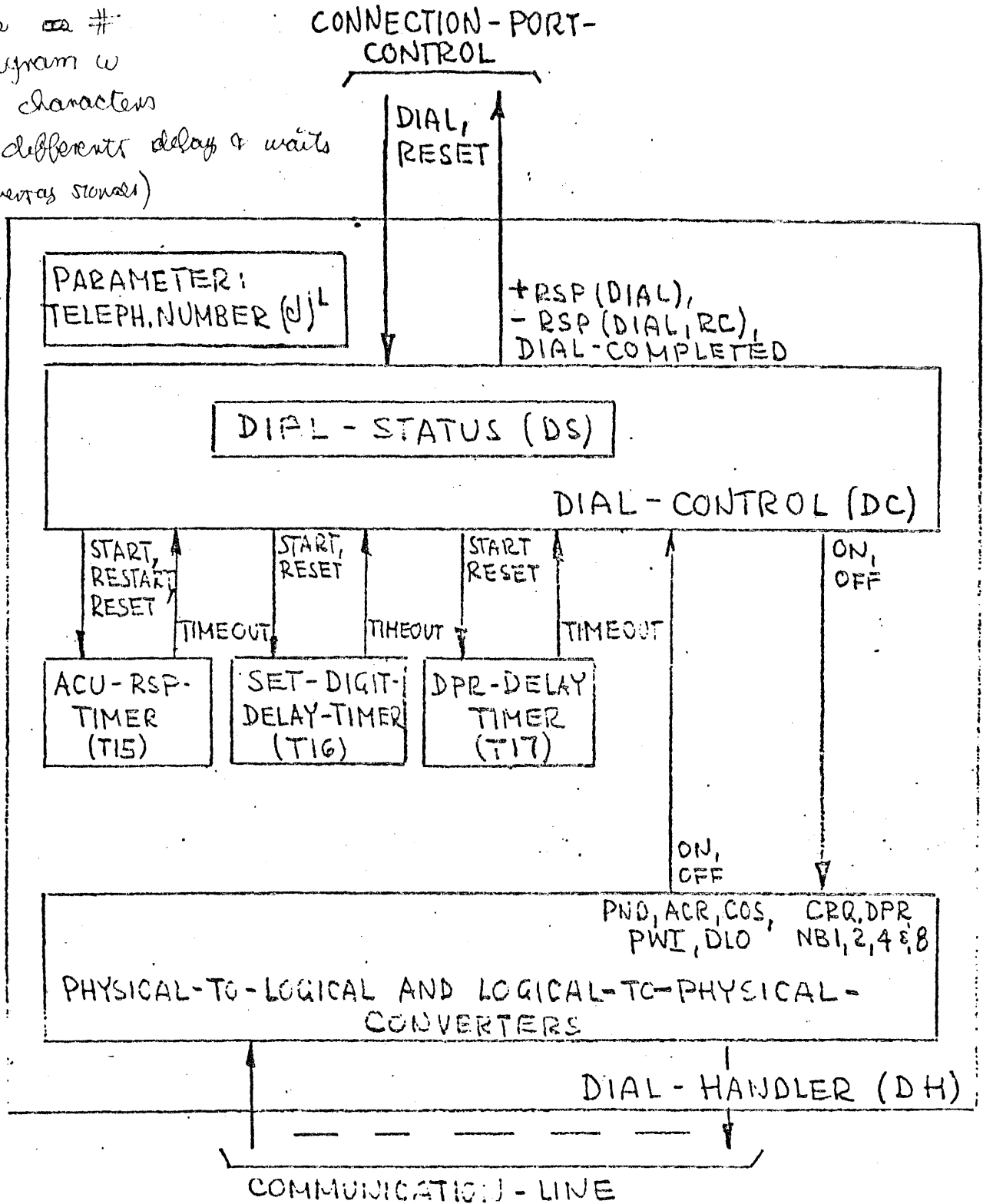


FIGURE 7.1-5 DIAL-HANDLER FUNCTIONAL BLOCK DIAGRAM

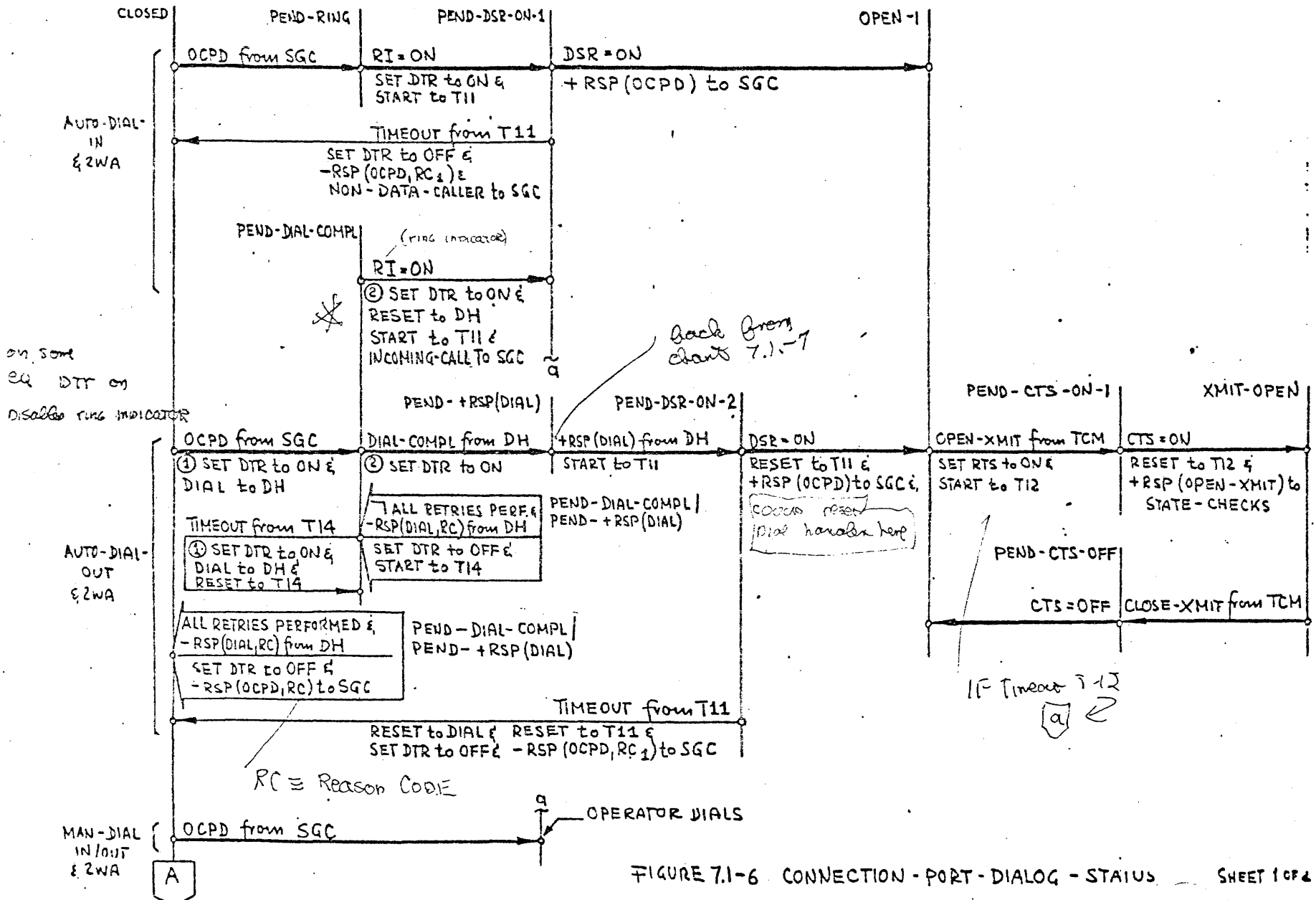


FIGURE 7.1-6 CONNECTION-PORT-DIALOG-STATUS SHEET 1 OF 2

* unlikely that an incoming call could be received when dial is in process

b

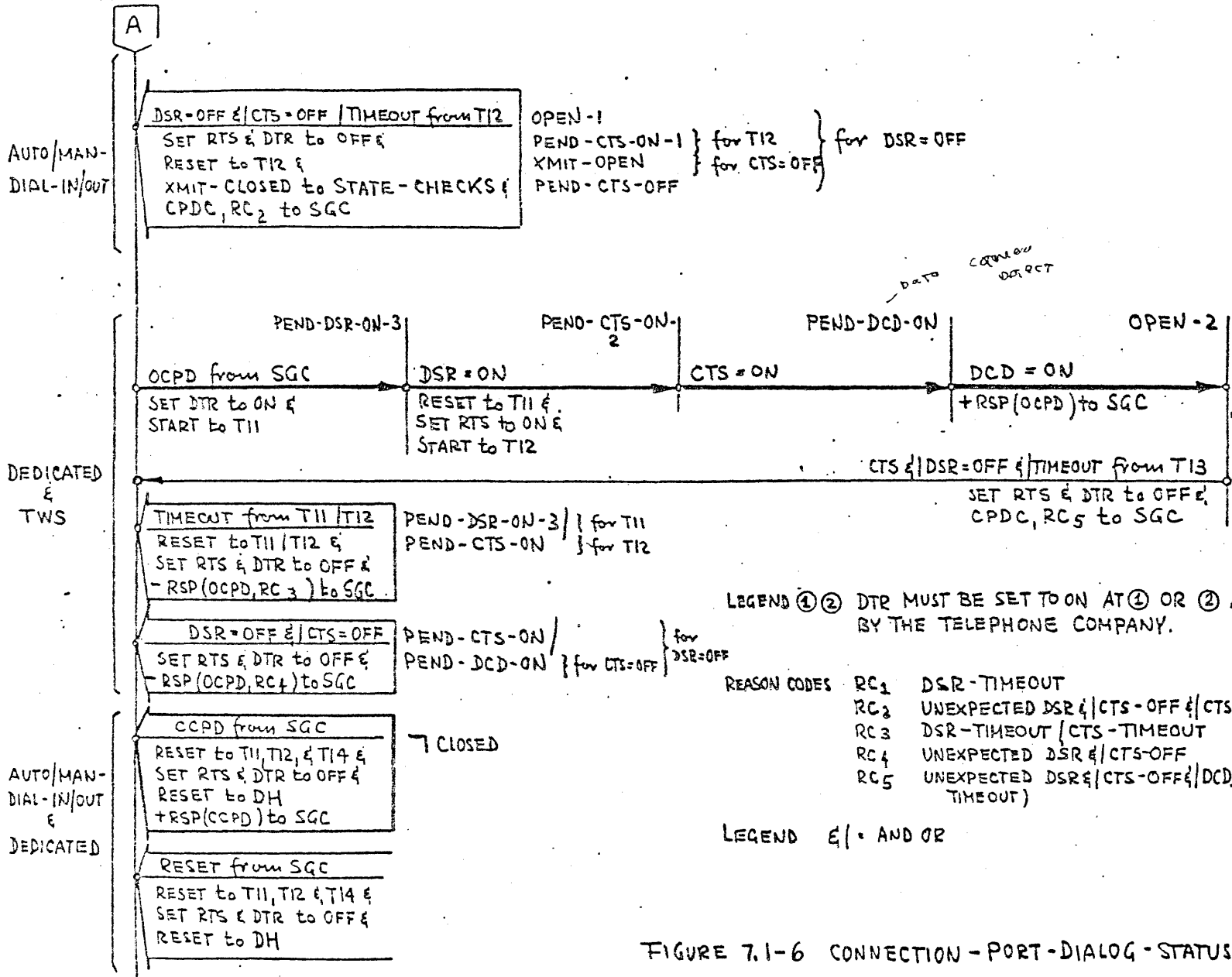
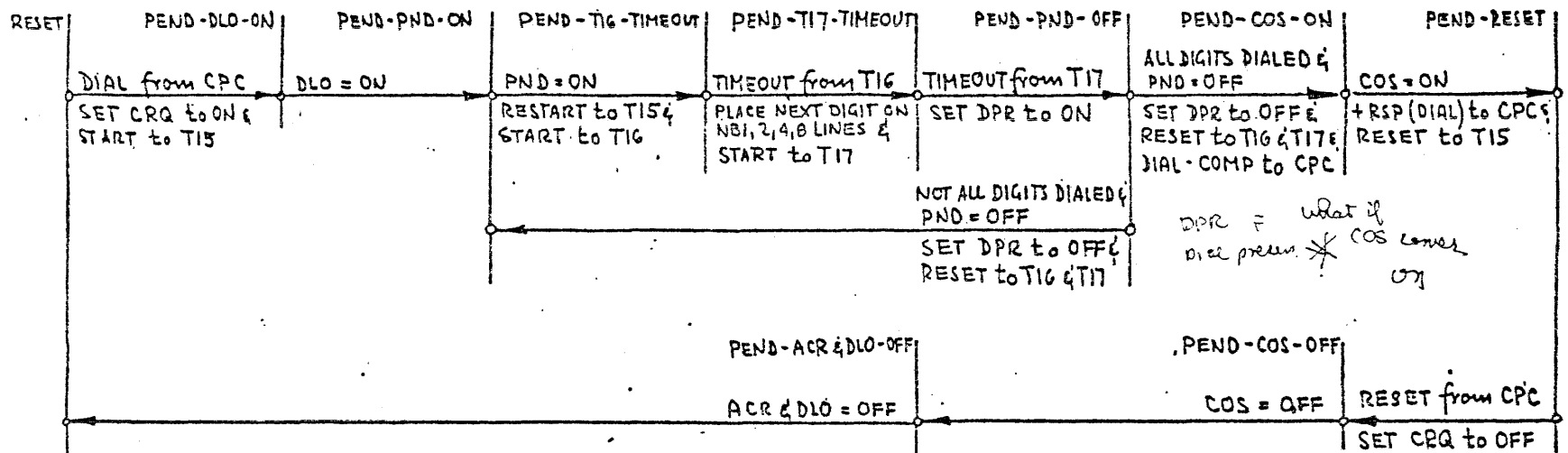


FIGURE 7.1-6 CONNECTION-PORT-DIALOG-STATUS SHEET 2 OF 2



RESET from CPC
 SET CRQ & DPR to OFF &
 RESET to T15, TIG, TI7

PWI & DLO = OFF |
 TIMEOUT from T15

SET CRQ & DPR to OFF &
 RESET to T15, TIG, & TI7 &
 - RSP(DIAL, RC₁) to CPC

PEND-DLO-ON
 PEND-PND-ON
 PEND-TIG-TIMEOUT
 PEND-TI7-TIMEOUT
 PEND-PND-OFF
 PEND-COS-ON

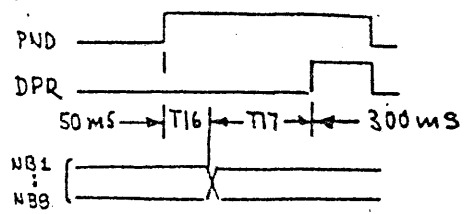
reset to Dial Handler

ACR = ON
 SET CRQ & DPR to OFF &
 - RSP(DIAL, RC₂) to CPC

PEND-DLO-ON
 PEND-PND-ON
 PEND-TIG-TIMEOUT
 PEND-TI7-TIMEOUT
 PEND-PND-OFF
 PEND-COS-ON

REASON CODE RC₁ UNEXPECTED PWI & DLO-OFF | T15-TIMEOUT
 RC₂ ACR-ON

LEGEND &| = AND OR



DETAIL A TIG & TI7 FUNCTIONS

FIGURE 7.1-7 DIAL-STATUS

Dial Handler on chart

TABLE 7.1-1 CONNECTION-PORT TIMER FUNCTIONS

| NAME & VALUE | FUNCTION | STARTS WHEN | RESETS WHEN | TIMEOUT CAUSES |
|--|--|--|--------------|--|
| <u>MODEM</u> | | | | |
| 1 DSR-RSP-TIMER (T11) (1-30)S | LIMITS THE INTERVAL DURING WHICH DATA TERMINAL READY (DTR) IS ON AND NO DATA SET READY (DSR) IS RETURNED. | DTR IS TURNED ON | DSR TURNS ON | - RSP (OCPD) & NON-DATA-CALLER (AUTO-DIAL-IN) to SCC |
| 2 CTS-RSP-TIMER (T12) (.5-2)S | LIMITS THE INTERVAL DURING WHICH REQ. TO SEND (RTS) IS ON AND NO CLEAR TO SEND (CTS) IS RETURNED. | RTS IS TURNED ON | CTS TURNS ON | TWS: - RSP (OCPD) to SGC TWA: CPDC, RC to SGC |
| 3 DCD-OFF-DELAY-TIMER (T13) (1-120)S | PROVIDES AN INDICATION WHEN DATA CARRIER DETECT (DCD) IS CONTINUOUSLY OFF FOR TIME LENGTH OF T13 VALUE (PROVIDES EARLY INDICATION OF LOSS OF CONNECTIVITY IN ABSENCE OF ACTIVE TRAFFIC ON THE LINE). | DCD TURNS OFF | DCD TURNS ON | TWS: CPDC, RC to SGC |
| <u>ACU</u> | | | | |
| 4 RETRY-DELAY-TIMER (T14) (1-15) MIN | DELAYS RETRY IN ACCORDANCE WITH TELEPHONE COMPANY REQUIREMENTS. | - RSP (DIAL) & NOT ALL RETRY'S PERFORMED | — | STARTS DIAL PROCESS AGAIN |
| 5 ACU-RSP-TIMER (T15) (.5-30)S | LIMITS THE INTERVAL DURING WHICH ACTION IS TAKEN BY CP AND NO REACTION IS NOTICED FROM ACU. | CRG IS TURNED ON & RESTARTED WHEN PND TURNS ON | COS TURNS ON | - RSP (DIAL) to CPC. CPC MAY PERFORM REDIAL |
| 6 SET-DIGIT-DELAY-TIMER (T16) (1-50) ms | DELAYS SETTING DIGIT AFTER PND TURNS ON IN ACCORDANCE WITH TELEPHONE COMPANY REQUIREMENTS (e.g., ACU 1A from BPO) (COPD & British Post Office) | PND TURNS ON | — | SETTING OF DIGIT & START OF T17 |
| 7 DPR-DELAY-TIMER (T17) (1-300)ms | DELAYS DPR TURN ON AFTER PLACING DIGIT ON NB1, NB2, NB4, & NB8 LINES (e.g., ACU 1A from BPO, SIEMENS AWD 1ms) | T16-TIMEOUT | — | TURNING ON OF DPR |

BDLC - STATION - GROUP -

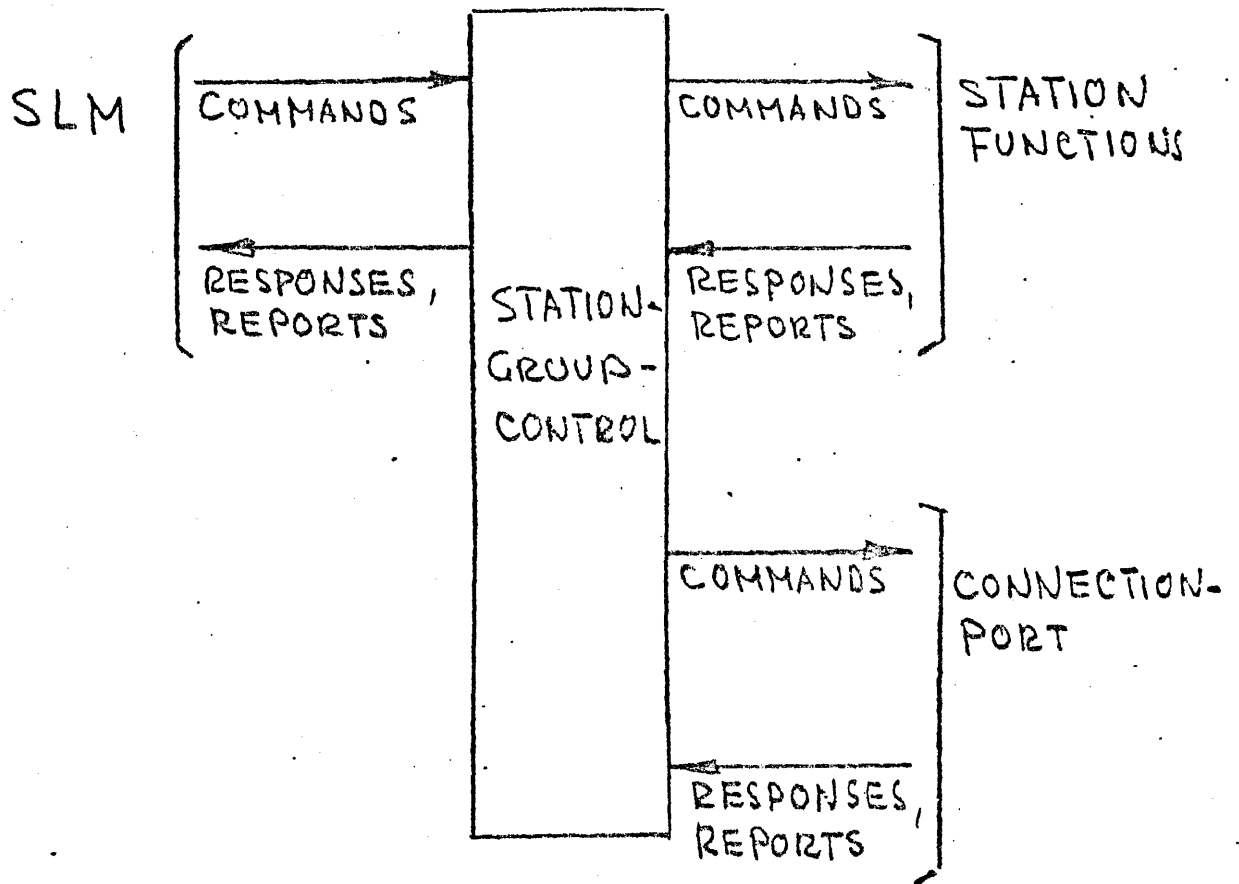
CONTROL

28-29 MARCH 1979

GENERAL FUNCTIONAL DESCRIPTION

- CONTROL FUNCTIONS
 - OPEN/CLOSE CONNECTION - PORT - DIALOG
 - OPEN/CLOSE STATION - DIALOG
 - SEND TEST
 - RESET THE LINK
 - GET AND SET ATTRIBUTES

- MONITOR FUNCTIONS



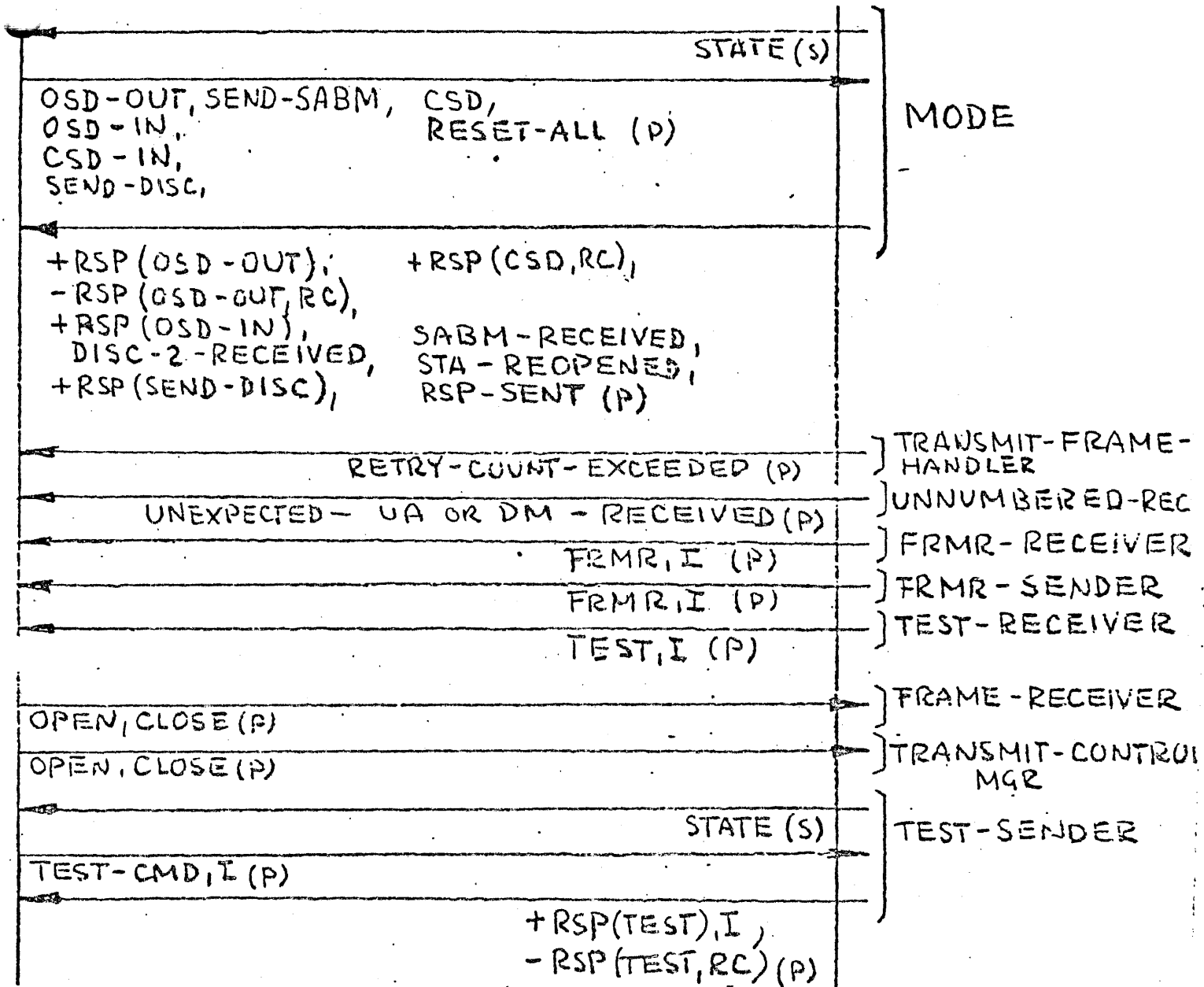
STATION-GROUP-CONTROL INTERFACE

| | |
|--|--|
| CMD, OPEN-STATION-DIALOG | ±RSP, OSD, STA-ID, RC |
| CMD, CLOSE-STATION-DIALOG CONDITIONAL | +RSP, CSDC, STA-ID, RC |
| CMD, CLOSE-STATION-DIALOG UNCONDITIONAL | +RSP, CSDU, STA-ID, RC |
| CMD, CLOSE-CONNECTION- PORT-DIALOG-CONDITIONAL | ±RSP, CCPDC, STA-ID, RC |
| CMD, CLOSE-CONNECTION- PORT-DIALOG-UNCONDITIONAL | +RSP, CCPDU, STA-ID, RC |
| CMD, SEND-TEST, TEXT | +RSP, ST, STA-ID, TEXT, -RSP, ST, STA-ID, RC |
| CMD, SET-ATTRIBUTE, NAME ₁ , VALUE ₁ , NAME ₂ , VALUE ₂ , ... | +RSP, SA, STA-ID, N ₁ , V ₁ , N ₂ , V ₂ , ... -RSP, SA, STA-ID, N ₁ , V ₁ , N ₂ , V ₂ , ..., RC |
| CMD, GET-ATTRIBUTE, NAME ₁ , NAME ₂ , ... /NAME-SET-ID(i) | +RSP, GA, STA-ID, N ₁ , V ₁ , N ₂ , V ₂ , ... -RSP, GA, STA-ID, N ₁ , N ₂ , ..., RC |

RPT, STATION-DIALOG-CLOSED, STA-ID, RC
RPT, TEST-RECEIVED, STA-ID, TEXT
RPT, INCOMING-CALL, STA-ID

MONITOR REPORTS:

RPT, REMOTE-BUSY-SET/RESET, STA-ID, TS
RPT, I-RSP-RECEIVED, STA-ID, ACI, TS
RPT, CONNECTION-PORT-DIALOG-OPEN/CLOSED, STA-ID, TS
RPT, INVALID-BDLC-ADDRESS, STA-ID, ACI, TS
RPT, BDLC-FRAME-RECEIVED-NOT-OCTET-MULTIPLE,
STA-ID, ACI, TS
RPT, BDLC-FRAME-TOO-SHORT, STA-ID, ACI, TS
RPT, NON-DATA-CALLER, STA-ID, TS
RPT, UNEXPECTED-CONNECTION-PORT-DIALOG-CLOSED, STA-ID, TS
RPT, NON-BNA-CALLER, STA-ID, TS
RPT, LINK-RESET-LOCALLY, STA-ID, i.e., FRMR-RECEIVED or
UNEXPECTED-UA/DM-RECEIVED or
RETRY-COUNT-EXCEEDED, STA-ID, TS
RPT, FRMR-RECEIVED, STA-ID, I, TS
RPT, RETRY-COUNT-EXCEEDED, STA-ID, TS
RPT, LINK-RESET-REMOTE, STA-ID, TS
RPT, FRMR-SENT, STA-ID, I, TS
RPT, UNEXPECTED-DM/DISC-RECEIVED, STA-ID, TS



STATION FUNCTIONS

INTERFACE

OVERALL STRUCTURE OF SGC

- MONITORING & REPORTING
 - EVENTS
 - OPERATION

- OPERATION OF STATION - GROUP - CONTROL

TABLE 8-1

MONITORING FUNCTION

| EVENT TO BE MONITORED | | COLLECTION | | | | REPORTING | | | | APPLICATION | | | | | REMARKS |
|-----------------------|---|------------|--------------|-----------------------|----------|-----------|------------------------------|--------------------|---------|-------------|------------------|-----------------|---------------|----------|--|
| EVENT ID SG- | EVENT | OPTIONAL | DATA CAPTURE | COUNT OCCUREN- CES | STRIPPED | TO WHOM | 3 UPON OCCUR- RENCE | 2 RE- DEMAND | 1 ON | BILLING | PERFOR- MANCE | MANTE- NANCE | DE- BUKING | SECURITY | |
| 1 | BDLC-FRAME-RECEIVED | ✓ | | ✓ | | SLM | | ✓ | | | ✓ | ✓ | ✓ | | ALLOWS DETERMINATION OF INBOUND FRAME ERROR RATE. |
| 2 | FCS-FAILURE | ✓ | | ✓ | | | | ✓ | | | ✓ | ✓ | ✓ | | |
| 3 | BDLC-FRAME-SENT | ✓ | | ✓ | | | | ✓ | | | ✓ | ✓ | ✓ | | |
| 4 | I-FRAME-SENT | ✓ | | ✓ | | | | ✓ | | | ✓ | ✓ | ✓ | | |
| 5 | I-FRAME-RESENT | ✓ | | ✓ | | | | ✓ | | | ✓ | ✓ | ✓ | | |
| 6 | SIGNAL-QUALITY SET/RESET | | | | | | | | | | | | | | NOT IN BNA-I |
| 7 | REMOTE-BUSY-SET/RESET | ✓ | | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | | |
| 8 | I-RSP-RECEIVED, ACI | ✓ | ✓ | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | | PROBABLE LOOP BACK |
| 9 | CONNECTION-PORT-DIALOG-OPEN/CLOSED | ✓ | | | ✓ | | ✓ | | | ✓ | | ✓ | ✓ | | TO DETERMINE DURATION OF SWITCHED LINE CONNECTION |
| 10 | INVALID-BDLC-ADDRESS, ACI | | ✓ | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | UNKNOWN HOST ATTACHED |
| 11 | BDLC-FRAME-RECEIVED-NOT-OCTET-MULTIPLE, ACI | | ✓ | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | | SEE NOTE 1. |
| 12 | BDLC-FRAME-TOO-SHORT, ACI | | ✓ | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | | SEE NOTE 1. |
| 13 | | | | | | | | | | | | | | | |
| 14 | NON-DATA-CALLER | | | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | DIAL-IN-ABORT-TIMER EXPIRES BEFORE CP-DLG IS ESTABLISHED |
| 15 | UNEXPECTED-CONNECTION-PORT-DLG-CLOSED | | | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | | ALARM |
| 16 | CONNECTION-PORT-IN-TEST-MODE | | | | | | | | | | | | | | NOT IN BNA-I |
| 17 | | | | | | | | | | | | | | | |
| 18 | NON-BNA-CALLER | | | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | SEE NOTE 2 |
| | LINK-RESET-LOCALLY, I.e. FRMR-RECEIVED or UNEXPECTED-UA/DM-RECEIVED or RETRY-COUNT-EXCEEDED | | | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | | |
| 19 | FRMR-RECEIVED, I | | ✓ | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | | |
| 20 | RETRY-COUNT-EXCEEDED | | | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ | | |
| 21 | LINK-RESET-REMOTELY | | | | ✓ | SLM | ✓ | | | | ✓ | ✓ | ✓ | | |

TABLE 8-1 MONITORING FUNCTION (CONT)

| EVENT TO BE MONITORED | | COLLECTION | | | | REPORTING | | | APPLICATION | | | | REMARKS |
|-----------------------|-----------------------------------|------------|--------------|-------------------|---------------|-----------|-------------|-----------|-------------|-------------|-------------|------------|---------|
| EVENT ID | EVENT | OPTIMAL | DATA CAPTURE | COUNT- OCCUR- CES | TIME- STAMPED | TO WHICH | WHEN OCCURS | ON DEMAND | BILLING | PERFORMANCE | MAINTENANCE | DE-BUGGING | |
| 22 | FRMR - SENT, I | | ✓ | | ✓ | SLM | ✓ | | | ✓ | ✓ | ✓ | |
| 23 | UNEXPECTED - DM / DISC - RECEIVED | | | | ✓ | SLM | ✓ | | | ✓ | ✓ | ✓ | |
| | | | | | | | | | | | | | |

- NOTES 1) IMPLEMENTATION IF POSSIBLE ON EXISTING HARDWARE.
- 2) DIAL-RSP-TIMER EXPIRES AFTER CP-DIALOG IS OPEN BUT BEFORE STATION-DIALOG IS OPEN.

MONITORING & REPORTING

OPERATION

- EVENT COUNTED AND REPORTED ON COMMAND
 1. COUNTER SET TO COUNT
 2. GET-ATTRIBUTE, COUNTER-NAME
CAUSES 1. +RSP(GA, CN, VALUE) &
2. SETS COUNTER TO 0
- EVENT REPORTED UPON OCCURENCE WHEN SELECTED
- EVENT REPORTED UPON OCCURENCE

NOTE ALL EVENTS MUST BE TIMESTAMPED

MEETING MINUTES

5/20/07
RAV
1/

BNA STATION LEVEL MEETING

CONNECTION PORT

(e.g. VIO)

Idle detect - noted that some products \downarrow step vcvg on loss of CF. NSO sez our spec elucidate BDLc/HDLc std - plants free to meet std other ways. Note that only Idle specified in std for the standard - not carrier off.

Noted that VIO auto dialing very flexible - can treat process as program allowing dynamically variable delays in dial process ^{of a single call}%. NSO judgement is that all products are not required to provide same mechanism of flexibility - hence the description as in cPort spec.

A Discussion on how to operate acoustic couplers via RS232 deemed not related to synchronous transmission reqs for BNA/BDLc.

ACTION ITEM - NSO will address ^{topic of} common denominator of modems ^{with} which all plants should qualify their STATION designs. Plants should be prepared to indicate what modems are currently qualified with what.

Timer values reasonably handled for TTB in current (B) products

| | | | |
|------|----------------|-----|----------------|
| SBP | 60 sec | | |
| UIO | 32 sec | h/w | h/w expandable |
| MVP | 13 sec | h/w | " " |
| TRED | " | " | " " |
| DTN | 1 to 4 minutes | | |

Problem w/ Call Request? Berneit indicates certain non domestic ACU/modem installations demand CCR stay on for duration of call. NSD will investigate reqts.

Auto call/dial Requirements

- allow dedicated - auto out (in US at least) - out in - ether
- Paper European characteristics, i.e. answer in face of collision

ACTION

- Again: the common denominator for ACU qualifications, like modems, is req'd. Esp attention to European req'ts
- State Diagram needs to allow above
- NOTE - COS may come on sooner than expected & design should specify behavior. Eg, a connection may get established before all digits get passed to ACU

Give copy of Fred's DSR5/SS signal usage chart to all.

STATION-GROUP-CONTROL

Rawlings - commented on apparent "overcomplexity" of means by which SLM gets TEST sent, i.e., implications of open, close are built into the SANS TEST command

Dominguez - why have automatic close in event of failure of TEST?

Acceptable Scenarios per MUP guys, at least

OCPD
+RSP

SANS TEST, TEST
±RSP

CCPD
+RSP

ACTION NSD will investigate making change in accord and w/ above.

VAUDITY CHKG AT INTERFACES

- In the architecture some provision for chkg & action taken as result of failure should be specified
- Products should employ same chkg at intfrs even where not in correspondence w/architecture

COMMENTS ON NSD'S MODELS

- In implementor's interest to stay close to model so they can track future changes more easily, etc
- Puts burden on NSD to provide clear, efficient models so implementors are similar

Barnett's comment, supported by Wilson in response to Carl's @ an 2 TEST buffer's

— THURSDAY 3/29/79

- LIU-SIZE CTR - why delete? all interface boundaries ought to be checked in implementations
 what is impact on NSO specs
 - How to recover if NSO spec calls for check?
 - NSO ought to at least identify error situations even if we don't know what systems ought to do
 - Use note in spec if necessary
 - Don't lose recognition of these circumstances
 - Issue is more general than just LIU-SIZE-CTR

• FRMR VALID-LENGTH CHECK

Agreed that read FRMR should always be acted on by BSLC SQ (typ RESET the link) whether I field is 0^{bits} or 24^{bit} or other.

• VALIDATION USING GREETINGS

presentation diagrams will be included in spec

• RE X.25 - ESTABLISHMENT OF LCN'S (B. Arnold)

Commented that dynamic resource availability may preclude ability to establish "subscription limit" no. of LCN's at given host. Need ability to "turn down" requests for new LCN's either from NSM or X.25 network

NSO plans 1979/80

- attendees want to know what's coming & when
- NSO will supply our plan for this time period in next 2 wks.

OPERATOR INTERFACE SPEC

- Expected availability in ~ 2 mtd

TABLE BUILDING

- NSO will not write a common (or exemplary) program for building NS tables, not even for the ROUTER now that ~~the~~ design has been changed.
- NSO will not identify a common operator interface for building system-dependent NS tables. This does mean, for example, that ^{the} notion of ensembles can be so different from host to host that customer would have to re-learn them if he moved from one host to another.

NOTION OF AN ENSEMBLE

ARCHITECTURAL NOTE

PAGE 1

RECOMMENDATION:

NOSPACE CAUSES LOSS OF I-FIELD OF BDLC FRAME

If a BDLC station can get into the following situation

- an A & C field have been received, and A is valid
- the I field exists and is not obtained, (presumably because of nospace)
- the FCS is obtained and is correct

the following action should be taken:

- I-frame received
use N(R) and the P-bit, ignore N(S)
- FRMR received
treat as usual except ignore reason
- TEST command received
send TEST response with no I-field
- TEST response received
report as if there were no I
- all others
establish FRMR as usual (unimplemented command/response or I-field too long)

Although I believe this issue is not addressed in the Burroughs BDLC standard, the implications that I draw point towards using the C field as specified above. Furthermore, the actions specified above are the most efficient solution (i.e. because they use the currently available information).

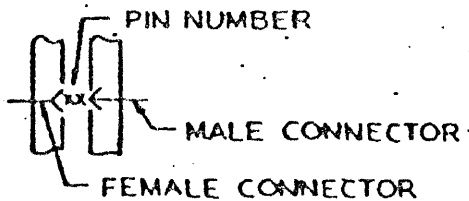
NOTES:

- 1-CALLING INDICATOR USED AND STRAPPED AS SHOWN.
- 2-FOR 7C MODEM ONLY: CIRCUIT 126 (SELECT TRANSMIT FREQ) IS USED AS CIRCUIT 116 (SELECT STANDBY). AT THE DCE CONNECTOR CIRCUIT 126 IS WIRED TO PIN 24.
- 3-THE BSC/ACU BOARD INTERFACED WITH THE 7C MODEM SHALL BE STRAPPED AS REQUIRED IN ACCORDANCE WITH THE FOLLOWING TABLE:


| SPEED (BPS) | MODUL | VOLTAGE ON | | STRAPPINGS ON WSM # 2 | | | | | |
|-------------|-------|-------------|-------------|-----------------------|------|-----------------------|------|-----------------------|------|
| | | CIRCUIT 111 | CIRCUIT 126 | REMOVE FROM TO | | CIRCUIT 111 FROM TO | | CIRCUIT 126 FROM TO | |
| 2400 | PHASE | +6 | -6 | | | 4F02 | | 4F05 | |
| | | -6 | -6 | 4E03 | 4F03 | | 4F04 | 4F05 | |
| 1200 | FREQ | +6 | +6 | | | | 4F03 | | 4F06 |
| | | -6 | +6 | 4E06 | 4F06 | 4F02 | | 4F07 | |
| 600 | | -6 | +6 | | | 4F04 | | 4F07 | |

4-REPLACE EXISTING MODEM CONNECTOR ON CABLE WITH BPO CONNECTOR PN 217A2EA AND TERMINATE WIRES AS INDICATED FOR MODEM TYPE.

LEGEND

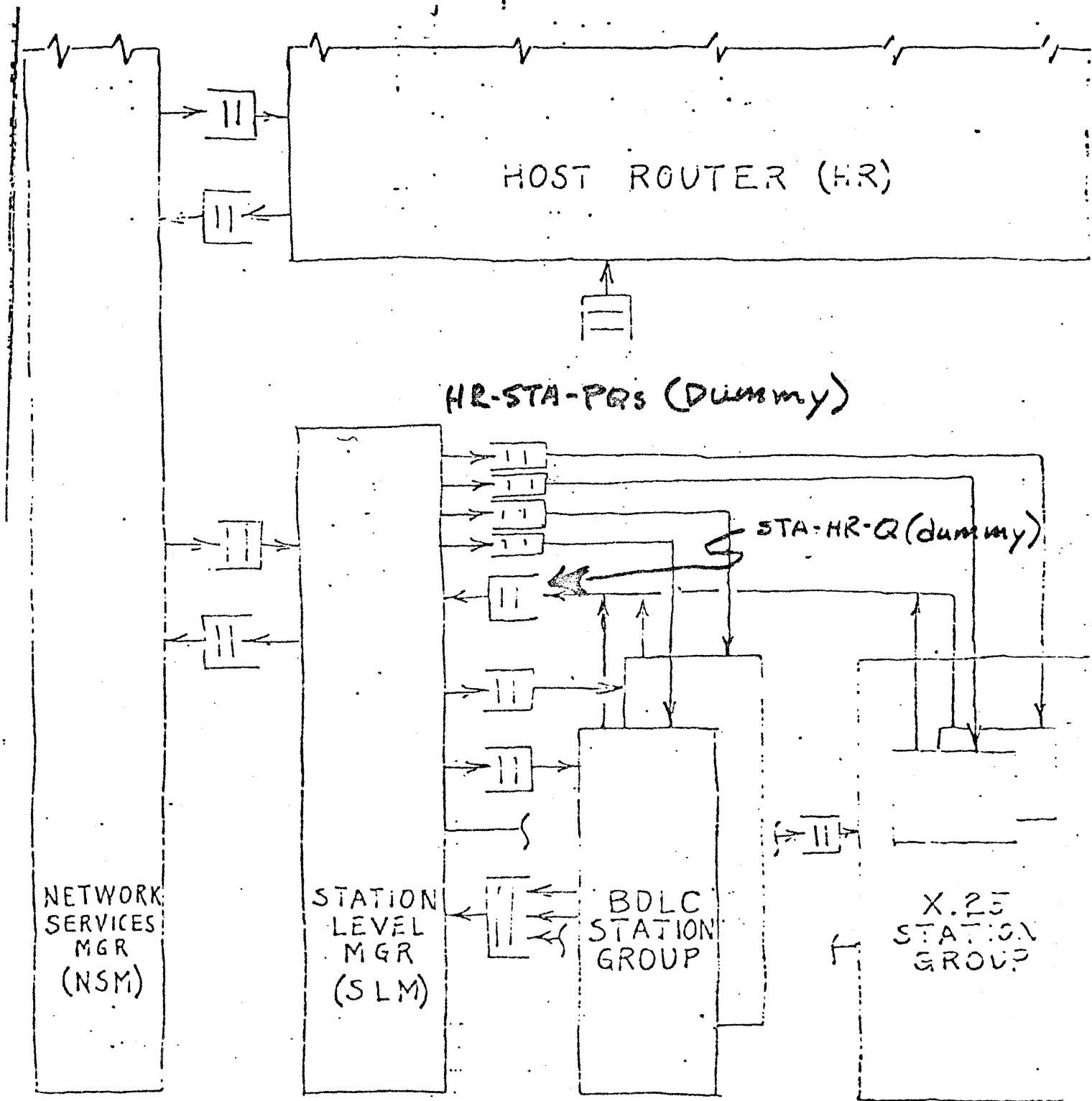


ISSUE 5


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 PUBLIC SWITCHED TELEPHONE
 LINE INTERFACE - USER
 APPLICATION SCHEMATIC
 UNITED KINGDOM

2661 2101

STATION-LEVEL



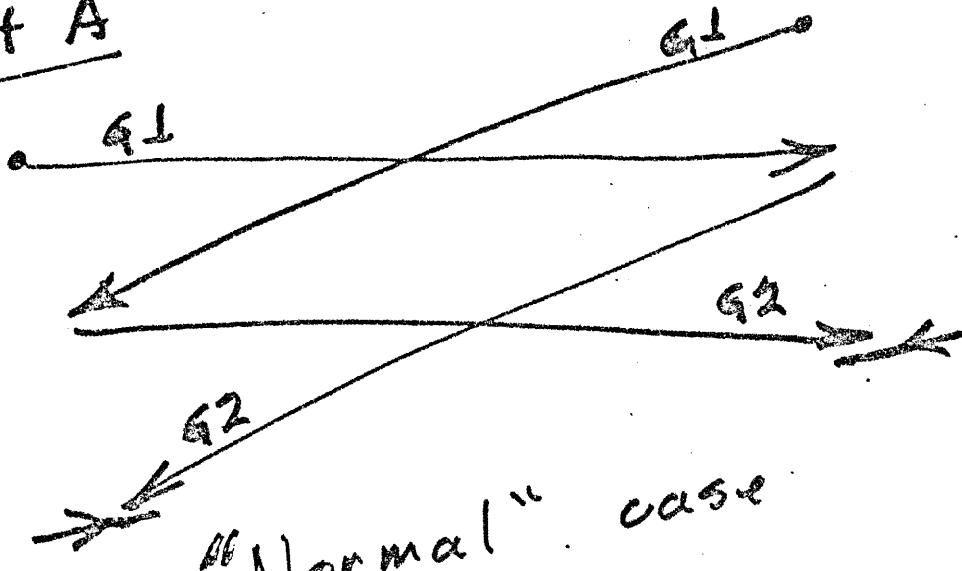
Initialization

- Table contents, Qs, etc are correct.
- Implementations may use shared tables
- Network Services Initialization (specified in NSM) appears as a sequence of commands.

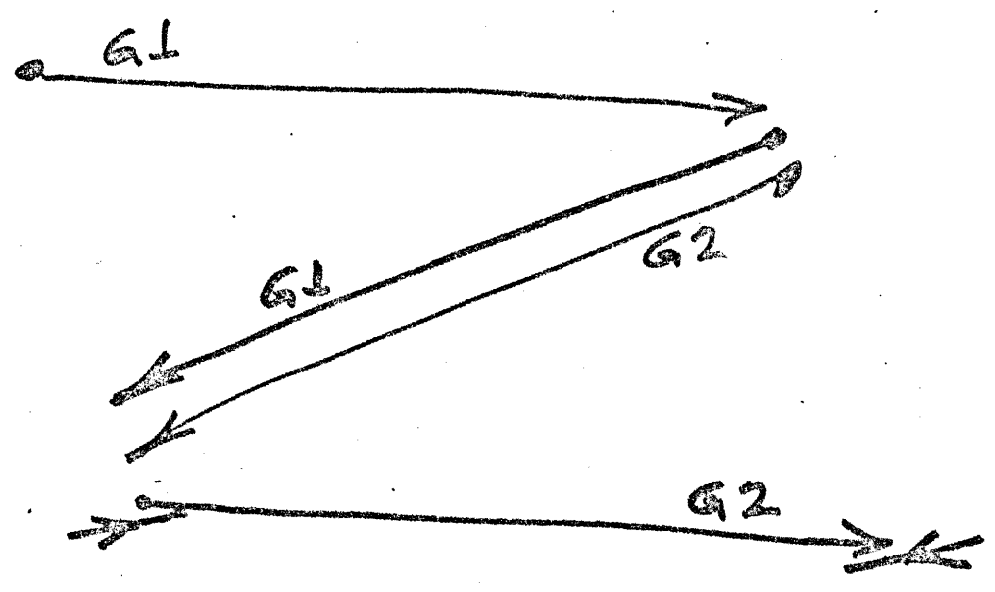
Validation using GREETINGS

Host A

Host B



"Normal" case



Extreme Case

→ means validation complete (at that host)

NHAs

A
B
C

D
E
F

A
B
C
D
E
F

Ensemble id →

Out

①

Out

②

In

③

Stations



Ensembles - 2 Out & 1 In.

Possible Use -

- ① Ordinary Switched Connection - 2400
- ② Hi-performance, self-equalizing Modems. - 9600

NHAs

A
B
C
...
Z

E
F
G
...
X
Y
Z

A
B
C
D

Ensemble id →

Out

In

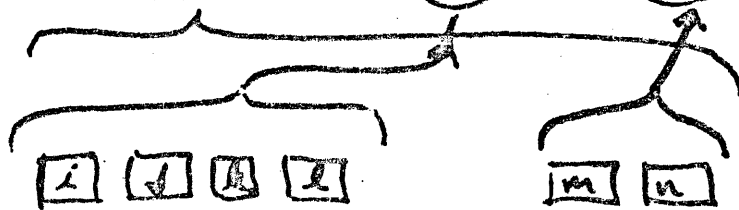
In

①

②

③

Stations

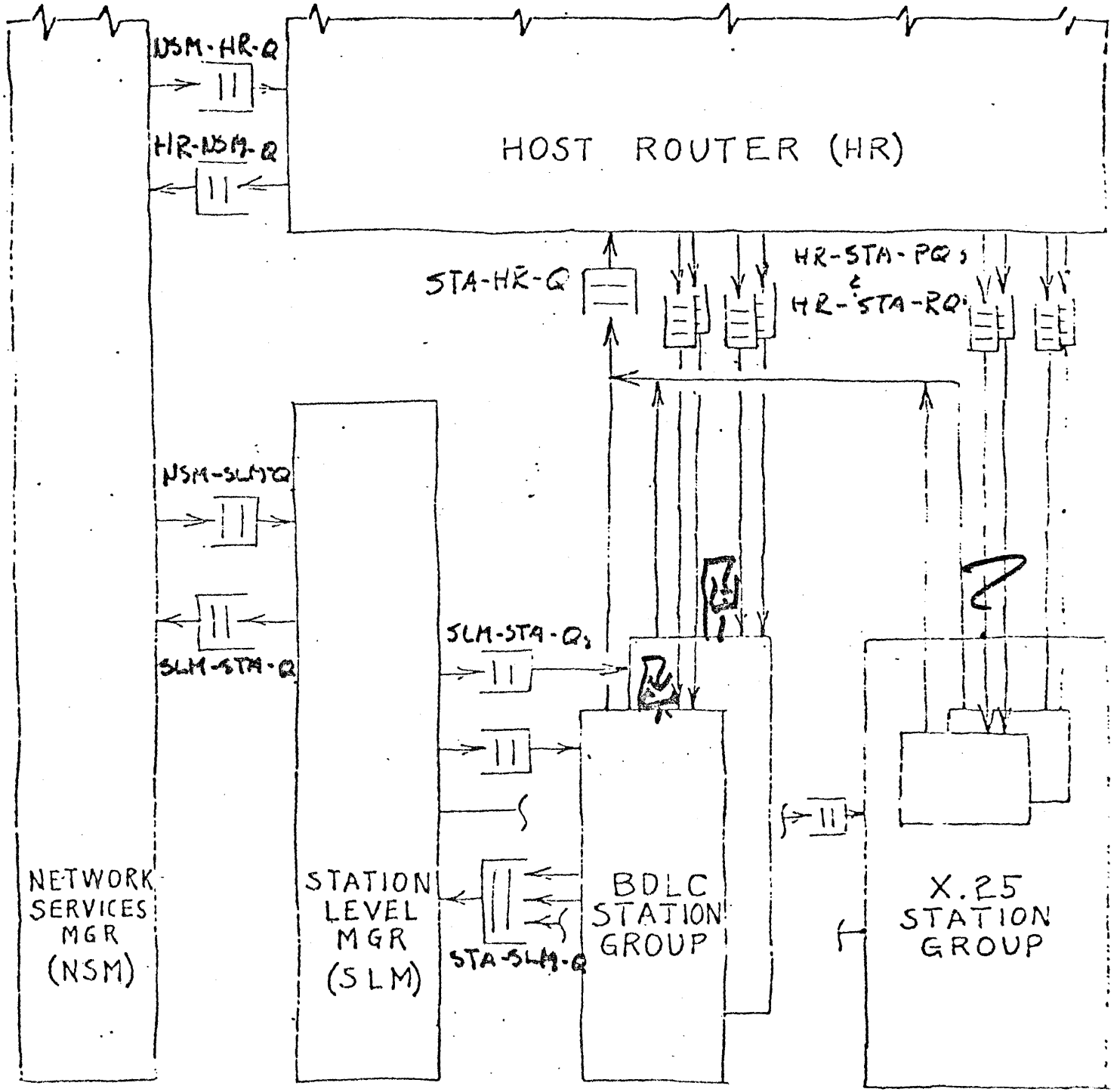


Ensembles - 1 Out & 2 In

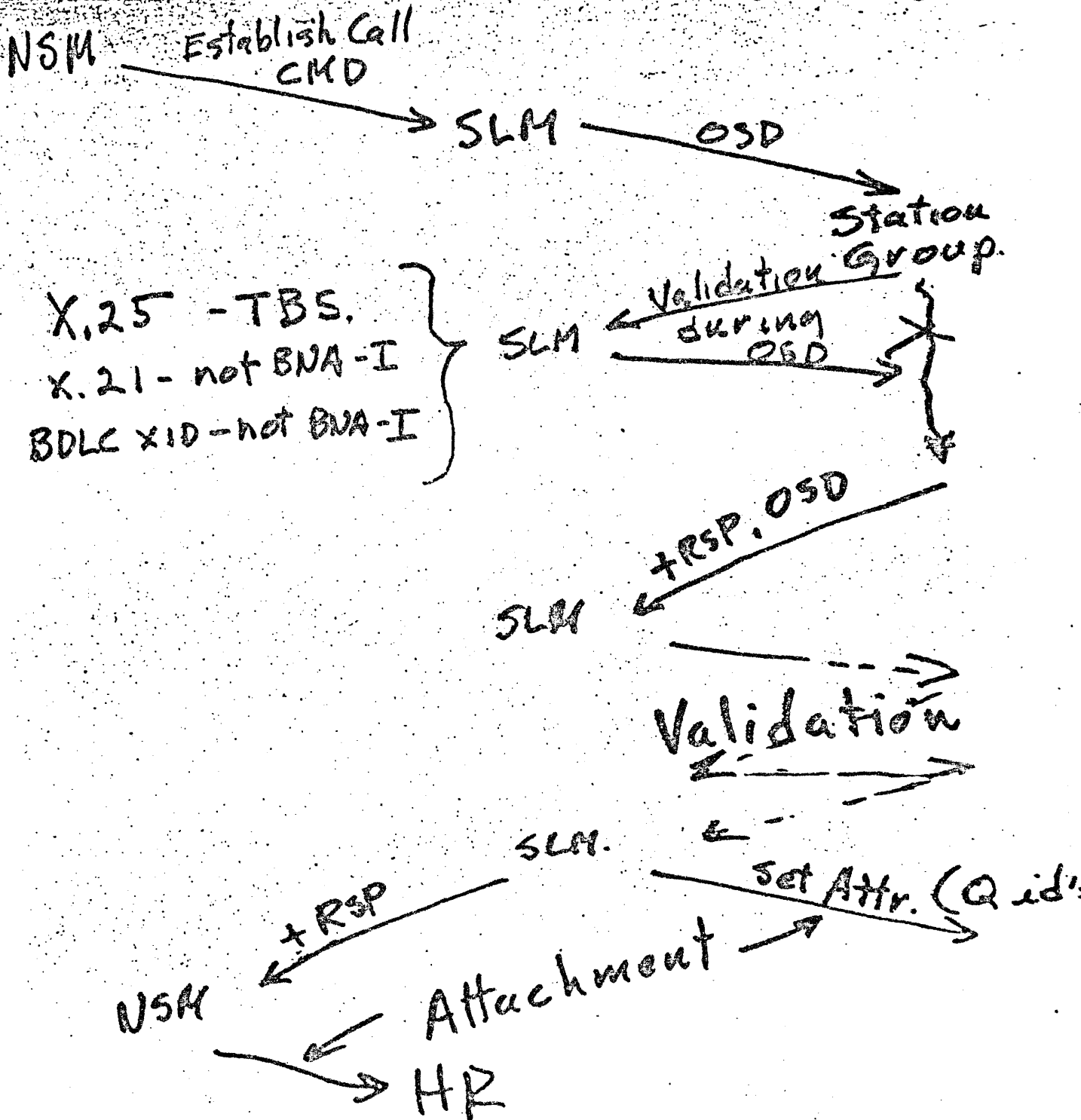
Possible Use

② "Good Customers" - 22 users sharing 4 access ports.

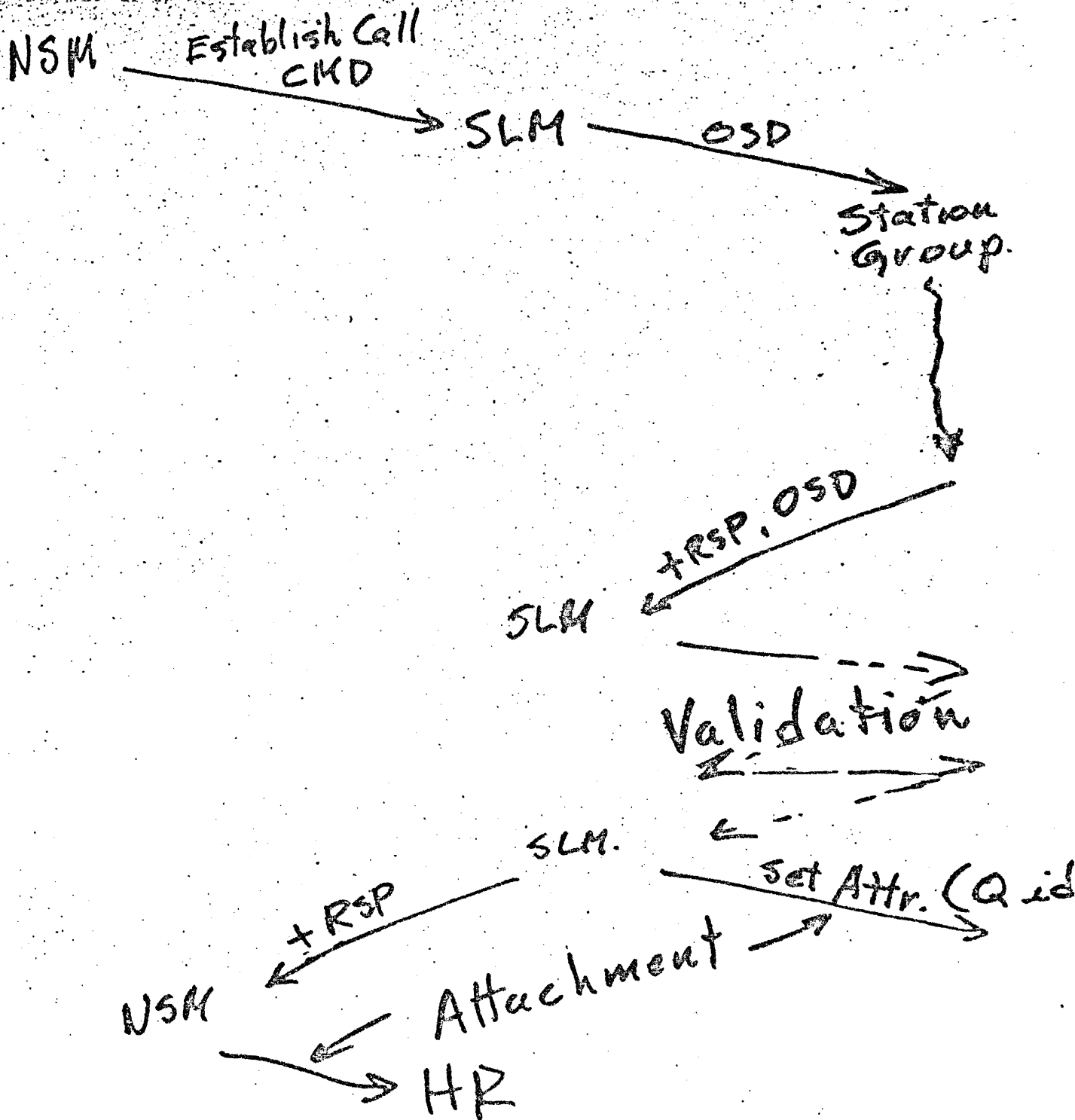
③ "Preferred Customers" 4 users sharing 2 access ports.



Call Establishment



Call Establishment



Ensembles

NSM

NHA Directory

| <u>NHA</u> | <u>Ens</u> |
|------------|------------|
| A | 1 |
| | 2 |
| | 3 |
| <hr/> | |
| B | 1 |
| | 2 |
| <hr/> | |
| C | 1 |
| | 2 |
| <hr/> | |
| D | 1 |
| <hr/> | |
| E | 1 |
| <hr/> | |
| F | 4 |

SLM

STATION LIST

| <u>STATION</u> | <u>Ens</u> |
|----------------|------------|
| i | 1 |
| <hr/> | |
| j | 1 |
| <hr/> | |
| k | 1 |
| | 2 |
| <hr/> | |
| l | 2 |
| <hr/> | |
| m | 3 |
| <hr/> | |
| n | 4 |

- Ensemble 1 - Incoming
2 - Out going
3 - Dedicated
4 - Dedicated.

Ensembles

NSM

SLM

NHA Directory

| NHA | Ens |
|-----|-----|
| A | 1 |
| | 2 |
| | 3 |
| B | 1 |
| | 2 |
| C | 1 |
| | 2 |
| D | 1 |
| E | 1 |
| F | 4 |

STATION LIST

| STATION | Ens |
|---------|-----|
| i | 1 |
| j | 1 |
| k | 1 |
| l | 2 |
| m | 3 |
| n | 4 |

- Ensemble 1 - Incoming
 2 - Out going
 3 - Dedicated
 4 - Dedicated.

My host with 3 parallel connections to NEIGHBOR HOST A.

Ensembles

NSM

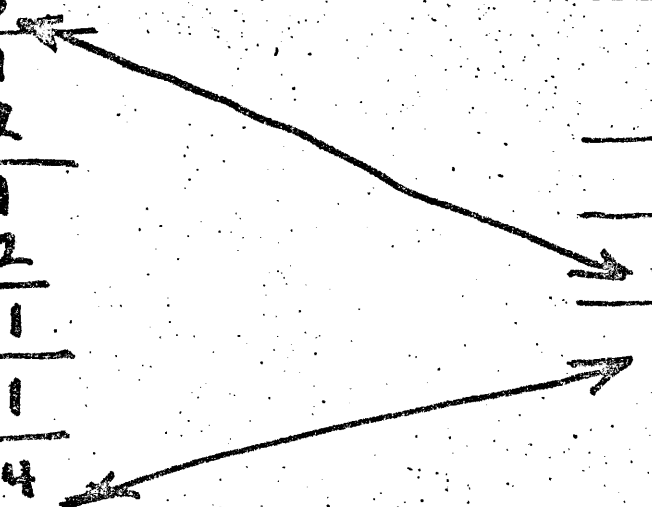
SLM

NHA Directory

| <u>NHA</u> | <u>Ens</u> |
|------------|------------|
| A | 1 |
| | 2 |
| | 3 |
| B | 1 |
| | 2 |
| C | 1 |
| | 2 |
| D | 1 |
| E | 1 |
| F | 4 |

STATION LIST

| <u>STATION</u> | <u>Ens</u> |
|----------------|------------|
| i | 1 |
| j | 1 |
| k | 1 |
| | 2 |
| l | 2 |
| m | 3 |
| n | 4 |



- Ensemble
- 1 - Incoming
 - 2 - Outgoing
 - 3 - Dedicated
 - 4 - Dedicated.

Ensembles

NSM

SLM

NHA Directory

| NHA | Ens |
|-----|-----|
| A | 1 |
| | 2 |
| | 3 |
| B | 1 |
| | 2 |
| C | 1 |
| | 2 |
| D | 1 |
| E | 1 |
| F | 4 |

STATION LIST

| STATION | Ens |
|---------|-----|
| i | 1 |
| j | 1 |
| k | 1 |
| | 2 |
| l | 2 |
| m | 3 |
| n | 4 |



- Ensemble
- 1 - Incoming
 - 2 - Out going
 - 3 - Dedicated
 - 4 - Dedicated

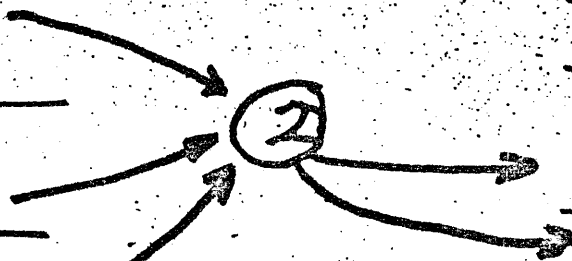
Ensembles

NSM

SLM

NHA Directory

| NHA | Ens |
|-----|-----|
| A | 1 |
| | 2 |
| | 3 |
| B | 1 |
| | 2 |
| C | 1 |
| | 2 |
| D | 1 |
| E | 1 |
| F | 4 |



STATION LIST

| STATION | Ens |
|---------|-----|
| i | 1 |
| j | 1 |
| k | 1 |
| | 2 |
| l | 2 |
| m | 3 |
| n | 4 |

- Ensemble
- 1 - Incoming
 - 2 - Outgoing
 - 3 - Dedicated
 - 4 - Dedicated.