

FEATURE DOCUMENT
OVERLOAD CONTROLS
DYNAMIC SERVICE PROTECTION
NO. 3 ELECTRONIC SWITCHING SYSTEM

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NOTICE

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INTRODUCTION

1. GENERAL INFORMATION

1.01 Dynamic service protection (DSP) is an automatic way of protecting the service of those lines with class A service (as opposed to class B) during a traffic overload. Class A service is generally assigned to lines used by fire, police, hospitals, etc. When DSP is in effect, the treatment of class A lines is not affected. However, customers with class B lines may experience a delay in the receipt of dial tone. When DSP is deactivated, class A lines no longer receive preferential treatment. This feature can be activated or denied via a teletypewriter (TTY) message.

1.02 When this section is reissued, the reason(s) for reissue will be given in this paragraph.

1.03 DSP is a standard No. 3 Electronic Switching System (ESS) feature with all versions of the generic program.

2. DEFINITION

2.01 DSP is a feature designed to protect certain lines with priority status (eg, fire, police, hospital, etc) from degraded service during overloads on the switching system by automatically giving preferential dial tone access to those lines. This feature can be manually denied.

DESCRIPTION

3. USER OPERATION

3.01 DSP is an automatic way of protecting the service of class A (as opposed to class B) lines during a traffic overload. Classes of lines are assigned by an office in the translation data with class A service generally being assigned to lines used by fire, police, hospital, etc. When DSP is in effect, the treatment of a class A line is not affected. A class B line, however, is serviced only if it is the first entry on a first-in first-out type list while all other class B entries in the list are cleared. This results in a delay in the receipt of dial tone by those customers. When DSP is deactivated, the preferential treatment provided to class A lines terminates. DSP can be manually activated or denied by inputting a TTY message.

4. SYSTEM OPERATION

4.01 Unless DSP is denied or has been inhibited by a level 3 or higher clear, the system automatically activates DSP when an overload condition exists. It is activated and removed by software as described in the following paragraphs.

4.02 One of the input monitor (INPUT) program's (PR-3H160) basic functions is to process line origination hopper entries and pass valid service requests to the line origination (LNORIG) program (PR-3H162). It also determines if DSP should be activated and gives preference to class A lines if DSP is activated.

4.03 Before entering the program loop which processes the entries, the value of the line origination hopper overflow counter is checked. The counter is incremented by one each time LINESCAN, the line scanning routine in the base level scanning (SCANS) program (PR-3H172), finds the line origination hopper full. The counter is decremented by one if its value is not zero when the input monitor program finds the line origination hopper empty, and enough time remains to invoke the line scanning routine in SCANS. Any time the value of the counter is greater than four, the program will attempt to activate DSP. When DSP is activated, the ESS lights a lamp marked **DSP** on the system status panel, sounds a minor alarm, and prints the message **REPT DSP** on the maintenance and traffic (only if this channel is dedicated) TTYs (refer to Output Message Manual OM-3H300 for details of this and other subsequent messages). If DSP is already activated, no further action is taken.

4.04 When the loop which processes the line origination hopper entries is entered, the entries are examined one at a time. If an entry is idle, the address register is updated to look at the next entry, and a check to see if all entries have been processed is made. If an entry is not idle, a check to see if time is left to process the entry is made. If time is available, a check to see whether DSP has been activated is made. If DSP has been activated, the very first busy entry in the line origination hopper is serviced without checking its class (A or B) status. After one entry in the line origination hopper has been serviced, only class A entries will be served. Any class B entries found will have their line status bits set to idle and be removed from the line origination

hopper without being served. A class B line can be processed while DSP is activated only if it is the first valid busy entry when the loop which processes the line origination hopper entries is entered. DSP results in a dial tone delay for most class B customers. When DSP is deactivated, the preferential treatment provided to class A lines terminates, the ESS extinguishes the *DSP* lamp on the system status panel, and prints the message **REPT DSP CLR** on the maintenance and traffic (only if this channel is dedicated) TTYs. DSP is deactivated when the value of the counter is equal to or less than four. Because of the complex increment/decrement system used to activate DSP, it may remain activated for several seconds after the overload condition is gone.

4.05 The DSP check is made continuously 24 hours per day and cannot be turned off. However, the operating company has the option to either allow or deny the system to activate DSP. DSP can be allowed or denied by manually inputting the appropriate TTY message. The message **ALW:DSP!** is used to activate DSP and the message **INH:DSP!** is used to deactivate DSP.

4.06 A feature flow diagram giving the functional operation of the DSP feature is shown in Figure 1.

CHARACTERISTICS

5. FEATURE ASSIGNMENT

5.01 Dynamic service protection is provided on a per-line basis to police, fire, hospitals, and other uses that require quick access by the public in emergency situations.

6. LIMITATIONS

6.01 Because of the complex increment/decrement system used to activate and deactivate DSP, no more than 10 percent of the total lines in a No. 3 ESS office should be class A lines. If more than 10 percent of the lines are designated as class A, the office will react like an office with one-tenth the line load when DSP is activated.

6.02 DSP is to be used only under conditions established by local operating company policy. The network administrator, following company policy, is jointly responsible with the maintenance force for determining if DSP should be allowed.

In normal operation, it is recommended that DSP be left in the inhibited state.

7. INTERACTIONS

7.01 When in effect, the DSP feature interferes with the total dial tone delay and dial tone blockage peg count measurements. These measurements become ineffective because the treatment given to class B lines makes the dial tone test deferrable thus affecting the measurements (see paragraph 4.04). The network administrator should take note of the times that the tt REPT DSP and tt REPT DSP CLR output messages occur because the data will be inaccurate during this time period.

8. RESTRICTION CAPABILITY

8.01 The ability of the No. 3 ESS to activate DSP can be denied at any time by a **INH:DSP!** TTY input message.

INCORPORATION INTO SYSTEM

9. INSTALLATION/ADDITION/DELETION

9.01 The software for this feature is available with all versions of the No. 3 ESS generic program and is activated or deactivated by the appropriate TTY message.

10. HARDWARE REQUIREMENTS

10.01 No hardware engineering is required for this feature.

11. SOFTWARE REQUIREMENTS

11.01 Class A lines are determined by whether an essential line (EL) bit in the line translations is set. Any line not having this bit set is considered to be a class B line.

11.02 Before giving a line access to dial tone when DSP is in effect, the scan point number of that line is translated into a line subtranslator address which contains a 2-word entry (Figure 2). The first word in the entry contains the EL bit. If the EL bit is set, the line is considered to be class A and is processed. If the EL bit is not set (and the line is not the first entry in the line origination hopper), the line is

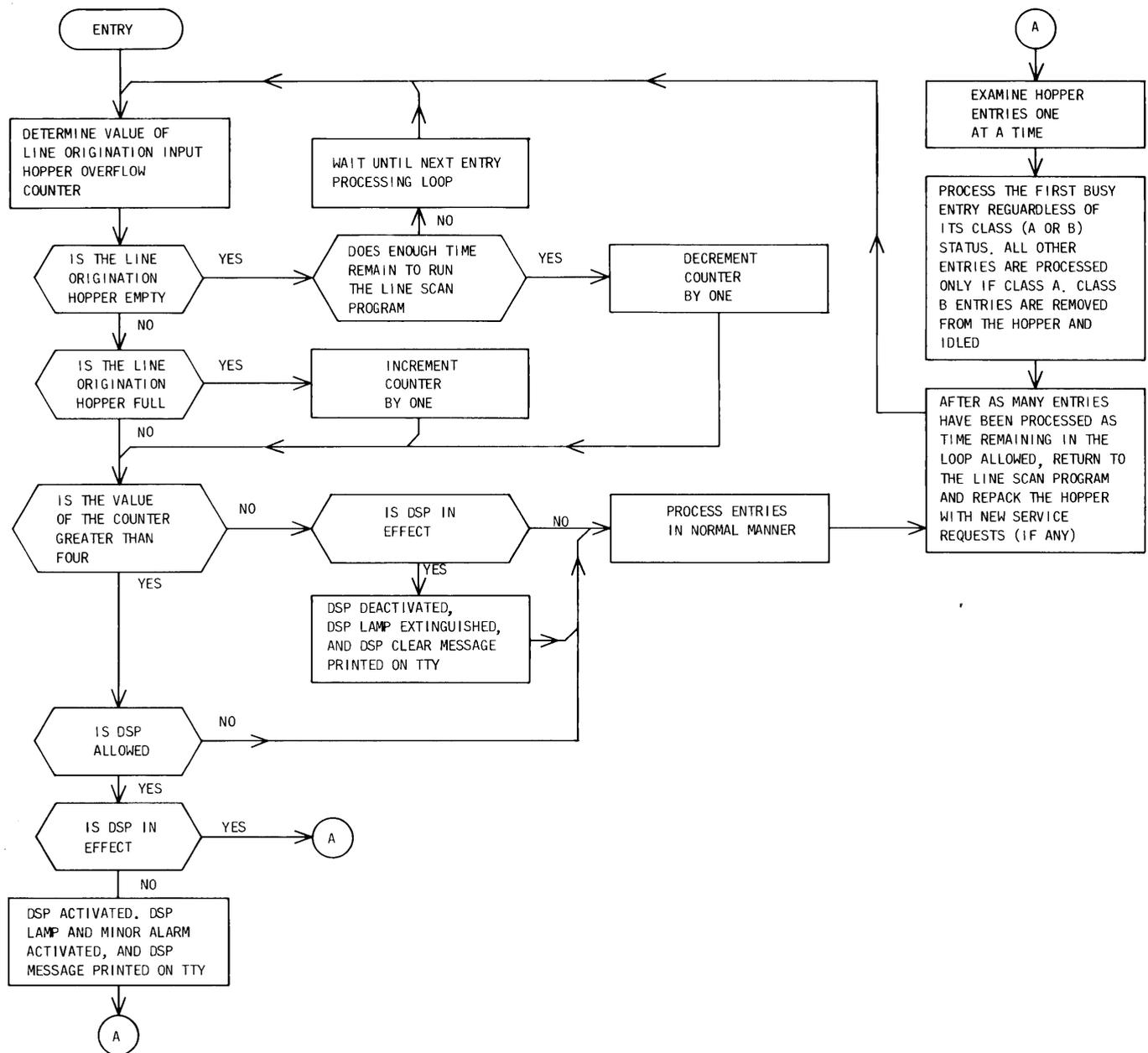


Fig. 1—Dynamic Service Protection Feature Flow Diagram

idled, removed from the line origination hopper, and processed as if it were a new service request.

11.03 One main store bit per line is required to classify the line as being class A or B and is found in the essential bit (EL) position in the line subtranslator.

11.04 One temporary store word is required for the line origination hopper overflow counter. One temporary store bit per system is required for marking whether DSP is denied or allowed and is located in miscellaneous bits (MISCBITS).

11.05 Processor real-time information will be included in this part when available.

11.06 Specific software requirements are provided in the applicable section, Section 233-060-ZZZ, of Network Design. Also refer to the PA-3H3XX for specific word layout details.

12. DATA ASSIGNMENTS AND RECORDS

12.01 The following translation input forms must be completed when implementing this feature and submitted to the WECO Regional Center using

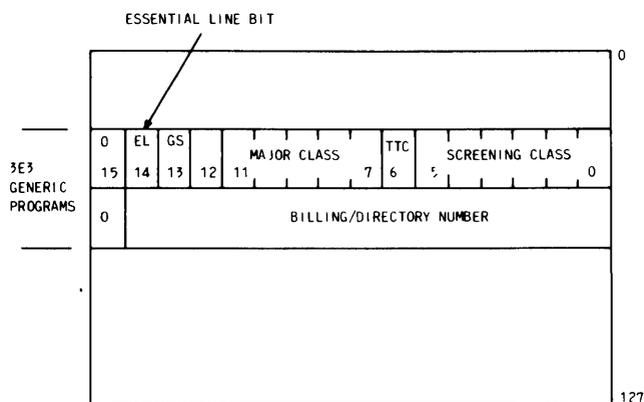
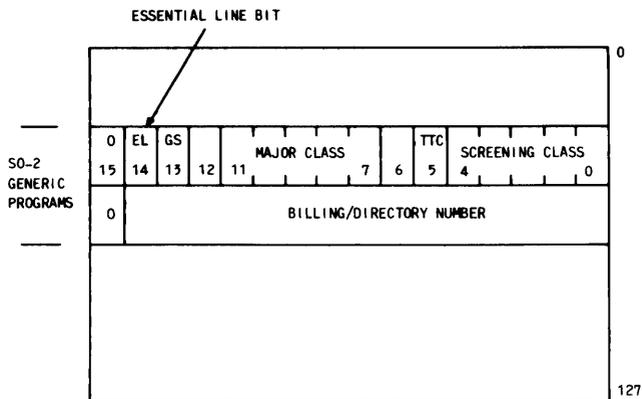


Fig. 2—Line Subtranslator

normal schedule procedures for the initial office data administration (ODA) run. The EL column on form ESS 3100, Telephone Number Table, and form ESS 3105, Multi-Hunting Group Table, should be marked for lines that are to be designated as class A. For information on these forms, consult No. 3 ESS Translation Guide TG-3.

12.02 Lines may be assigned to class A or class B by use of the key word EL (YES or NO) as part of the following RC messages; RC:LINE/, RC:MLHG/, RC:MPTY, RC:MTL/. Refer to Input Message Manual IM3H300 for details of the recent change messages.

12.03 To enable the automatic DSP function in the No. 3 ESS, TTY message **ALW:DSP!** must be inputted. To deny DSP, TTY message **INH:DSP!** must be inputted on the TTY. In each case, an **OK** response indicates that the message is now in effect and an **NG** response

indicates that the message was already in effect and, therefore, nothing was done.

13. TESTING

13.01 This feature requires no testing other than using the VER:LINE and VER:OE messages to verify assignment of class A status to individual lines.

14. OTHER PLANNING TOPICS

14.01 Care should be taken not to assign more than 10 percent of the total lines in a No. 3 ESS office to be class A lines.

ADMINISTRATION

15. MEASUREMENTS

15.01 There are no measurements required by this feature, but it does affect other measurements (refer to paragraph 7.01).

16. CHARGING

16.01 Charging is not applicable to this feature.

SUPPLEMENTARY INFORMATION

17. GLOSSARY

17.01 The following list identifies terms used in this feature document.

- Teletypewriter (TTY)
- Essential Line (EL).

18. REFERENCES

18.01 The following documents may be referred to for supplementary information concerning the DSP feature.

- PA-3H3XX—No. 3 ESS Layout Specification of Translation Data
- IM-3H300—No. 3 ESS Input Message Manual
- OM-3H300—No. 3 Output Message Manual
- PR-3H160—Input Monitor (INPUT) Program

- PR-3H004—Application Base Level Monitor (BLMMA) Program
- PR-3H162—Line Origination (LNORIG) Program
- PR-3H172—Base Level Scanning (SCANS) Program
- Translation Guide TG-3
- Sections 233-060-ZZZ—Network Design Sections