This ATM is a statement of the passive seismic (PS) processing currently included in the DPS 2000 computer programs being written for the ALSEP System Test Set. Basically there is one PS program, used two ways:

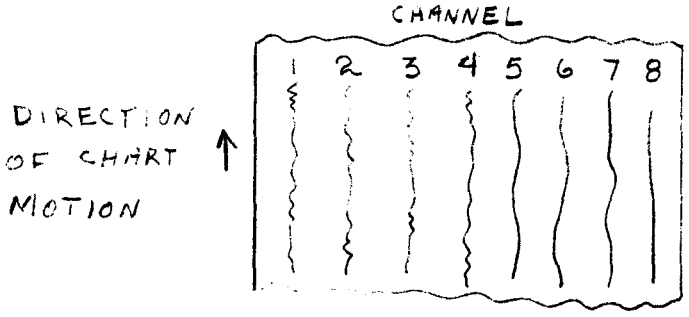
1. Process PS data with no other experiments operating.
2. Process PS data with any or all other experiments operating.
   (This would include system integration, cross-talk, and integrated system tests.)

In general all processing is similar to that described in the following documents:

1. ATM 399B, Section 5
2. ATM 547 (Passive Seismic Section)
3. SE03 (formerly ATM 370)

The scientific PS data is decommutated and output directly to an eight channel D to A converter. The converted data is then displayed on one of eight channels of a strip chart recorder. The data is displayed on the recorder as follows:

1. Short period seismic is displayed on channel one;
2. Long period seismic (x) is displayed on channel two;
3. Long period seismic (y) is displayed on channel three;
4. Long period seismic (z) is displayed on channel four;
5. Long period tidal (x) is displayed on channel five;
6. Long period tidal (y) is displayed on channel six;
7. Long period tidal (z) is displayed on channel seven;
8. Instrument temperature is displayed on channel eight.



The program is imbedded in a real time executive program, the purpose of which is to permit experiment data decommutation control, decommutation, processing and input/output. The executive also decommutates the main frame sync pattern, housekeeping count, mode ID, and in addition, processes word 33 (central station housekeeping) and word 46 (command verification). There is also a provision for transmitting uplink commands from external input.

The central station housekeeping (HK) section has the facility (using sense switches) for continuous output. In the continuous mode all HK data is printed on the line printer. When not in continuous mode and in subframe lock (after two complete cycles of 90 main frames), HK data will be printed when it is out of tolerance, when a change from its previous walue is detected, or when the data is to be printed

each time it is received (no tolerance). The first 90 HK words received after an uplink command is transmitted and verification is received will be printed. Sense switch control is provided for the experimentor to turn on HK data if desired. When HK data is printed, it is identified with the code "HK" followed by the subframe word number (0-89). The data is printed in octal form and may be followed by diagnostic letter or symbolic codes indicating the reason for printing.

Codes: C=continuous mode
OT=out of tolerance
*=change from previous value
I=initial pass of HK data

The command verification (CV) section detects any non zero bit configuration that occurs at the 46th word of the main frame. An identification code "CV" is printed on the line printer. Parity is checked and the letter "p" is printed if a parity error is detected. Following the parity check the received CV word is printed. A comparison is made between the CV word and the most recently transmitted uplink command. If the comparison is unsuccessful, a check is made to insure that a command was transmitted after the previous non-zero CV word was received. If transmission has taken place, the diagnostic code "ER" indicating an error in the CV word is printed. If no transmission has occured the code "NX" is printed indicating that no transmission occured prior to the CV word. If no code is printed after the CV word the CV word and the transmitted command compare.

The accompaning functional flow chart is intended only to provide interested parties with an outline of program flow. As program debugging progresses, detailed flow charts just above the coding level will be drawn. These charts and annotated assembly listings will be appended to this document when they are available.

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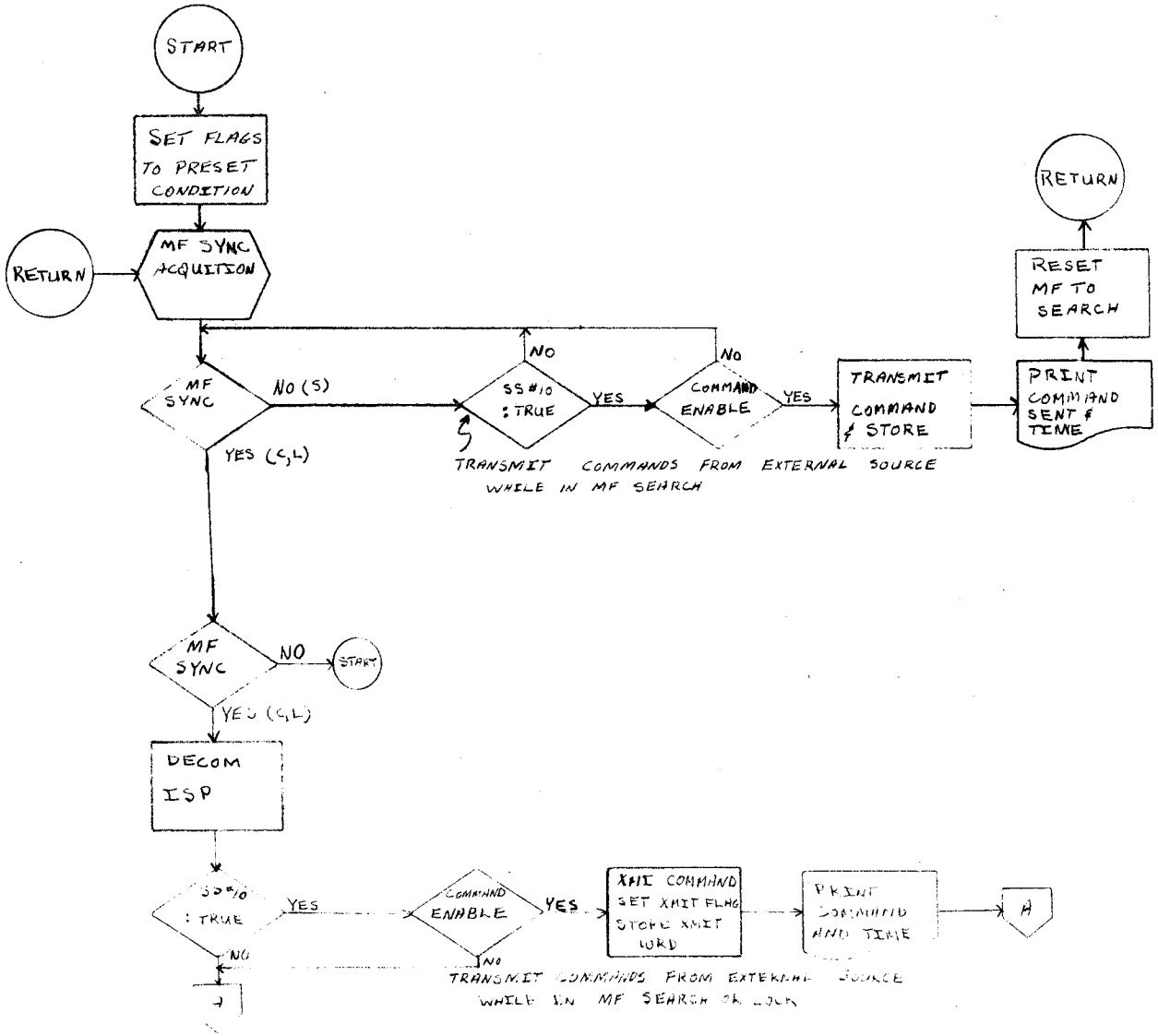


PASSIVE SEISMIC EXPERIMENT
FLOW CHART

PASSIVE SEISMIC DATA
- MF WORDS -

9, 25, 41, 57 LONG PERIOD: X

11, 27, 43, 59 LONG PERIOD: Y

13, 29, 45, 61 LONG PERIOD: Z

35 EVEN LONG PERIOD TIDAL: X

37 EVEN LONG PERIOD TIDAL: Y

35 ODD LONG PERIOD TIDAL: Z

37 ODD INSTRUMENT TEMP

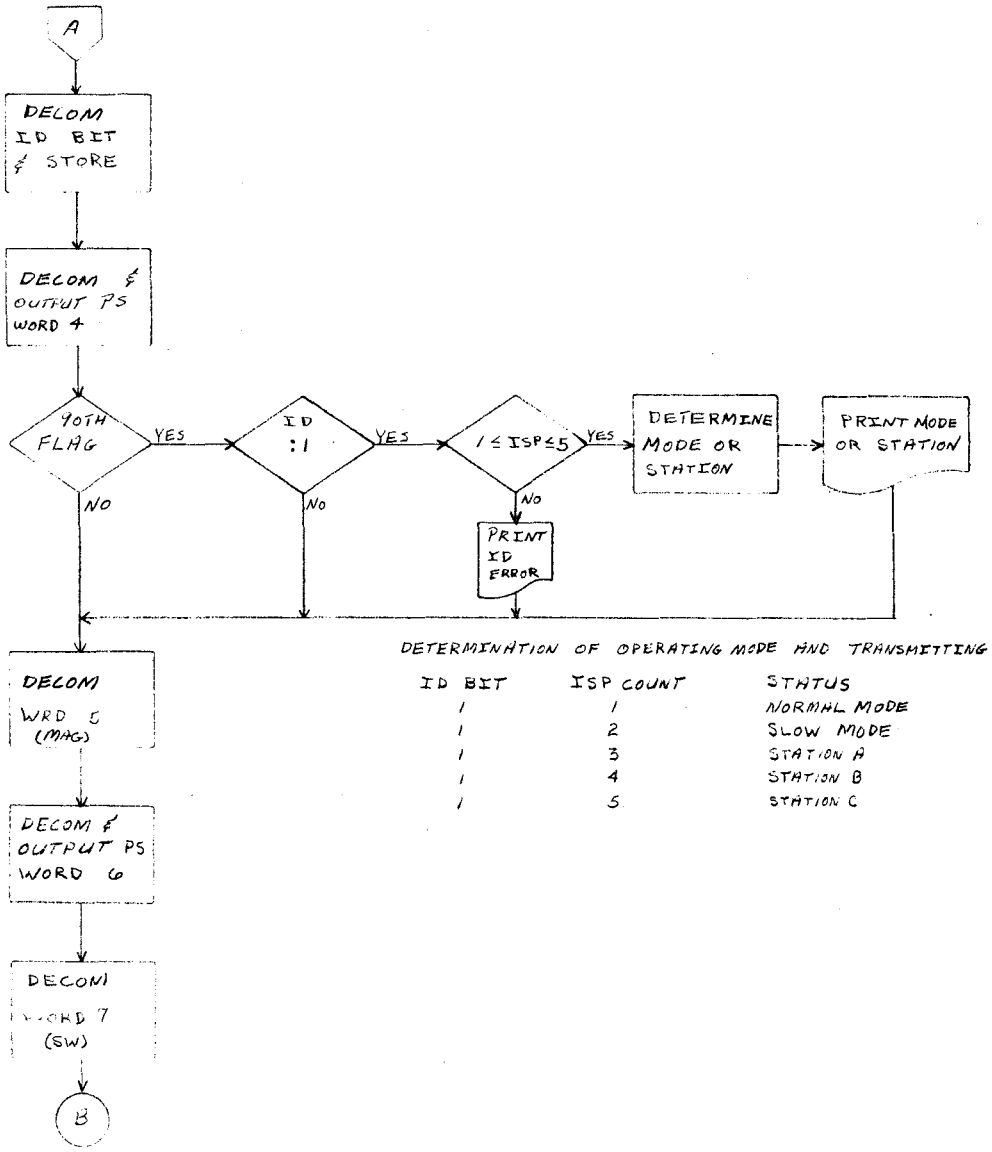
ALL EVEN WORDS
EXCEPT 2, 96, 56
SHORT PERIOD: Z

33 ENGINEERING DATA (HK)
SUB FRAME WORD
23 L. P. AMPL. GAIN (X&Y)
24 LEVELING MODE & COARSE SENSOR MODE
38 L. P. AMPL. GAIN (Z)
39 THERMAL CONTROL STATUS
53 LEVEL DIRECTION AND SPEED
54 CALIBRATION STATUS / PEAK
68 SP AMPL. GAIN (Z)
69 UNCAGE STATUS

HK COUNT 1-90
1=1
2=2
0=90

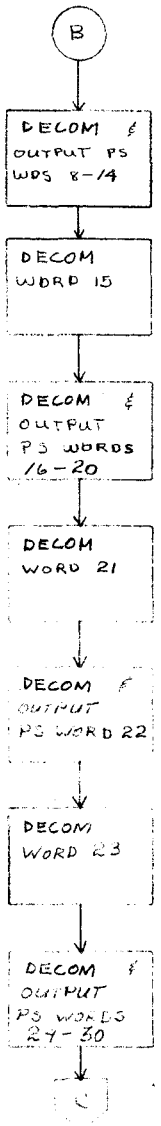
SCIENTIFIC DATA FROM PASSIVE SEISMIC EXPERIMENT IS OUTPUT TO 9 CHANNEL STRIP CHART RECORDER

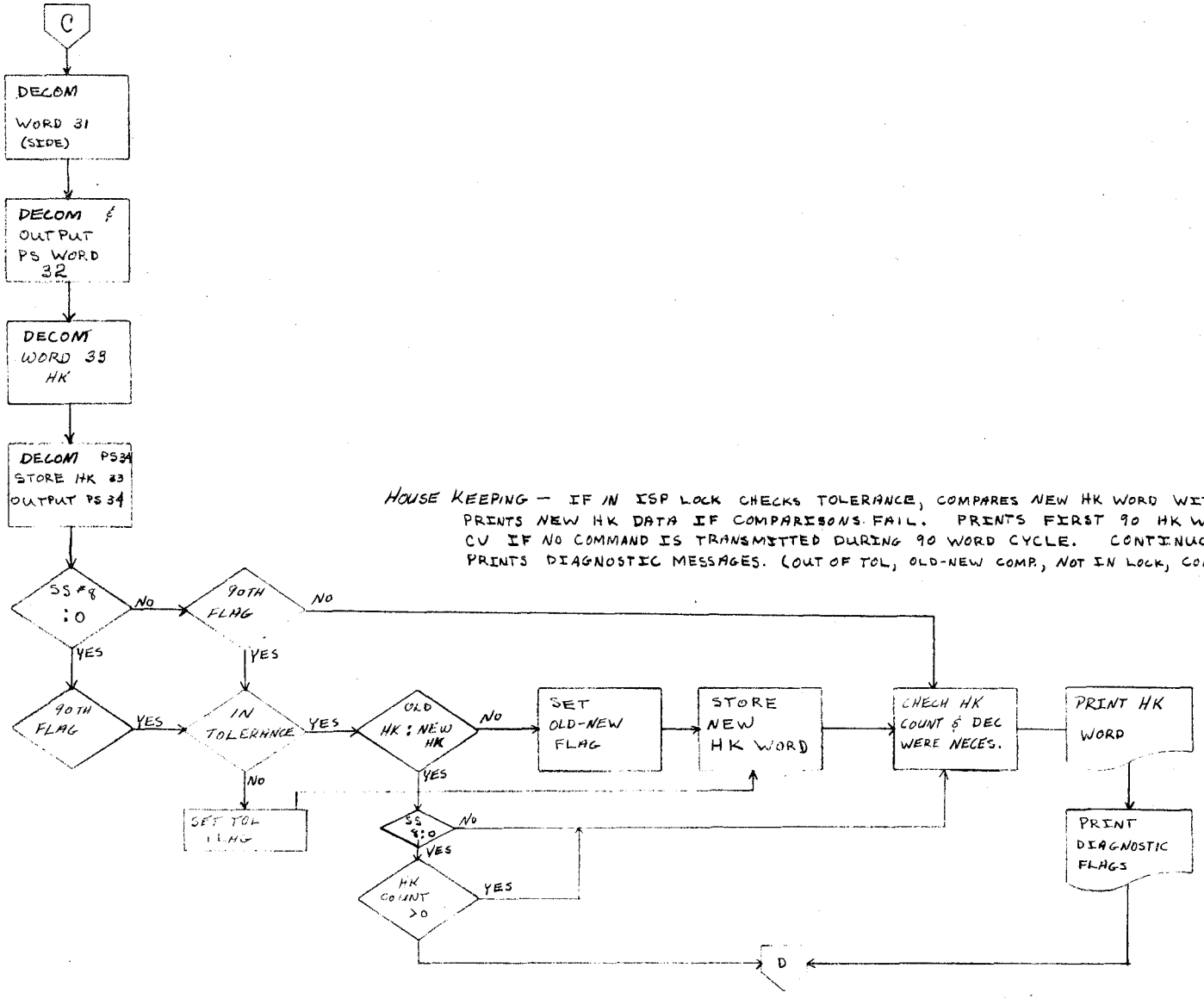
1/F



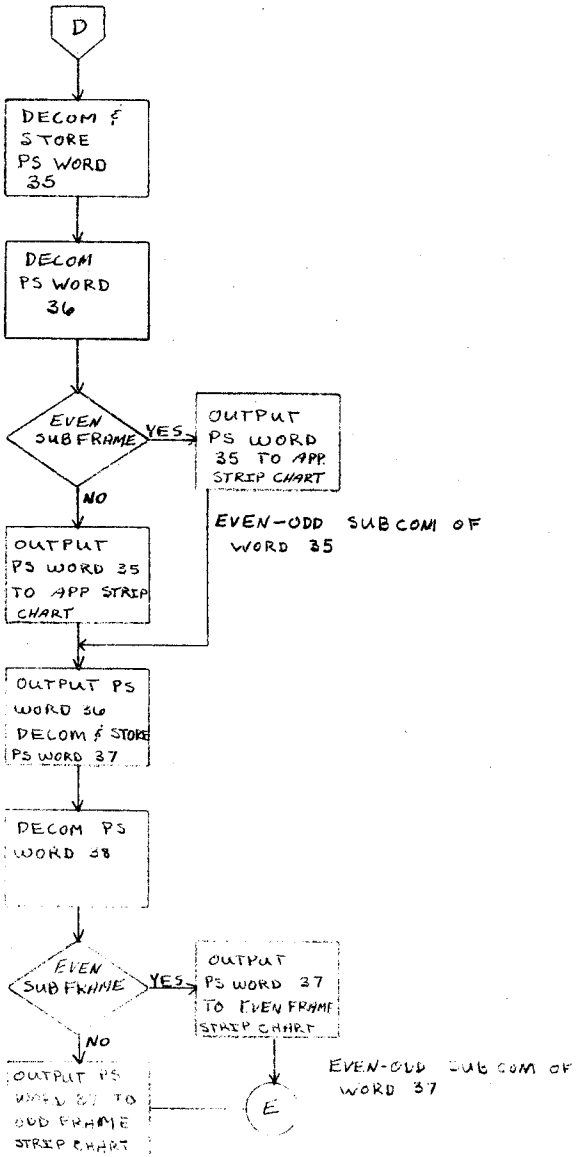
DETERMINATION OF OPERATING MODE AND TRANSMITTING STATION

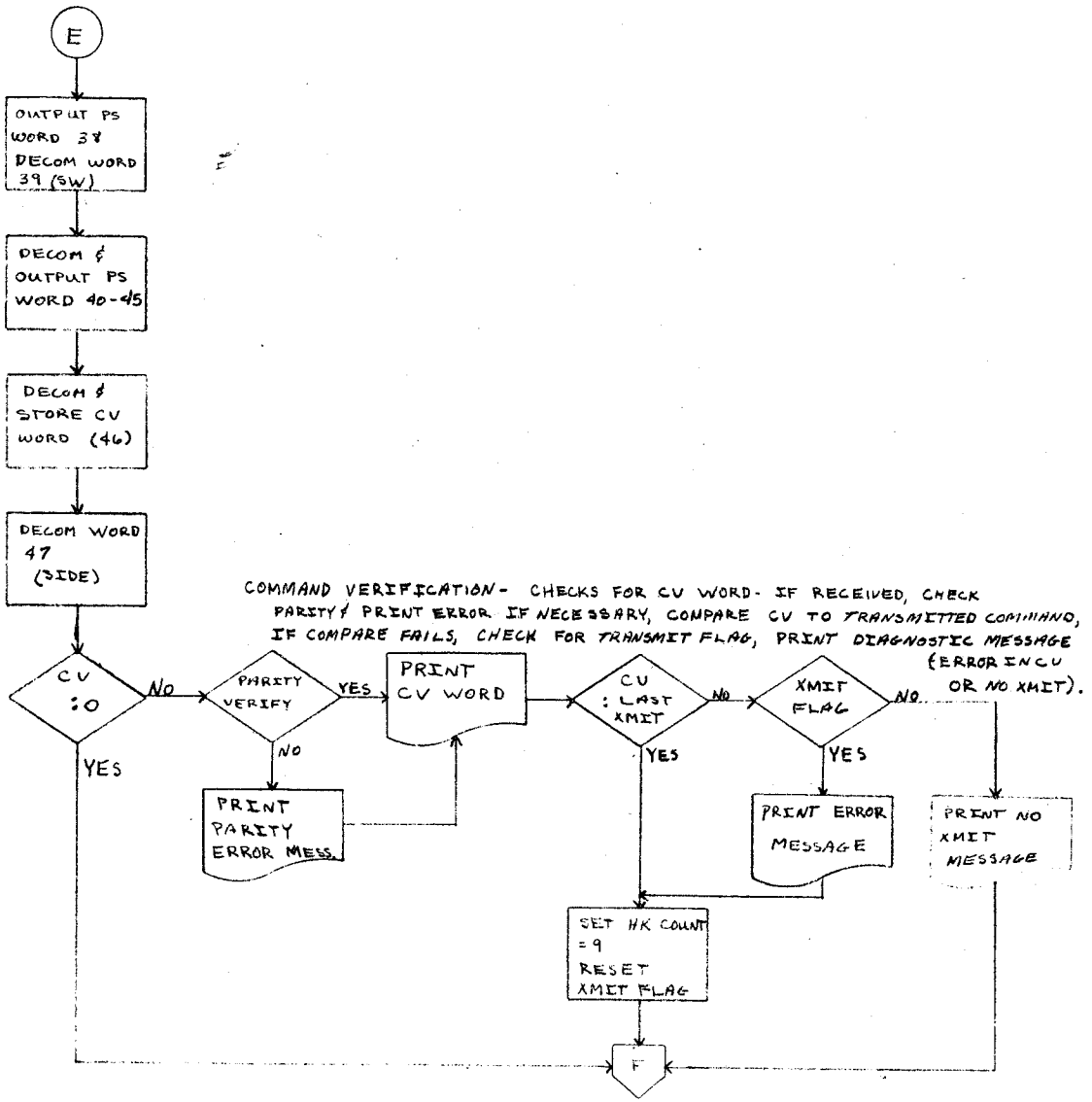
ID BIT	ISP COUNT	STATUS
1	1	NORMAL MODE
1	2	SLOW MODE
1	3	STATION A
1	4	STATION B
1	5	STATION C

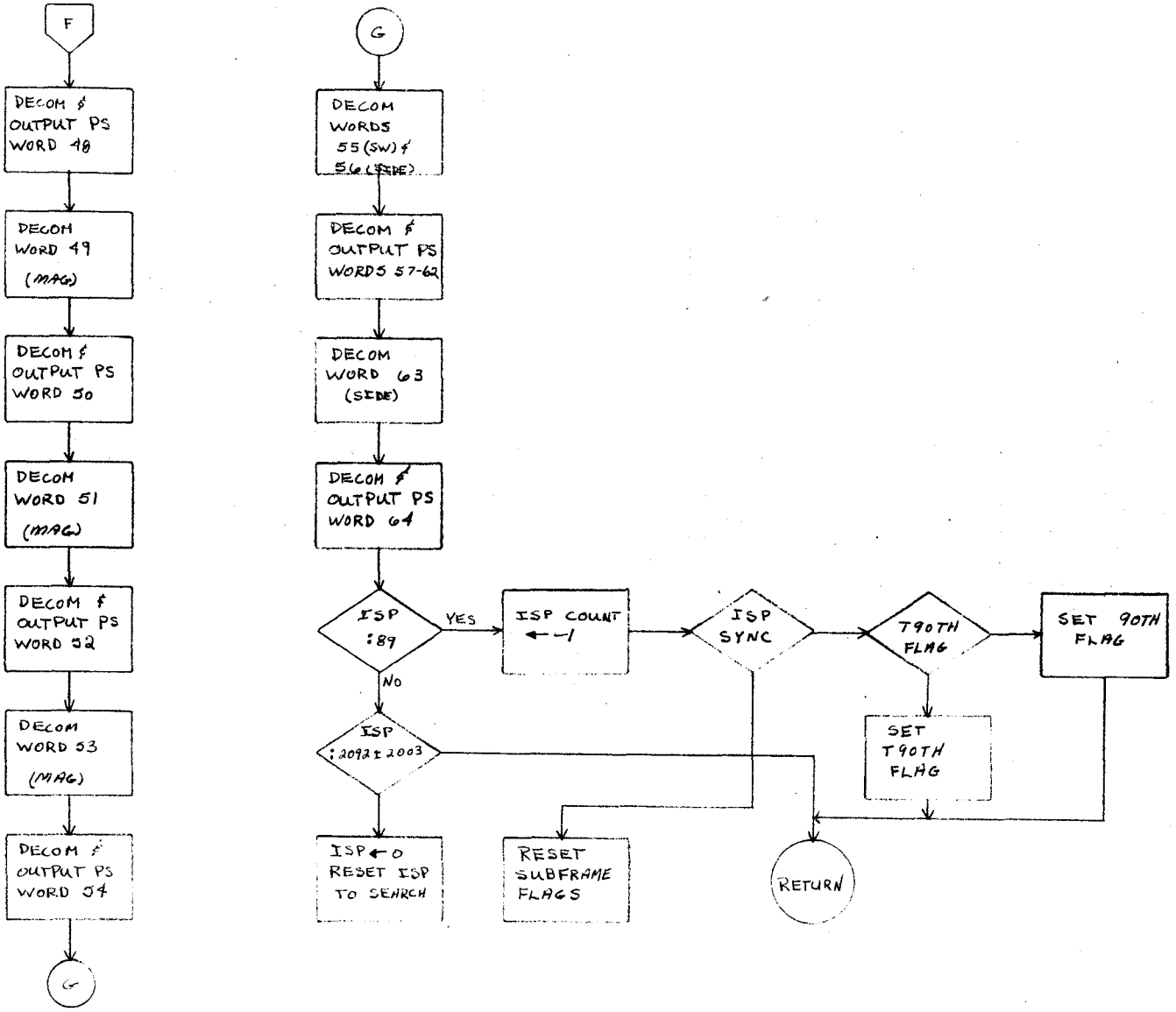




HOUSE KEEPING — IF IN ISP LOCK CHECKS TOLERANCE, COMPARES NEW HK WORD WITH PREVIOUS WORD AND PRINTS NEW HK DATA IF COMPARISONS FAIL. PRINTS FIRST 90 HK WORDS AFTER RECEIVING CV IF NO COMMAND IS TRANSMITTED DURING 90 WORD CYCLE. CONTINUOUS HK PRINT OPTION. PRINTS DIAGNOSTIC MESSAGES. (OUT OF TOL, OLD-NEW COMP, NOT IN LOCK, CONTINUOUS PRINT).


D
DECOM & STORE PS WORD 35
DECOM PS WORD 36
EVEN SUBFRAME
YES
NO
OUTPUT PS WORD 35 TO APP STRIP CHART
EVEN-ODD SUBCOM OF WORD 35
OUTPUT PS WORD 35 TO APP STRIP CHART
OUTPUT PS WORD 36 DECOM & STORE PS WORD 37
DECOM PS WORD 38
EVEN SUBFRAME
YES
NO
OUTPUT PS WORD 37 TO EVEN FRAME STRIP CHART
EVEN-ODD SUBCOM OF WORD 37
OUTPUT PS WORD 37 TO ODD FRAME STRIP CHART
E


E
OUTPUT PS WORD 38 DECOM WORD 39 (SW)
DECOM & OUTPUT PS WORD 40-45
DECOM & STORE CV WORD (46)
DECOM WORD 47 (SIDE)
COMMAND VERIFICATION- CHECKS FOR CV WORD- IF RECEIVED, CHECK PARITY & PRINT ERROR IF NECESSARY, COMPARE CV TO TRANSMITTED COMMAND, IF COMPARE FAILS, CHECK FOR TRANSMIT FLAG, PRINT DIAGNOSTIC MESSAGE (ERROR IN CV OR NO XMIT).
CV :0
No
YES
PARITY VERIFY
YES
NO
PRINT CV WORD
PRINT PARITY ERROR MESS.
CV : LAST XMIT
No
YES
XMIT FLAG
NO
YES
PRINT ERROR MESSAGE
PRINT NO XMIT MESSAGE
SET HK COUNT = 9 RESET XMIT FLAG
F



RESET ISP WHEN A COUNT OF 89 IS REACHED. ASSURE THAT ISP DOES NOT EXCEED 89 - RESET TO SEARCH IF IT DOES. SET HK LOCK FLAG (90TH FLAG) AFTER THE SECOND FULL CYCLE OF 90 WORDS FOWLOWING A LOCK CONDITION OF THE HK SUBFRAME.