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EQUIPMENT

PROGRAMMABLE INDICATOR DATA PROCESSOR (PIDP) OPERATOR'S MANUAL

1 AUGUST 2000

FOREWORD

PURPOSE: This publication is for use in the training of USAF air traffic controllers and is not intended to replace, substitute for, or supersede official regulations, procedures, or directives.

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-- Prepared by --

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ALPHABETICAL INDEX

GLOSSARY

A	Arrival. Used to indicate an arrival aircraft. Also used to define the Arrival/Departure/En Route List (Key A-Tab).
A	Monitor. Key used (A-Tab) to activate the assigned altitude monitor function. It also appears in track data block.
AA	All Altitudes. Used in OP List to show that all altitudes are being displayed.
ABV	Altitude monitor failure indication showing the track is 300 or more feet above the altitude to be monitored.
<ACID>	Aircraft Identifier. Alphanumeric ID tag.
<ACID SPACE>	Fix One Key. Used to display/inhibit fix one, tag a tracked target with fix one, or amend fix one in a flight plan or track.
AD	Arrival/Departure/En Route List. Used to indicate in the indicators OP List alarm line that the Arrival/Departure/En Route List is inhibited.
AGL	Above Ground Level.
AI	Aircraft Inhibited. Used in the display's alarm line to indicate that targets outside the conflict alert area are inhibited.
ALT	Altitude. Key used to display/inhibit the altitude format.
AMB	Ambiguity. Displayed in data block of track when PIDP position and sending facility position do not agree by more than two miles during a handoff.
AR	Arrival Indicator Identifier. Appears in OP List of arrival indicators.
ARSA HANDOFF	Airport Radar Service Area Handoff. Inter-facility handoff to an adjacent ARTS/PIDP within the host ARTCC airspace on track that was not initiated by a NAS flight plan.
ARTCC	Air Route Traffic Control Center. The FAA En Route Center.
ARTS	Automated Radar Terminal System.

AUTO-ACQUIRE	Automated correlation and track start of a flight plan in the PIDP system with a target that has a matching discrete beacon code and is within a specified airspace boundary.
B	Class - Heavy TCAS-equipped aircraft.
B-BOX	Interrogator Set.
BACKSP	Backspace Key.
BAR	Barometric Pressure.
BLO	Altitude monitor failure indication shows the track is 300 or more feet below the altitude to be monitored.
BT	Beacon Target. Used to indicate on the system alarm line that the 204 NM test target is being received by the computer.
C	Cursor, <Code>, or <ACID>. Used to center/off-center cursor. Also used to display/inhibit beacon code/<ACID>. Appears in track data block to indicate the conflict alert feature is inhibited.
C-BOX	Indicator Control C-10501/T.
(CAT)	Target Category. Non-selected, selected, or tracked.
CA	Appears in the data block (flashing) to indicate conflict alert. At least one target does not have a valid altitude.
CLS	Target Class. B (Heavy TCAS), F (Boeing 757), H (Heavy IFR), L (TCAS equipped Boeing 757), T (TCAS), U (Heavy on-top), V (VFR), or W (Heavy VFR).
CM	Communication Failure. Used to indicate on the system alarm line that a communication failure (7600) is being received.
CMF	Communication Failure. Tag given to communication failure target (7600) appearing in the target's data block.
CN	CENRAP feature activated. Displayed on system alarm line to indicate CENRAP is in operation.

<CODE>	Aircraft Beacon Code. Used as an abbreviation in keyboard sequence commands.
CONF	Conflict Alert. Appears in the data block of targets in conflict. Shares the message line with emergency and MSAW.
CONFLICT	Appears in the data block of targets in conflict alert.
CONTROL	Track Ownership. Only the track owner may control track format, initiate track handoff, modify track elements, and delete the track. Track control used in this sense should not be confused with procedural control of the aircraft.
CX	Cancel. Message sent by ARTCC to cancel flight plan data.
D	Departure. Used to indicate a departure aircraft. Also used to define the drop/suspend list (Key D-Tab).
DE	Departure Indicator Identifier. Appears in OP List of departure indicators.
DM	Appears in the track data block to alert controller that ARTCC has not acknowledged a departure message.
DS	Drop/Suspend List. Appears in the display's alarm line to indicate the Drop/Suspend List is inhibited.
E	En Route. Used to indicate an en route aircraft.
EI	Emergency Inhibit. Used on the system alarm line to indicate that emergency track starts are inhibited outside the conflict alert area.
(ELEM)	Format Element. <ACID>, class, ground speed, altitude, <CODE>, aircraft type, fix 1, fix 2, or message.
EM	Emergency. Used to indicate on the system alarm line that a civil emergency (7700) or a military emergency is being received.
EMG	Emergency. Tag given to an emergency target (7700) appearing in the target's data block.
EN	En Route Indicator Identifier. Appears in OP List of en route indicators.
ESC OL-DE	Electronic Systems Center, Operating Location DE, office at Tinker AFB OK, responsible for maintaining the PIDP computer program.

ETA	Estimated time of arrival.
ETD	Estimated time of departure.
F	Code Filter. Key used to display/inhibit the selected codes in the OP List. Class - Boeing 757 aircraft.
FAA	Federal Aviation Administration.
FD	Flight Data. Keyboard key that is pressed to initiate a flight plan entry.
FDS	Flight Data System.
FF	FLIPS Interface Failure. Displayed on system alarm line to indicate FLIPS interface failure.
FL	FLIPS Interface Inhibit.
FP	Flight Plan. System alarm to indicate that 75 flight plans are stored. Message is sent by ARTCC/ARTS-III/PIDP containing flight plan data. ARSA. Used in the right half of line two of the target's data block to indicate FP message not acknowledged on ARSA handoffs.
GSP	Ground Speed. Key used to display/inhibit ground speed of tracked target.
H	Class - Heavy IFR aircraft. Hold Mode Identifier (Key H-HOLD).
HIJ	Hijack. Tag given to a hijack target (7500) appearing in the target's data block.
HJ	Hijack. Used to indicate on the system alarm line that a hijack (7500) is being received.
HO	Handoff Key.
IB	Input Buffer Overflow. System alarm in OP List indicating 256 or more targets in the system.
ID	Identifier. Key used to display/inhibit the identifier for a tracked target.
IF	Inter-facility Failure. Used on the system alarm line to indicate a NAS interface failure or in the right half of line track data block to indicate a handoff failure.

INTERFACE	A circuit which connects the PIDP to a FAA ARTCC or a terminal facility allowing the controller to perform semi-automated inter-facility handoffs with the center or another terminal facility.
JACC	Japanese Air Control Center.
L	Limit. Key used to display/inhibit the display of the altitude filter in the OP List. Class - Heavy TCAS-equipped aircraft.
LDR	Leader. Key used to change leader direction.
MODEM	Device used to transmit and receive data between interfaced facilities (hardware).
MSAW	Minimum Safe Altitude Warning Function. (Site data internal to the system). Causes a tracked target to alarm (MSAW plus audible and blinking of data block) when track is at or below the minimum safe altitude.
MSG	Message. Key used to tag tracked target with message, enter a message in the OP List, amend a FP message, and to display/inhibit messages.
NAS	National Airspace System. A system of FAA terminal and USAF PIDP systems interfaced with FAA's en route facilities.
NAT	Not a PIDP Track. Used in data block of track in interfacility handoff status when PIDP does not have a valid target on the handoff.
NS	Non-selected. Display alarm which indicates that all non-selected targets are being filtered out.
NSL	Non-selected. Non-selected targets are those targets neither selected by code block nor tracked. The NSL key is used to define the NSL category in the various key sequences.
NXT	Next Code. NXT key is used to assign the next available beacon code of a specified code block.
OB	Output Buffer Overflow. Indicator alarm in OP List that indicates too many characters are being displayed. Data blanking will then take place to reduce the number of formats.
OD-58A/T	Indicator used to display TPX-42 data.

OD-69/T	Indicator used to display TPX-42 data.
OD-152A/T	An OD-58A/T indicator modified to display PIDP data.
OD-153/T	PIDP indicator.
OL-425/T	Computer rack used to drive up to 16 displays.
OLD	Old. Cessation of track updates of inter-facility handoff appearing in data block of target.
OP LIST	Operational Parameter List. Contains date/time group, barometric pressure, altitude filter limit, cursor bearing and strobe range (OD-153/T), codes and code blocks selected, next code blocks assigned, two 20-character messages, indicator conditions/alarms, and system conditions/alarms.
P	Key used to relocate the Preview Area on the display. Also used to center the <PEM>.
PC	Parity Check. Indicator alarm in OP List indicating an error in target input data.
<PEM>	Position Entry Module. The trackball, commonly called the <PEM>, is used to define (or capture) a target, move the tab areas and off-center the sweep or cursor origins.
PET	Performance Evaluation Test. A quality assurance test designed to verify that the program functions in accordance with design specifications. The PET must be accomplished prior to implementing a new program version.
PIDP	Programmable Indicator Data Processor.
PO	Point Outs.
PREVIEW AREA	The preview area is where the key sequences are “echoed” back from the computer. The preview area is used for editing the key sequence prior to using the terminator key.
PROGRAM	The computer instructions that enable the PIDP to function. Used interchangeably with “software” in this document. The PIDP program (software) is delivered to facilities on floppy diskettes.
QI	Quick-Look Inhibit. Used to inhibit the display of another indicator’s tracks.

QL	Quick-Look. Quick-Look is used to view another display's tracks either by indicator ID or individual track.
RPM	Revolutions per Minute.
RPOS	Reposition. Key used to remove a dropped or suspended target from the D/S List and reattach the format to its target.
S	Strobe or Sweep. Key used to off-center the sweep origin or display/ inhibit the display of the range strobe data on the OD-153/T display.
SA	Suspect Aircraft. Alarm indicator in OP List indicating a suspect aircraft (beacon code 1236) is being received.
SEL	Selected. Class of target that has its code or code block entered in the OP list. SEL key is used to define the SEL category in the various key sequences.
SITE UNIQUE DATA	Information that is unique to a particular base or air traffic control facility, i.e., field elevation, magnetic deviation, PRF, antenna coordinates and RPM, transition altitude, MSAW and reflection data. This information is placed on the PIDP operational program to tailor the standard software to meet specific area requirements.
SL	Select. Indicator alarm in the OP List that indicates that select targets are not being displayed.
SM	Simulation. Indicates in the OP List that the simulated program is being displayed and not live traffic.
SOFTWARE	The computer instructions that enable the PIDP to function. Used interchangeably with "program" in this document. The PIDP software (program) is delivered to facilities on floppy diskette.
SP1	Spare 1 key. Used to display bearing/range/time-to-fly between a track and any position on the display or bearing/range between any two positions on the display.
SP2	Spare 2 key. Key used to tag tracked target with an aircraft type, to display/inhibit aircraft type, and amend aircraft type on a flight plan or track.
SP3	Spare 3 key. Key used to input conflict alert limits, tag a tracked target with fix two, display/inhibit fix two, and amend fix two on a flight plan or track.

SPACE	When underlined, indicates a mandatory SPACE key to be entered.
SPEC	Special. Class of keys used to define special sequences.
SUS	Suspended. Key used to remove tracked formats from targets. Formats are placed in the D/S List.
T	Class - TCAS-equipped aircraft.
TCAS	Traffic Alert and Collision Avoidance System.
TG	Training Indicator Identifier. Appears in the OP List of a training indicator. It inhibits the display of AR/DE/EN identifiers.
TT	Track Table. System alarm in the OP List which indicates that there is no room for any additional tracks. System can handle 200 tracks.
U	Class - Heavy OTP aircraft.
V	Class - VFR aircraft.
VDD	Version Description Document. A document describing any operational or procedural changes in a new PIDP software version. The VDD is provided by HQ SSG OL-B when the new program version is released.
VDT	Video Display Terminal.
VFR	Visual Flight Rules
VSP	Video Signal Processor. Device that feeds target reports to the computer.
W	Class - Heavy VFR aircraft.
X	MSAW exempt by track.
Z	Turn on/off auto track.
⊕	Position Entry Module <PEM> position identifier.
⌗	<PEM> position identifier after MOV key is activated.
⊗	Used to indicate a 1200 beacon code target. No code will be displayed.

∃	Error or illegal key sequence (preview area).
< >	Defined as a class of keys or an entry sequence used in the keyboard command section.
___	Indicates, when underlined, a mandatory key stroke.
/\	Denotes use of the SPACE key is mandatory.
/	Virgule. Used in A/D List, D/S List, and track data block to indicate a duplicate beacon code exists in the PIDP data.
#	Pound sign. Appears in date block to indicate the target is excluded from conflict alert processing by code or code block.
ã	Track owner identifier number 10 through 19 where N is a number 0 through 9.
☒	Track owner identifier number 20 through 29 where N is a number 0 through 9.

INTRODUCTION

1. This handbook has been prepared for the air traffic controller using the Programmable Indicator Data Processor (PIDP). Included in this handbook are the necessary operating instructions for the system and the effect on the air traffic control environment.

2. The increased performance of the AN/TPX-42, resulting from installation of the PIDP, will permit a reduction in the amount of voice coordination required. The PIDP will increase system efficiency by allowing a controller to spend more time sequencing the traffic flow and less time on repetitive ATC communications.

3. The PIDP, when integrated with an ATC radar, provides a symbolic and alphanumeric display.

4. The PIDP provides:

a. Synthetic alphanumeric data in addition to the display provided by the AN/TPX-42. The alphanumeric data presented is of two types: a track format affixed to all beacon video replies and a tabular presentation of auxiliary data. As a minimum, the track format consists of a position symbol coincident with the beacon video. A full track format consists of a position symbol, leader, and a four-line data block containing aircraft identification, reported beacon code or aircraft type, reported altitude, aircraft class, ground speed, fixes, and a controller message. The tabular presentation of auxiliary data consists of operating parameter information, arrival/departure/en route data, drop/suspend data, and preview area data.

b. Processing of target reports in response to Mode “1”, “2”, “3/A”, or “C”. Two hundred targets can be tracked simultaneously with automatic or manual (controller-initiated) track acquisition.

WARNING: TPX-42 defruiter must be on to display targets replying on Mode “C” only.

c. Receipt of abbreviated NAS flight plans.

d. Recognition and identification of reflected targets.

e. Intra- or inter-facility handoff of tracked aircraft.

f. Special code detection and display of alarm features for all 7700 (emergency), 7600 (communications failure), and 7500 (hijack) target reports. This feature may be inhibited for targets outside the facility auto-acquire area by master keyboard entry.

g. Capability for controller to view the full track format of a specified target, or all tracked targets at any other active indicator positions. This function is called “quick-look”.

h. Manual suppression of displayed data via controller-initiated keyboard entries as follows: Non-select targets outside the facility conflict alert area, selected data categories within the Operational Parameter List, display of Arrival/Departure/En Route and Drop/Suspend Lists, and selected data elements within the target format.

i. Automatic suppression or blanking of displayed data during data overload conditions.

j. Off-centering of display sweep and cursor origin.

k. Two keyboards per indicator which can function simultaneously. This provision enables one controller to "work" active traffic and another controller to perform flight data entry/modification, handoffs, etc.

l. Assigned altitude monitoring of selected tracked targets for a deviation of 300 feet or more from assigned or present altitude.

m. Detection of "out-of-limits" conditions which result in an audible and visual alarm (associated with the offending target format) when a tracked target is at or below a preset, site-adapted, minimum altitude limit.

n. Capability to display the bearing/range between any two positions on the indicator. If the first point corresponds to the position of a track, time-to-fly to the second point is also displayed.

o. Capability for the controller to accept or reject a beacon code change.

p. Detection of conflict alert conditions between a tracked target and another target resulting in audible and visual alarms for as many as ten scans or until the conflict is resolved.

q. Send and receive local flight plans to FLIPS.

r. Can receive secondary target messages from the ARTCC if the radar is not functioning. This feature requires a "box" to generate the sweep and timing for the PIDP.

s. Up to three uncontrolled emergency tracks will have their bearing and range displayed in the OP List to aid controllers in locating them.

t. Capability of a controller to inhibit the display of tracks owned by another indicator. This function is called "quick-look inhibit".

u. Capability to rotate the leaders of targets individually to relieve data block overlaps.

v. The PIDP version number can be displayed in the preview area if requested.

w. Local flight plans having duplicate ACID's and/or beacon codes will be accepted under the same guidelines used for NAS duplicates.

x. A flight plan can be displayed as a data block over a satellite airport indicating the airport is in use for an IFR operation.

y. The indicator ID letter can be displayed in the preview area if requested.

z. A satellite airport closed for IFR operations can have a special symbol displayed on the indicator. Up to six airports can be designated at one time.

aa. Trail dots can be displayed on all targets within the auto-acquire area or on tracked targets only.

bb Can check the MSAW altitude in a particular area of the display by keyboard command. The value will be printed in the preview area.

cc. Validation of the MSAW alarm function.

dd. Position Sign On.

CHAPTER 1 - NORMAL OPERATING PROCEDURES

1-1 Introduction

The PIDP must be loaded and initialized before it is ready to display the various types of targets. These procedures will be discussed in Chapter 3, PROGRAM LOAD AND SYSTEM INITIALIZATION. In Chapter 1, there is a description of the equipment and its configurations, the operational functions permitted, target categories, special replies, system features, and keyboard commands. Chapter 2 explains special operating procedures.

SECTION 1 - EQUIPMENT

1-2 System Components

The PIDP consists of the following equipment:

a. The data processing group which consists of a computer, floppy disk drive, two 486 computers, and modems (when interfaced with the NAS or Japanese ACC). One of the 486 computers is the system console, and the other one is to run the FLIPS program. The system console at the Japanese sites, will have installed a Sync/Async Dual Channel Communication Card to interface the PIDP and Japanese Centers. The computer will drive up to 16 indicators.

b. OD-153/T indicator group which consists of a display, indicator control box, <PEM>, and one or two keyboards.

c. OD-152A/T indicator group which consists of a display, indicator control box, <PEM>, and one or two keyboards.

1-3 Data Processing Group Operating Controls

In loading and initializing the system, the controller needs to be familiar with the control of four items:

a. Computer.

b. Hard Disk/Floppy Disk Subsystem.

c. System console.

d. FLIPS console.

1-4 Computer

The computer front panel has various controls and indicators.

a. POWER OFF-ON - Press ON to power up the computer. Press OFF to power down the computer.

b. SYSTEM BOOT-RST - Press RST to reset the computer before reloading the program.

c. CONSOLE RST - Press this switch to activate the System Control Program at the console.

d. LOCK OFF-ON - Press ON to lock out the console and system switches. Press OFF to enable the console and system switches. The switch should stay in the OFF position.

e. PWR - Illuminates when the computer power supply voltages are normal.

f. BATT - Illuminates when the computer is powered by the battery back- up unit.

g. RUN - Illuminates when the CPU is expecting instructions.

h. TEST ENABLED* - A momentary contact switch for testing battery status. When TEST is pushed, one of the following lights will illuminate:

(1) ACTIVE* - Illuminates when TEST is pushed to indicate the battery status is satisfactory.

(2) BATT CHECK* - Illuminates when TEST is pushed to indicate the battery status is not satisfactory.

*CAUTION: The battery back-up unit can be destroyed by depressing the TEST switch.

1-5 Hard-Disk/Floppy Disk Subsystem

1. The floppy disk drive is used to load the operational program, as well as the maintenance diagnostics, into the computer. The floppy disk drive has the following operator controls and indicators:

2. Controls:

a. ON-OFF - Switch to turn on the floppy disk drive.

b. STATUS - illuminates when the power is on.

c. READ - Illuminates when data is being transferred to or from the disk.

d. PUSH BUTTON - Releases the floppy disk from the floppy disk drive. DO NOT RELEASE DISK WHEN READ LIGHT IS ON.

1-6 Systems Console

The systems console is used for hardware and software maintenance and to load the operational program.

1-7 FLIPS Console

The FLIPS system is used to input local flight plans, training strips, print local strips, do reports, and store satellite airport data.

SECTION II - CONFIGURATION

1-8 Single Processor System

PIDP facilities have a single MV-7800XP processor with up to 16 indicators.

1-9 External Interface

a. Systems, interfaced with a FAA ARTCC, allow the controller to perform interfacility handoffs. Flight plan information is received from the ARTCC. When a departure becomes airborne, a departure message is automatically sent to the NAS system making manual entry on the FDS unnecessary. CENRAP provides secondary targets from the Center's radar to be displayed when the Air Force radar is inoperative. The FAA is the circuit manager for the interface that connects PIDP to the NAS system.

b. Systems, interfaces with a Japanese ACC, allow the controller to perform interfacility handoffs. Flight plan information is received from the ACC. When a departure becomes airborne, a departure message is automatically sent to the Japanese system making manual coordination unnecessary.

1-10 Terminal Interface

Systems, interfaced with ARTS or other PIDP facilities, permit the controller to perform semi-automated handoffs with those facilities. Up to four different PIDP/ARTS may be interfaced with one PIDP facility. Each of these adjacent terminal facilities will be assigned a number for handoff identification purposes. Each of these adjacent terminal facilities may have up to four different fix pairs, which will be assigned a letter (A-D) for handoff identification purposes. Each PIDP facility interfaced with ARTS may handoff to a specific sector of the ARTS. Each ARTS sector will be assigned a letter (A-Z) for handoff identification purposes.

1-11 FLIPS Interface

The FLIPS interface allows facilities to enter local and training flight plans and print strips. Flight plans and local tracks started on the PIDP will be forwarded to FLIPS for storage and a printed strip if desired. Training strips created on the FLIPS and forwarded to PIDP will be assigned current time and be sent only to displays designated as training. (If there are no training displays designated, the training flight plans will be ignored.) Certain reports can be generated using the FLIPS. Flight plans initiated on the PIDP may not be retained by PIDP. They will be forwarded to FLIPS, and FLIPS will send them to PIDP at a set parameter before activation time. Flight plan information received by PIDP from Japanese ACC will be forward to FLIPS for storage and strip printing.

1-12 Facility Configuration

During installation of PIDP, the system's hardware is configured according to the total number of displays installed. These displays are identified by letter designators. The letter designators are used for the following:

a. As a position symbol for a controlled tracked target on non-controlling displays. If the position symbol is A, indicator A controls the target.

b. As a designator during a handoff sequence. The handoff message will specify a from/to relationship using letter designators.

c. For identifying the display for configuration of arrival, departure, en route, and the master display.

d. For special functions such as quick look and diagnostic testing.

1-13 Arrival-Departure-En Route-Training Designation

Flight plan data will be sent to all displays regardless of the type (arrival, departure, or en route) and display AR, DE, or EN. "Training" will receive all training flight plans regardless of type. When the program is loaded or restarted, all displays will be designated AR, DE, and EN. Indicators may then be designated, with the reconfiguration command, to have any combination or none of these three functions. The training designation overwrites the others.

1-14 Master Designation and Display Functions

The display that has supervisory control is the master. When the program is loaded or restarted, the first active display will be designated as the master. The master has the following special features:

a. Must enter the barometric pressure followed by the year, month, day, and time when the program is first loaded or restarted.

b. Can change the barometric pressure.

c. Can change mode of operation to live or simulation.

d. Can initiate a "master message" that is displayed on all indicator groups.

e. Can modify A/D entry time.

f. Can modify the day and time.

g. Can enter or delete up to eight arrival-departure display ID(s)/ beacon code blocks/call sign prefixes for auto track functions.

h. Can turn the auto track function on or off.

i. Can reconfigure master, arrival, departure, and en route displays.

j. Can enter, change or delete a code or code block to be exempted from MSAW processing.

k. Can enter, change or delete a code or code block to be excluded from conflict alert processing.

l. Can enter, change or delete the altitude, range and number of sweeps for conflict alert limits.

m. Can purge all NAS flight plans.

n. Can modify NAS and PIDP IDs.

o. Can restore the data base from FLIPS.

p. Can inhibit the FLIPS interface so the FLIPS program can be loaded/ reloaded.

q. Cannot be placed in diagnostic test mode until the master function is reassigned unless there is no operational NAS interface and no other indicators active.

r. Can put another display in diagnostic test mode.

s. Is automatically reassigned to the first active non-training display when the master indicator becomes inactive.

t. If a display becomes inactive, the master can reassign control of all tracks owned by the inactive display to any active display. Special local flight plans, which have been entered using the TRK key, will also be reassigned by the master.

u. Can inhibit emergency track start outside the auto-acquire limits.

v. Cannot be designated as a training display.

w. Can turn the CENRAP feature on or off. CENRAP not available on systems interfaced with Japanese ACC.

x. Can turn the automatic code change feature on or off.

1-15 Keyboard Functions

The keyboard keys correspond to the types of functions:

a. The first group, colored white, contains the alphabet and numeric block of keys. Some of the alphabet keys have a dual purpose and are also used to specify tabular display areas. Certain keys in the numeric block are also used to define leader/format direction.

b. The second group, colored yellow, contains the format control keys, data entry identifiers, track control, editing keys, entry and terminator keys, and track and special (SPEC) keys.

c. A dimmer control is used to provide variable illumination of the keyboard keys.

1-16 Position Entry Module

The <PEM> trackball controls the movement of ⊕ or ⌗ on the indicator screen. The ⊕ or ⌗ moves in the direction that the trackball is moved. The ⊕ or ⌗ and the push buttons on the OD-153/T located near the trackball are used to:

a. Define a particular target when the ⊕ and HOOK key are used.

b. If the <PEM> is not located directly over a target, HK will appear in the preview area.

c. Specify a position on the indicator to which the sweep origin will be moved when the ⊕ and the HOOK key are used.

d. Specify a position on the indicator to which the cursor origin will be moved when the ⊕ and the HOOK key are used.

e. If cursor or sweep needs to be moved to a point where an aircraft is currently located, the HOOK key can be pressed, while the ⊕ is away from the target, then moved to the needed position.

f. Specify where one of the tabular areas is to be moved when the ⌗ and the MOV keys are used.

g. On the OD-153/T only, change the bearing of the cursor when BEARING ON is illuminated.

h. On the OD-153/T only, change the range of the range strobe on the cursor when STROBE ON is illuminated.

1-17 Indicator Control

The indicator control replaces the TPX-42 control indicator C-8625/T (commonly known as the "A-BOX"). Since code filtering and altitude filtering are now done via the keyboard, the new control box performs only the following functions:

a. Selection of mode interface, "1C", "2C", or "3C", and mode readback from the TPX-42.

b. TPX-42 system performance, visual warning and audible alarm.

c. Bracket and character (format) intensity controls.

d. Computer engage/disengage to electrically connect or disconnect the display to/from the computer.

e. Bracket video ON/OFF switching.

f. Lamp intensity control for the lamps of the control box and <PEM> push buttons.

g. Lamp test for the lamps of the control box and <PEM> push buttons.

1-18 Indicators

Two types of indicators are used in the PIDP. The first is a modified version of the existing TPX-42, OD-58A/T, and the OD-152A/T. The second is the OD- 153/T which replaces the existing OD-69/T indicator used with the FPN-47/GPN- 20 radar.

1-19 Indicator Group OD-152A/T

The OD-152A/T has the same front panel controls and layout as the OD-58A/T and all the controls function the same except:

a. The sweep and cursor are now off-centered by means of the keyboard/ <PEM> when the computer is engaged.

b. Character size is fully adjustable.

1-20 Indicator Group OD-153/T

1. The OD-153/T has a front panel layout similar to the OD-152A/T and has the following special features:

a. Fully adjustable character size.

b. Cursor and sweep off-centering by means of the keyboard/<PEM> when in engaged or disengaged mode.

c. Cursor bearing and range strobe controlled by the <PEM> trackball.

2. Table 1-1 lists the controls of the OD-153/T and the functions they perform.

Table 1-1 OD-153/T Front Panel Controls

CONTROL	FUNCTION
RANGE MARKS	Used to adjust range mark intensity.
RANGE STROBE	Used to adjust range strobe intensity on the cursor.
CURSOR INTENSITY	Used to adjust the intensity of the cursor.
SWEEP INTENSITY	Used to adjust the intensity of the sweep.
PANEL LIGHTS	Used to adjust the illumination of the edge lit panels.
FOCUS	Used to adjust the focus of the sweep and characters.
COMPASS ROSE LIGHTS	Used to adjust the illumination of the compass rose lights.
SPARE VID 1	Used to adjust the intensity of spare video 1. NOT USED.
SPARE VID 2	Used to adjust the intensity of spare video 2. NOT USED.
NORMAL VID	Used to adjust the intensity of normal radar video.
MAP VID	Used to adjust the intensity of the video map.
MTI INTER	Used to control the MTI interval from 6 to 60 NM.
MTI VID	Used to adjust the intensity of MTI radar video.
BCKGND VID	Used to adjust the intensity of background radar (normal) video.
RADAR VIDEO	Used to select the mixing mode of video: 1. Normal video only. 2. MTI video only. 3. Normal and MTI video mixed, controlled by the MTI interval control.

CONTROL	FUNCTIONS
CURSOR DECENTER/CENTER	Used to select the cursor to be: 1. Off-centered (DECENTER); controlled by the keyboard. 2. No cursor (OFF). 3. At screen center (CENTER).
SWEEP OFF-CENTER/CENTER	Used to control the sweep origin; whether at screen center or off-centered by means of the keyboard.
CHAR SIZE	Used to control the size of the alphanumeric characters.
RNG (NM)	Used to select the following ranges: 7.5-15 VAR NM 15 NM 15-30 VAR NM 30 NM 30-60 VAR NM 60 NM 60-120 VAR NM 120 NM 120-240 VAR NM 240 NM
VARIABLE RNG	Used to adjust the range between the lower and upper limits when on a variable (VAR) range scale.
PRETRIG RADAR/BEACON	Used to select the trigger used on the display. When used with a radar, it should be set to RADAR. Should radar become inoperative, BEACON can be used for emergency restoration of the secondary radar.
STC 1-2-3-4	Used to select 1 of 4 sensitivity time constants for the GPN-12 radar.
RCVR GAIN 1-2-3-4-5-6	Used to select 1 of 6 receiver gains for the GPN-12 and GPN-20 radar's.
NORMAL VID ENHAN	Controls the GPN-12's normal video enhance.
NORMAL VIDEO LOG FTC	Controls the GPN-12's normal video log fast time constant.

NORMAL VIDEO BACKGND	Controls the GPN-12's normal video background channel.
CONTROL	FUNCTION
MTI VIDEO ENHAN	Controls the GPN-12's MTI video enhancer.
MTI VIDEO LOG FTC	Controls the GPN-12's MTI video log fast time constant.
MTI VIDEO BACKGND	Controls the GPN-12's MTI video background channel.
RCVR CONTROL	Illuminates when the indicator has control of the GPN-12 or GPN-20's radar receiver controls.
GPN-12/20 PUSH BUTTON	Used to complete circuit for radar receiver controls. It is only active if an indicator has control (i.e., RCVR CONTROL light illuminated).

SECTION IV - DATA AREAS

1-21 Introduction

Data areas are used to display keyboard, system, and tabular data on the PIDP indicator and consist of:

a. Preview Area.

b. Operational Parameter (OP) List.

c. Drop/Suspend (D/S) List.

d. Arrival/Departure (A/D) List.

NOTE: Should any of the data areas be placed partially off screen, display off screen blanking will remove every other line from view. At a dual keyboard indicator, the MOV function can only be accomplished with one keyboard providing input. Simultaneous use of the keyboards prior to completing the MOV function will result in the <PEM> symbol being displayed in a reversed format from that described in paragraph 1-16 (circle displayed when square should be displayed). This can also result in an erroneous <PEM> position being transmitted to the computer. Should this condition occur, it can be corrected by disengaging and engaging the indicator control box.

1-22 Preview Area

The preview area (Figure 1-1) displays the keyboard messages entered by the air traffic controller and permits editing of the data prior to entering it into its processor. Each keyboard may enter up to 39 characters into the preview area. A flight plan initiate key sequence may contain up to 45 characters. (They will not all be displayed at the same time.) Though normally located at the bottom center of the indicator, either preview area may be moved by the key sequences: MOV <PEM> P

Figure 1-1 (OP) Operational Parameter List

*39 CHARACTER PREVIEW AREA USED FOR
EDITING ALL KEYBOARD ONE INPUTS.

*39 CHARACTER PREVIEW AREA USED FOR
EDITING ALL KEYBOARD TWO INPUTS.

NOTE: * symbol is used to indicate next character position in preview area. Line two of each preview area will always start with the 21st character input.

1-23 Operational Parameter (OP) List

1. The operational parameter list (Figure 1-2) consists of system parameters, status alarms, current load number, and operator entered messages for:

a. System time (day/hour/minute/second), barometric pressure, and altitude filter limits (lower and upper) displayed on line one.

b. Cursor and range strobe readouts for the OD-153/T only are displayed on line two.

c. Codes or code blocks selected by the air traffic controller (and therefore becoming SEL class targets) are displayed on line three.

d. The next code of next code blocks which have been set up by the air traffic controller are displayed on line four. Up to three uncontrolled, unacknowledged emergency's bearings and ranges will be displayed on the line instead of the next codes as applicable.

e. A 20-character master message is displayed on line five. A 20-character indicator message is displayed on line six. The current load number and site ID (a 15-character master message) is displayed during initialization and remains until dropped by the master display. Airport data or emergency airport data requested via keyboard from FLIPS will be displayed in place of the master and display messages until cleared by keyboard action.

f. Overload conditions (Tables 1-2 and 1-3) as well as operator indications such as quick look and emergency status are displayed on lines seven and eight.

2. Though normally located at the top center of the indicator, the OP List may be moved about the indicator at the operator's discretion by using the following key sequence: MOV <PEM> OP

1-23-1 OP List Data Entry Procedures

1. Procedures listed in the following paragraphs allow the air traffic controller to enter and/or modify the following elements in the OP List:

a. Altitude Filter.

b. Select Codes or Code Blocks.

c. Next Code Blocks.

d. Master or Display Messages.

e. System Barometric Pressure.

f. System Day and Time.

2. Included in the entry procedures is a brief description of the control, the keyboard format requirements, any special logical requirements, and the various error conditions for incorrectly entered data.

Figure 1-2 Display for Operational Parameter List

1. T 30 13:28:05 B 29.92 A 000-999
2. C 000.0 S 000.0
3. 5137 6666 12 4605 6201
4. NX 1001 2001 3001 4001
   or
   045022 250100 095055
5. LOAD 62P1VPS1
6. VOR OUT
7. AI NS SL OB AD DS QL A AR DE EN
   or or
   QI TG
8. EI FP TT IB HJ CM EM PC SA IF BT M=A
   or or or or
   FL CN FF SM

LEGEND:

1. Date-Time Group (day, hour, minute, second). Barometric pressure (range 28.00 to 31.99). Altitude filter lower and upper limits (range 00000 to 99,900 feet) in hundreds of feet.

2. Cursor bearing and range strobe readouts (OD-153/T only).

3. Discrete codes and code blocks selected.

4. Next code of next code blocks assigned to this display. If all the codes in the block are in use, "FULL" will replace the code. The three-digit bearing followed by the three-digit range of up to three uncontrolled unacknowledged emergencies will replace the next codes as required.

5. 20-character master message line. During initialization, 15 characters of this area are used to display current load number and base ID at all displays. This message can be dropped only by the master display. This message, as well as the indicator message, can be overwritten by requested emergency airport data or airport data.

6. 20-character indicator message line. Available at all indicators.

7. Indicator conditions and alarms. If TG is displayed, AR, DE, and EN are not displayed. QL and QI will alternate as appropriate.

8. System conditions and alarms (last entry indicates the master console).

Table 1-2 System Alarms

ALARM	MEANING
EI	Emergency track starts are inhibited outside the auto-acquire area.
FP	Maximum number (75) of flight plans is stored in the system.
FL	FLIPS interface has been turned off by the master. Will be overwritten by FP if the Flight Plan Table is full.
TT	The maximum number (200) of targets is being tracked.
IB	A target overload of over 256 targets is occurring.
CN	CENRAP function is enabled.
HJ	A hijack (7500 code) target is in the system.
CM	A communications failure (7600 code) target is in the system.
EM	A civil emergency (7700 code) or military emergency target is in the system.
PC	Bad data is entering the computer from the video signal processor (VSP) or the T-4 simulator.
FF	A failure in the FLIPS interface exists. Will be overwritten by the PC if parity errors exist.
BT	The VSP test target is in the system. Will be overwritten by SM if the system is in simulation
SA	A suspect aircraft (1236) is in the system.
SM	The simulation test program is being displayed instead of live target data.
IF	A failure in the NAS interface exists.

M= Indicates which display is the master.

Table 1-3 Indicator Alarms

ALARM	MEANING
AI	Display of targets outside the conflict alert area are being inhibited.
NS	Display of non-selected targets is being inhibited.
SL	Display of selected targets is being inhibited.
OB	A display message overload (data blanking) is occurring.
AD	Display of the A/D List is inhibited.
DS	Display of the D/S List is inhibited.
QL (display ID)	Indicates which display is being quick looked.
QI (display ID)	Indicates which display's tracks are not being displayed. (Alternates with QL (display ID).)
AR	Indicates an arrival scope.
DE	Indicates a departure scope.
EN	Indicates an en route scope.
TG	Indicates a training scope. AR, DE, and/or EN will not be displayed.

1-23-2 Altitude Filter Control

The altitude filter command allows the controller at a particular display to enter altitude limits for that display. This will inhibit the display from receiving untracked targets (except for special reply codes) that are outside the limits set. This feature is similar to that of the altitude filter on the TPX-42's A-Box.

EXAMPLE:

Command	Limits	Execute	Remarks
OP	100 ^ 180	ENTER	Receive all tracked and special code targets plus untracked targets between 10,000 and 18,000 feet.

Special Requirements:

1. When the system is first activated, the limits are automatically set for 000-999.

2. The lower altitude limit must be inserted first. All three digits for each limit must be used.

Results:

The altitude limits entered will appear in the display's OP List (line one) after "A". Now, the only targets outside these set limits that will be displayed are those tracked or quick looked by this display, those uncontrolled tracks for which this display is a possible owner, and those targets on special reply codes. Those targets without Mode "C" will be forced through, and have a non-select or select symbol only if untracked.

Errors:

Error Condition	Preview
Altitude limits entered in the wrong order - upper limits entered first.	"INVALID!"

1-23-3 Override/Reinstate The Altitude Filter

The AA command allows the controller of an individual display to override the altitude filter limits for the display and thereby view all targets regardless of altitude. To reinstate the filter limits, the AA command is repeated. Those targets not reporting Mode "C" will have their non-select or select symbol only.

EXAMPLES:

Command	Remarks
AA	Override filter limits on controller's display.
AA	Reinstate filter limits on controller's display.

Special Requirements:

This command is a flip-flop (on-off, off-on) type command. The first time it is entered, it will override the filter limits. The next time it is entered, it will reinstate the altitude filter limits.

Results:

The first time the command is entered, any altitude limits the controller has displayed will be replaced by "AA" in line one of the OP List. The next time the command is entered, the controller's display will reinstate the set altitude filter limits. Then the only targets outside the set limits that will be displayed are those tracked or quick looked by the display, those uncontrolled tracks for which the display is a possible owner, and those targets on special reply codes.

Errors: None.

1-23-4 Select Code Control

The select code command allows the controller of a particular display to select codes or code blocks of targets and to allow the control of formats, independent of the tracked and non-selected targets. Further explanation of the selected target category is contained in paragraph 1-29. This feature is similar to the code thumbwheels of the TPX-42's A-Box.

EXAMPLES:

Command	Codes to Control	Execute	Remarks
OP	2460	ENTER	Make target 2460 select on the display.
OP	33	ENTER	Make targets in code block 3300 select on the display.
OP	2460	DROP	Make target 2460 non-select on the display.
OP	33	DROP	Make targets in code block 3300 non-select on the display.

Special Requirements:

1. The code blocks entered must be beacon code values (0-7).

2. Only one code or code block at a time may be entered.

3. A maximum of five codes/code blocks may be selected.

Results:

If all the requirements have been met, the code/code block selected will appear in the controller's OP List. Targets with this code or within this code block will now be displayed in the general select format currently set on the display. If the controller drops a code or code block from selected status, the value entered will be dropped from the display's Select Code List; and all targets of that code or code block will now be in non-select format.

Errors:

Error Condition	Preview
Code entered was not a beacon code value.	"BAD CODE"
Code entered into the Select List is already there.	"INVALID!"
Code to be deleted from list is not there.	"NO MATCH"
Maximum number of codes (five) is already input.	"NO ROOM"

1-23-5 Message Control

The message control command allows each controller to display comments such as weather data and NOTAMs in the message area of the display. It also allows the controller of the master display to place messages on all PIDP displays. The 20-character master message is displayed on line 5 of the OP List message area; the 20-character indicator message is displayed on the line following the master message. The master and display messages can be overwritten by airport data requested from FLIPS. When the airport data is removed, the master and display messages will be restored.

EXAMPLES:

Command	Message	Execute	Remarks
SPEC MSG	WEATHER ADVISORY	ENTER	To enter a master message.
SPEC MSG		DROP	To delete a master message.
OP MSG	ILS OUT	ENTER	To enter a display message.
OP MSG		DROP	To delete a display message.

Special Requirements:

1. During initialization, the current load number is displayed as a 15- character master message. This message may be dropped through normal master keyboard sequence. Messages entered before the load message is dropped are displayed immediately following the load message.

2. If the controller enters a master message, this message will be displayed on all indicators.

3. A maximum of 20 characters is allowed for each message. If more than 20 are used, the message will be cut short after 20 characters are in the message area. If the message area is full, no more messages may be entered until the current message is deleted/dropped.

4. When the master message is dropped, it is deleted from all displays.

5. Messages (both master and display) must be dropped before they can be changed.

Results:

A message will appear in the message area of the OP List on the display. The master message will be in the OP List of all displays. An indicator message will be displayed on the line following the master message in the OP List of a single display. If the master message is dropped, the display message will

remain until dropped. New master or display messages entered while airport data is being displayed will not be displayed until the airport data is removed.

Errors:

Error Condition	Preview
Message line already contains 20 characters prior to this entry.	"NO ROOM!"

1-23-6 Set System Barometer

The barometric pressure command allows the controller of the master display to enter a new barometric pressure. This will automatically correct all Mode "C" altitudes that are below the transition altitude and has the same function as the switches on the TPX-42's B-Box. To ensure the system starts with the current setting, the barometric pressure must be entered prior to the date and time when the system is initialized.

EXAMPLE:

Command	Set Barometer	Execute	Remarks
SPEC	29 ^ 83	ENTER	Set system barometer to 29.83
	29 ^ 96	ENTER	Enter barometric pressure at initialization.

Special Requirements:

Command must be entered at the master display.

Results:

This command will change the system barometric pressure to the newly input one. The altitude correction factor will be changed to the new value. The new barometric pressure will appear in the OP List of all displays except those having the barometric readout inhibited.

Errors:

Error Condition	Preview
New barometric value entered was not within limits less than 28.00 or greater than 31.99)	"INVALID!"
Attempt is made to change the barometric pressure from a non-master display.	"MST ONLY"

1-23-7 Change System Time

This command allows the controller of the master display to change the day and time.

EXAMPLE:

Command	Set Time	Execute	Remarks
SPEC	18 ∧ 20 ∧ 30	ENTER	Set day to 18; hour to 20; minute to 30.

Special Requirements:

1. Command must be entered at the master display.

2. Any change to the system time resets seconds to zero.

3. Care must be taken to consider the effect of large changes in system time on the handling of flight plans and the A/D List entries with times near or between the new and old system times.

4. Where a time change will take the date to a new month due to a power failure, initialization of the system must be accomplished (See paragraph 3-5).

Results:

The result is to set the clock in the system to the newly entered time. The new time immediately appears in the OP List of all displays except for those displays currently inhibiting the time. The seconds are reset to zero.

Errors:

Error Condition	Preview
Invalid time - where hours are greater than 23, minutes are greater than 59, days less than 01, or days greater than the maximum number for the current month.	"BAD TIME"
Attempt is made to change the system day/time from non-master display.	"MST ONLY"

1-23-8 Initialize System

After a program start or restart, the prompt BAR will appear in the preview area of the master display indicating the system is ready to accept the current barometric pressure setting followed by the year, month, day, hour, minute.

EXAMPLE:

Command	Execute	Remarks
29 ∧ 96	ENTER	Set barometric pressure to 29.96
94 ∧ 11 ∧ 18 ∧ 20 ∧ 30	ENTER	Set year to 94 (1994), month to 11 (November), day to 18, hour to 20, minute to 30

Special Requirements:

1. Command must be entered at the master display.

2. No other key sequences can be entered from any other keyboard until the master display has entered the barometric pressure and the year, month, day, hour, minute.

3. Command can only be used as the first command after a restart or program load.

Results:

The result is to set the barometric pressure and the year, month, day, hour, minute from the master display which initializes the system. The barometric pressure, date, and time immediately appear in the OP List of all active displays in the system.

Errors:

Error Condition	Preview
Attempt is made to enter the system initialization from a non-master display.	"MST ONLY"
New barometric value entered was not within limits.	"INVALID!"
Invalid year/month - where year is fewer than two digits, or month is greater than 12 or less than 01.	"INVALID!"
Invalid day/time - where days are greater than the maximum number for the current month or less than 01, hours are greater than 23, or minutes are greater than 59.	"BAD TIME"
If other than a number is entered.	" ∃ "

1-23-9 OP Data Drop

This command allows the controller of a particular display to:

a. Delete a non-master message. This does not include airport data messages requested from FLIPS.

b. Remove all select codes or code blocks.

c. Reset the altitude filter to 000-999.

EXAMPLE:

Command	Execute	Remarks
OP	DROP	Delete from the display from which the command is entered any message and all select codes. Set altitude limits to 000-999 feet.

Results:

The display message and select codes will be deleted, and the altitude limits will be set to 000-999.

Errors: None

1-23-10 OP List Data Restoration

1. The A/D List, D/S List, and target elements (non-select, select, tracked) will be displayed if not inhibited. The altitude limits will be set to 000-999. All items in the OP List, except for the master message, satellite airport data, cursor/strobe information, and alarms, may be displayed with the command: OP ENTER.

2. Individual items of the OP List may be suppressed or restored, with the exception of the master message and alarms, by repeating a specific command listed below.

EXAMPLES:

Command	OP Format	Execute	Remarks
OP	T		Inhibit/display time.
OP	B		Inhibit/display barometer.
OP	L		Inhibit/display altitude limits.
OP	F		Inhibit/display select codes.
OP	MSG	ENTER	Inhibit/display messages, except for master message or airport data.
OP	C		Inhibit/display cursor bearing (OD-l53/T only).
OP	S		Inhibit/display strobe range (OD-153/T only).
OP	N		Inhibit/display beginning next code blocks.
OP	D		Inhibit/display target trail dots.
TRK	D		Inhibit/display track trail dots.

Special Requirements:

1. Cursor and range strobe functions are valid for the OD-153/T indicator only.

2. To redisplay the bearing and strobe information, the controller must press the STROBE ON and BEARING ON push buttons twice.

3. The master message, satellite airport message, and alarms cannot be inhibited.

4. Trail dots are inhibited at initialization. Activating target trail dots will turn off track only trail dots, and activating track only trail dots will turn off target trail dots. Trail dots will not be reactivated if they are turned off due to display overload.

Results:

If all the special requirements have been met, the items in the OP List, which have been inhibited, will be displayed. If the A/D or D/S List has been inhibited, it will be displayed. All items of non-select, select, and tracked targets will be displayed. Altitude limits will be set to 000-999.

Errors:

Error Condition	Preview
Controller on the master display tried to inhibit the master message.	"INVALID!"

1-23-11 FLIPS Interface ON/OFF

This command allows the controller of the master display to turn off/turn on the FLIPS interface.

EXAMPLE:

Command	Execute	Remarks
SPEC	F	Turn off/turn on FLIPS interface. FL will be displayed/not displayed in the OP Area.

Special Requirements:

Command must be entered at the master display.

Results:

No messages will be sent to FLIPS, and the interface will be disabled until the command is entered again.

Errors:

Error Condition	Preview
Attempt is made to enter the command from a non-master display.	"MST ONLY"

1-23-12 Satellite Airport Data

The FLIPS can store up to two 20-character lines of airport data to be sent to PIDP for each airport. This airport data will be displayed in the OP area in place of the master and display messages. When deleted, the master/display messages are restored.

EXAMPLE:

Command	Execute	Remarks
<PEM> E	OP	FLIPS will send the data for the runway closest to the PEM coordinates.
<PEM> 8	OP	FLIPS will send the data for the runway closest to the PEM coordinates that is at least 8000-feet long.
<PEM> 6	OP	FLIPS will send the data for the runway closest to the PEM coordinates that is at least 6000-feet long.
I OP (Aprt ID or Fix ID)	ENTER	FLIPS will send the data for the requested runway or fix.
C	OP	Remove the airport data from the OP area and restore the master/display messages.

Special Requirements:

1. Runway/airport/fix data must be stored in FLIPS.

2. The FLIPS interface must be active.

Results:

If the FLIPS interface is active, a forty-character message (two lines, 20 characters each) will be displayed in place of the master/display messages. If the command is to delete the airport data from the display, the master/ display messages will be displayed again.

Errors:

Error Condition	Preview
FLIPS interface failure	"INACTIVE"

1-23-13 Read Load Number

This command allows the controller to display the current operational load number in the preview area.

EXAMPLE:

Command	Execute	Remarks
OP	V	Display the current load number in the preview area, i.e., "LOAD54P2"

Special Requirements: None.

Results:

The current load number is displayed in the preview area until cleared using the CLEAR key or typing a new command.

Errors: None.

1-23-14 Read Indicator ID

This command allows the controller to read the letter ID of the indicator into the preview area.

EXAMPLE:

Command	Execute	Remarks
OP	I	Display the ID of the current display in the preview area, i.e., "INDICATOR C"

Special Requirements: None

Results:

The ID of the current indicator is displayed in the preview area until cleared using the CLEAR key or typing a new command.

Errors: None.

1-24 Drop/Suspend (D/S) List

1. The Drop/Suspend (D/S) List, shown on the left-hand side of Figure 1-3, consists of a list of tracked targets which have been removed from the display by controller intervention (suspended) or which have stopped reporting for more than four consecutive antenna scans (dropped). Up to ten dropped or suspended targets may be displayed in the D/S List. The D/S List displays a numeric character (1-0) to indicate the line number, the target's <ACID>, the target's beacon code, and a S or D to indicate whether it is a suspended (S) or dropped (D) target. Though normally located at the left center of the indicator, the D/S List may be moved about the display at the controller's discretion by performing the key sequence: MOV <PEM> D.

2. If a controller wishes to inhibit the display of the D/S List or redisplay it after it has been inhibited, perform: D ENTER.

NOTE: When display of the D/S List is inhibited, the alarm "DS" will appear in the OP List.

3. Non current or unusable data may be deleted from the D/S List using any of the following methods:

a. <ACID> RD DROP.

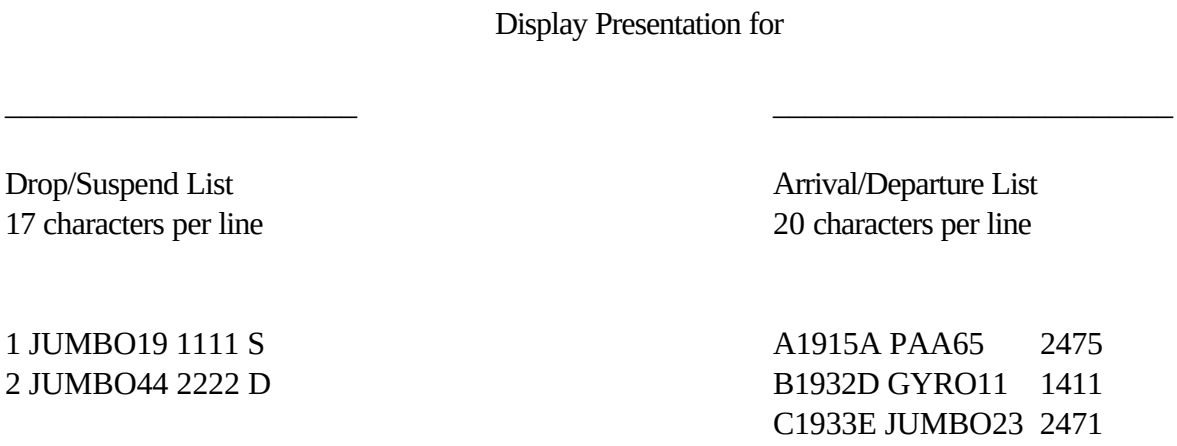
b. <CODE> RD DROP (discrete codes only).

c. <D/S List Number> DROP.

Errors:

Error Condition	Preview
No entry for line number in D/S List.	"NO MATCH"
Target identified by a code is not on a discrete beacon code.	"DUPL BC!"
Target identified is not a tracked target.	"INVALID!"

Figure 1-3 Display for Arrival/Departure and Drop/Suspend Lists



1-25 Arrival/Departure (A/D) List

1. The Arrival/Departure (A/D) List shown on the right-hand side of Figure 1-3 consists of a listing of aircraft scheduled to arrive or depart or proceed en route. Indicators which have been designated as training displays will have only training flight plans in their A/D Lists, and non-training displays will not have any training flight plans. The abbreviated flight plan appears in the A/D List five minutes prior to arrival or departure. This amount of time may be changed by keyboard sequence (paragraph 1-25-7). Up to ten arrivals, departures, or en routes may be displayed. The A/D List displays an alpha character (A-J) to indicate the line number in the A/D List, the arrival or departure time, an A, D, or E to indicate whether it's an arrival (A), departure (D), or en route (E), the targets <ACID>, and the assigned beacon code. The A/D List is normally located at the right center of the indicator screen. The A/D List may be moved about the indicator at the controller's discretion by performing the key sequence: MOV <PEM> A.

2. The controller may, if so desired, suppress the A/D List. To do this, perform the key sequence: A ENTER.

NOTE: When display of the A/D List is inhibited, the alarm "AD" will appear in the OP List.

3. To redisplay the A/D List, the above command is repeated.

4. Duplicate ACIDs and beacon codes are allowed under the following conditions:

a. Beacon Codes: One flight plan and one track can be entered. When a duplicate situation exists, a flashing virgule (/) will be displayed after the beacon code in the track data block and a steady virgule immediately before the beacon code in the A/D List. Either the flight plan or the track must be an arrival and the other a departure. They cannot be the same.

b. ACIDs: There can be one arrival track and up to two departure flight plans with duplicate ACIDs. If there are two departures, the departure fixes must be different. When a duplicate situation exists, a steady virgule will be displayed in the eighth character position of the call sign.

c. A local flight plan or track can be a duplicate of another local flight plan or track only, and NAS flight plans can duplicate only another NAS originated one.

5. Should a duplicate discrete beacon code or duplicate ACID condition exist, the flight plan entry will automatically appear in the A/D List regardless of the anticipated activation time if there is room.

1-25-1 Flight Plan Data Entry Procedures

1. Four methods of flight plan entry exist. For those sites where the PIDP is interfaced with NAS, flight plans are entered on the FDS if available and then sent to the PIDP via the ARTCC.

2. Local flight plans can be initiated on the FLIPS terminal. The flight plans will be sent to the PIDP via the FLIPS interface. Training flight plans entered on FLIPS can be sent to PIDP. The flight plans will have the activation time set to current system time by PIDP and will only be sent to displays designated as training indicators. If no indicators are configured for training at the time training flight plans are received, the flight plans will not be saved in PIDP.

3. The controller can initiate local flight plans in the system. Procedures paragraph 1-25-2-1 describe the method a controller can use to initiate, readout, modify, or cancel a PIDP initiated flight plan. Tracks originating from these local flight plans cannot be handed off to/from the ARTCC via automated means except ARSA. Local flight plans and tracks initiated, modified, or canceled on the PIDP will be forwarded to the FLIPS computer. Printed strips are optional.

4. The controller can enter a VFR NAS flight plan from the PIDP keyboard. The flight plan will be sent to the ARTCC who will initiate a flight plan.. Procedures in paragraph 1-25-2-2 describe the method a controller can use to initiate the VFR NAS flight plan.

1-25-2 Flight Plan Initiate

1-25-2-1 Local Flight Plan Initiate

The flight plan initiate command allows the controller of any display position to enter data concerning an impending arrival, departure, or en route into the system. The new flight plan will be forwarded to FLIPS but will not be retained in the PIDP until approximately fifteen minutes prior to activation time. If the FLIPS interface is not operational, a maximum of 75 flight plans can be input. On flight plan initiate, a controller may choose to “control” a flight plan by entering a special keyboard sequence, which uses the <TRK> key for the terminator instead of the <ENTER> key. The flight plan will be displayed only on the originating indicator regardless of the system configuration or activation time. When the flight plan auto-

acquires on a target, it will be a controlled track owned by the originating indicator instead of an uncontrolled track.

EXAMPLES:

Command:

	Code (CD?)	ACID (ID?)	Type (AD?)	Type A/C (TP?)	Class (CL?)	Time (TM?)	Fix1 (F1?)	Fix2 (F2?)	Message (MS?)	Execute
FD	1234^	TWA123^	A ^	^	H ^	18^30^	JFK			ENTER
1 FD	2221^	EA21^	D ^	^	T ^	19^45^	^	END		ENTER
2 FD	1372^	DL928^	E ^	^	V ^					ENTER
1 FD	2222^	NA28^	^	F4 ^	U ^	^	FSA ^	SPA ^	2AC	ENTER
1 FD	2223^	AA123^	^	C141 ^	W					ENTER
3 FD	1111^	ABC12^			F					TRK

Special Requirements:

1. If the <ACID> and/or <CODE> values assigned to the flight plan create a duplicate <ACID> and/or <CODE>, the criteria in paragraph 1-25.4.a and b must be met.

2. The assigned <ACID> must be at least two characters and the first character alphabetical.

3. Flight plan type, aircraft type, class, time, fixes, and message are optional; and the command may be terminated at any one of these steps.

4. The flight plan type will default to a departure, and a "D" will be displayed if no value is entered.

5. The flight plan aircraft type will default to no aircraft type if no character is entered.

6. The assigned aircraft type must be at least two characters.

7. The flight plan class (B, F, H, L, T, U, V, or W) will default to no class if no value is entered.

8. The flight plan activation time will default to the current system time if no activation time is entered. The current time will be displayed in the preview area.

9. The flight plan fixes will default to no fixes if no characters are entered.

10. There must be fewer than 75 flight plans in the system (no FP in the OP List system alarm line). If the FP is present in the OP List, the flight plan will be sent to FLIPS but will not be in the PIDP until there is room. If the FLIPS interface is not operational, no more than 75 flight plans can be input.

11. Code 1236 must not be used when initiating a flight plan.

12. If the display has an assigned code block(s), the entering of the <FD> key or (OPTIONS: 1, 2, or 3) <FD> key will display the next available code of the appropriate code block. The controller may either enter an <ACID> or a new <CODE>. If the display does not have an assigned code block(s), the controller must enter the <CODE> first.

Results:

The new flight plan will be entered into the FLIPS system. If the flight plan activation time is close enough to the system time to be forwarded to PIDP, the flight plan will be forwarded to the system. If the flight plan activation time is close enough to the current system time, the flight plan will then appear in the A/D Lists of those displays configured for arrival, departure, or en route sectors. (This assumes that there is room in the A/D List of those displays.) If the print strips option is on, a strip will be printed.

Errors:

Error Condition	Preview
<ACID> entered matches one already in the system and does not meet the criteria for valid duplicate.	"DUPL ID!"
<CODE> entered matches one already in the system (if discrete) and does not meet the criteria for valid duplicate.	"DUPL BC!"
<CODE> entered is 1236.	"INVALID!"
Invalid time entry - where hours are greater than 23 or minutes are greater than 59.	"BAD TIME"
Maximum number of flight plans (75) is already in the system prior to entry of the new flight plan if the FLIPS system is not operational.	"NO ROOM!"

1-25-2-2 VFR NAS Flight Plan Initiate

The VFR NAS flight plan initiate command allows the controller of any display position to enter a VFR NAS flight plan from the PIDP keyboard. The new flight plan will be entered into the PIDP system and sent to the ARTCC. The flight plan will appear in the A/D list with a beacon code of "0000". The ARTCC will acknowledge the receipt of the flight plan and will replace the "0000" with a beacon code of "NNNN". If a flight plan is not acknowledged by the ARTCC within 32 seconds the "0000" will be replaced with "FAIL".

EXAMPLES:

Command:

	ACID (ID?)	Type A/C (TP?)	Equip Suffix (ES?)	Fix1 (F1?)	Fix2 (F2?)	Altitude (AL?)	Class (CL?)	Execute
V FD	FRI234Δ	C141Δ	AΔ	JFKΔ	DFWΔ	235Δ	H	ENTER
V FD	TRI256Δ	A7Δ	PΔ	STLΔ	DFW	ENTER		
V FD	AFR263Δ	B52Δ	RΔ	FSAΔ	SPAΔ	115Δ	H	ENTER
V FD	SPIRT25Δ	C141Δ	PΔ	FSAΔ	SPAΔ	125Δ	H	ENTER
V FD	TRIX451Δ	A7Δ	RΔ	FSAΔ	LTSI	ENTER		

Special Requirements:

1. If the <ACID> value assigned to the flight plan create a duplicate <ACID>, the criteria in paragraph 1-25.4.a and b must be met.

2. The assigned <ACID> must be at least two characters and the first character alphabetical.

3. Flight plan altitude and class are optional; and the command may be terminated at any one of these steps.

4. The assigned aircraft type must be at least two characters.

5. The flight plan class (B, F, H, L or T) will default to no class if no value is entered.

6. If the 4th character of Fix2, "I", is input the fix is sent to the ARTCC as an intermediate fix.

7. There must be fewer than 75 flight plans in the system (no FP in the OP List system alarm line).

8. The altitude value must end with a "5".

Results:

The new flight plan will be entered into the PIDP system and sent to the ARTCC. A failure message will be displayed in the beacon code of the A/D list when the following conditions occur:

a. If a duplicate Beacon Code is sent, "FAIL" will be displayed.

b. If an incorrect fix is sent, "FXER" will be displayed.

c. If the ARTCC rejects the VFR flight plan, "FAIL" will be displayed.

d. If a flight plan is not received from the ARTCC within 32 seconds, "FAIL" will be displayed.

Errors:

Error Condition	Preview
If a duplicate ID is input.	"DUPL ID!"

1-25-3 Flight Plan Readout

The purpose of the flight plan readout is to display the contents of any flight plan that is in the PIDP system. This data will be displayed in the preview area of the display from which the command is entered. After completion of readout, enter CLEAR.

EXAMPLES:

Flight Plan

Identifier	Readout	Remarks
TWA1234	RD	Search by <ACID>.
4315	RD	Search by <CODE>.
C	RD	Search by <A/D List Identifier>.

Special Requirements:

1. The flight plan will appear in the preview area if the code, <ACID> or A/D List identifier matches a flight plan in the system, and no other keyboard is reading or modifying the flight plan.

2. The A/D tab letter entered must correspond to an entry in the A/D List.

3. The <CODE> identifier, if used, must be a discrete beacon code.

Results:

If all of the special requirements are met, the flight plan identified by the controller will be read out in the preview area in the following format:

Line 1, Characters 1-7	<ACID>
Line 1, Characters 9-12	Beacon Code
Line 1, Character 14	Flight Plan Type (A, D, or E)
Line 1, Characters 15-18	Time (hours/minutes)
Line 1, Character 20	Aircraft Class (B, F, H, L, T, U, V, W, or blank if class not entered)
Line 2, Characters 1-4	Aircraft Type (blank if aircraft type is not entered)
Line 2, Characters 6-11	Airport Fixes
Line 2, Characters 12-20	Message

Errors:

Error Condition	Preview
Non-discrete beacon code entered as the flight plan identifier.	"DUPL BC!"
The identifier used does not match any flight plan in the system.	"NO MATCH"
Another controller is performing a function on this flight plan at this time.	"CAPTURED"

1-25-4 Flight Plan Scroll

This command allows the controller to view each flight plan in the Flight Plan Table. The flight plan displayed in the preview area may be modified or dropped.

EXAMPLES:

Command	Remarks
RD	To initiate the flight plan scroll.
/\	To bring each flight plan into the preview area.
CLEAR	To terminate flight plan scroll.

Special Requirements:

Flight plan scroll remains in effect at the display where it was initiated until one of the following occurs:

a. The end of the Flight Plan Table is reached.

b. A flight plan is modified or dropped.

c. CLEAR key is pressed.

Results:

The result is the display of flight plans in the preview area, one after the other, until the flight plan scroll is discontinued or the last flight plan is reached.

Errors:

Error Condition	Preview
The end of the Flight Plan Table has been reached.	"LAST F/P"

1-25-5 Flight Plan Modify

The flight plan modify command allows the controller to modify the different elements (<ACID>, code, flight plan type, aircraft type, class, time, fix one, fix two, or message) of a PIDP or FLIPS initiated local flight plan, one element at a time. The command will cause a flight plan amendment message to be sent to FLIPS if the interface is active, and the flight plan is not training.

EXAMPLES:

Identifier	Read	Parameter Modified	Execute	Remarks
TWA1234	RD	TWA123	ENTER	Search by <ACID>; modify <ACID>.
1234	RD	1454	ENTER	Search by <CODE>; modify <CODE>.
A	RD	1 NXT	ENTER	Search by <A/D letter>; modify <CODE> using NXT key for specified code block.
1237	RD	D	ENTER	Search by <CODE>; modify flight plan type.
C	RD	CLS H	ENTER	Search by <A/D letter>; modify aircraft class.
TWA124	RD	18 \ 25	ENTER	Search by <ACID>; modify time.
5734	RD	MSG 2FLIGHT	ENTER	Search by <CODE>; modify message.
TWA1234	RD	SP2 C141	ENTER	Search by <ACID>; modify aircraft type.
2442	RD	ACID SPACE FSA	ENTER	Search by <CODE>; modify fix one.
4135	RD	SP3 GGG	ENTER	Search by <CODE>; modify fix two.

Special Requirements:

1. The flight plan to be modified will appear in the preview area after RD key is entered, provided the flight plan identifier matches a flight plan in the system, and no other controller is performing any function on this flight plan.

2. If an A/D tab letter is entered, it must be an entry in the controller's A/D List.

3. If <CODE> identifier is used, it must be a discrete beacon code.

4. If the activation time entered (new modified time) is more than one hour earlier than the current system time, the flight plan is assumed for the next day. Example: If the current system time is 18 07:05 and the new flight plan activation time is 06:04, the flight plan is assumed to be for the next day (19 06:04).

5. If the time is changed to be close enough to the activation time, and there is room in the A/D Lists, the flight plan will appear in the appropriate A/D Lists. If the FP was already in the A/D Lists, and the time was modified so it is no longer within the activation time, the flight plan will be deleted from all A/D lists.

6. If the NXT key or (OPTIONS: 1, 2, or 3) NXT keys are used, the next available discrete beacon code from the appropriate block of codes assigned to the controller's display will be used as the modified code. This code will appear in the preview area. (See paragraph 1-57.)

7. If the flight plan type is modified and the flight plan was in the A/D Lists, it will be deleted from the old lists immediately, and inserted into the new lists (arrival, departure or en route) at the next minute update unless it is a training flight plan.

8. If the <ACID> or <CODE> is modified, the new value must meet the requirements for valid duplicate if applicable.

9. Code 1236 must not be used.

10. To delete the class, fixes, message, or aircraft type, spaces will be entered for the field.

Results:

If all special requirements are met, the flight plan will be modified with the new information. Any A/D Lists containing the flight plan will also reflect the modification. If the time has been modified and the flight plan becomes activated, it will appear in the appropriate A/D Lists.

Errors:

Error Condition	Preview
A non-discrete beacon code is entered as an identifier.	"DUPL BC!"
The identifier used does not match any flight plan in the system.	"NO MATCH"
An invalid time entry is used - where hours are greater than 23 or minutes are greater than 59.	"BAD TIME"
Modified <ACID> matches one already in the system and does not meet the criteria for valid duplicate.	"DUPL ID!"
Modified discrete <CODE> matches one already in the system and does not meet the requirements for valid duplicate.	"DUPL BC!"
Modified <CODE> is 1236.	"INVALID!"

Error Condition	Preview
Next code not assigned or all are in use.	"USED/NA"
Another controller is performing a function on the flight plan at this time.	"CAPTURED"
Attempting to modify a NAS-initiated flight plan.	"INVALID!"
Attempting to modify a flight plan that has auto-acquired.	"INVALID!"

1-25-6 Flight Plan Cancellation

The flight plan cancellation command allows the controller of any display to delete a flight plan from the system as necessary. If a NAS originated flight plan is accidentally canceled, you may use the FDS "RF" message to have the flight plan transmitted again. If a local, non-training flight plan is accidentally canceled, you may use the "FF" keyboard command to have the flight plan transmitted again (see paragraph 1-25-9). You may also use the "SR" keyboard command to have the flight plan transmitted again and a strip printed (see paragraph 1-25-10). All local and NAS flight plans will be automatically deleted from the system two hours and five minutes after the flight plan activation time. Local flight plans, except for training flight plans, that automatically delete will cause a flight plan cancel message to be sent to the FLIPS.

EXAMPLES:

Identifier	Read	Cancel	Remarks
TWA123	RD	DROP	Search by <ACID>.
2463	RD	DROP	Search by <CODE>.
C	RD	DROP	Search by <A/D List Identifier>.

NOTE: If the flight plan is NAS originated, the message "ARE YOU SURE? (Y/N)" will appear in the preview area. Press the "Y" key to delete the flight plan. Press the "N" key to retain the flight plan in the PIDP system.

Special Requirements:

1. The flight plan will appear in the preview area if the identifier entered matches a flight plan in the system and no other controller is performing any function on this flight plan.

2. The A/D tab letter entered must correspond to one displayed in the controller's A/D List.

3. The <CODE> identifier, if used, must be a discrete beacon code.

4. The controller MAY cancel an individual NAS initiated flight plan in the PIDP system. The NAS flight plan must also be canceled via the FDS, if available. A NAS originated flight plan canceled in the PIDP is not removed from the NAS computer. The flight plan in the NAS computer will remain active until canceled via the FDS or other coordination with the NAS facility.

Results:

If all special requirements are met, the flight plan identified by the controller will be shown in the preview area and then deleted from the PIDP system.

Errors:

Error Condition	Preview
Non-discrete beacon code is entered as the flight plan identifier.	"DUPL BC!"
The identifier used does not match any flight plan in the system.	"NO MATCH"
Another controller is performing a function on the flight plan at this time.	"CAPTURED"
Attempting to cancel a NAS initiated flight plan.	"ARE YOU SURE? (Y/N)"

1-25-7 Change A/D Entry Time

This command will change the amount of time before a flight plan is placed in the A/D List.

EXAMPLES:

Command	Type	Change A/D Entry Time	Execute	Remarks
SPEC	A	4	ENTER	Set A/D entry time to 4 minutes.
SPEC	A	27	ENTER	Set A/D entry time to 27 minutes.

Special Requirements:

1. Command must be entered at the master display.

2. Time entered must be no less than one nor greater than 29.

Results:

The result is to change the amount of time (1-29 minutes) before ETA or ETD that a flight plan will be placed in the A/D List.

Errors:

Error Condition	Preview
Attempt is made to change A/D entry time from a non-master display.	"MST ONLY"
Attempt is made to change the A/D entry time to a value less than 1 or greater than 29 minutes.	"INVALID!"

1-25-8 Restore FLIPS Data Base

This command will cause a message to be sent to FLIPS asking for a (re)send of all stored flight plans that should be in the PIDP system at this time. This does not apply to training flight plans.

EXAMPLES:

Command	Type	Remarks
SPEC	R	All the flight plans that should be in the PIDP will be sent from FLIPS.

Special Requirements:

1. The FLIPS interface must be enabled.

2. Only the master indicator can initiate this command.

Results:

All flight plans that are stored in the FLIPS that should be in the PIDP at this time are sent to PIDP.

Errors:

Error Condition	Preview
Attempt to send the command from a non-master display.	"MST ONLY"
The FLIPS interface is not active.	"INACTIVE"

1-25-9 FLIPS Force Message

The FLIPS force command will request a particular flight plan be sent from FLIPS to the PIDP. A training flight plan cannot be requested.

EXAMPLES:

Command Type	Identifier	Execute	Remarks
F OP	2340	ENTER	Identify flight plan to be sent by beacon code.
F OP	TWA123	ENTER	Identify flight plan to be sent by ACID.
F OP		HOOK	Identify flight plan to be sent by beacon code of target.
F OP	012	ENTER	Identify flight plan to be sent by computer ID (CID).

Special Requirements:

1. The FLIPS interface must be active.

2. If the HOOK key is used, the beacon code of the target must be discrete.

3. The flight plan identified must be stored in the FLIPS computer.

4. The flight plan identified must not be training.

Results:

The flight plan identified will be sent to PIDP from the FLIPS system.

Errors:

Error Condition	Preview
The FLIPS interface is not active.	"INACTIVE"
The target identified is already a flight plan or track in the PIDP system.	"INVALID"
The target identified by the HOOK is on a non-discrete beacon code.	"DUPL BC!"

1-25-10 Strip Request Message

The Strip Request command will request a particular flight plan be sent from FLIPS to PIDP and that a strip be printed. This does not apply to training flight plans.

EXAMPLES:

Command	Type	Identifier	Execute	Remarks
S	OP	2340	ENTER	Identify flight plan to be sent by beacon code.
S	OP	TWA123	ENTER	Identify flight plan to be sent by ACID.
S	OP		HOOK	Identify flight plan to be sent by beacon code of target.
S	OP	012	ENTER	Identify flight plan to be sent by computer ID (CID).

Special Requirements:

1. The FLIPS interface must be active.

2. If the HOOK key is used, the beacon code of the target must be discrete.

3. The flight plan identified must be stored in the FLIPS computer.

4. The flight plan identified must not be training.

Results:

The flight plan identified will be sent to PIDP from the FLIPS system, and a strip will be printed. The strip will be printed even if FLIPS is configured not to print local strips.

Errors:

Error Condition	Preview
The FLIPS interface is not active.	"INACTIVE"
The target identified is already a flight plan or track in the PIDP system.	"INVALID!"
The target identified by the HOOK key is on a non-discrete beacon code.	"DUPL BC!"

1-26 Bearing/Range/Time-to-Fly

This command will display the bearing and range information between two points, or display bearing, range, and time-to-fly information between a tracked target and another point.

EXAMPLES:

Command	Parameters	Display
<PEM> SP1 <PEM> SP1	No tracked target at the first <PEM> location.	Bearing and range from first to second point.
	Tracked target at the first <PEM> location.	Bearing, range, and time-to-fly from first to second point.
<PEM> SP1 ENTER	No tracked target at the <PEM> location.	Bearing and range from <PEM> location to the start of the sweep.
	Tracked target at the <PEM> location.	Bearing, range, and time-to-fly from the <PEM> location to the start of the sweep.

Special Requirements:

Time-to-fly will only be displayed if the first <PEM> location corresponds to a tracked target.
Results:

The result is to display bearing, range, and time-to-fly (when appropriate) information in the preview area.

Errors:

Error Condition	Preview
Points too close to each other.	All fields displayed as “XXX”.
Range greater than 256NM.	Range field displayed as “XXX”.
Time-to-fly greater than 999 minutes.	Time field displayed as “XXX”.

SECTION V - TARGET CATEGORIES

1-27 Introduction

1. The PIDP processes and displays four classes of targets:

   a. Non-selected.

   b. Selected.

   c. Tracked.

   d. VFR (1200 codes).

2. Display of two classes, selected (targets selected by beacon code) and non-selected (all other targets), are similar to that of the TPX-42 in that they consist of beacon code and altitude only. The third category, tracked, allows for the added capabilities of the PIDP which will be discussed in paragraph 1-30. VFR aircraft consist of altitude only.

1-28 Non-Selected Targets

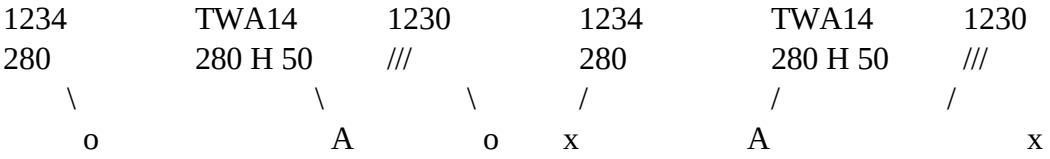
1. Non-selected targets are those targets not "selected" by keyboard action. In the basic TPX-42, these targets were displayed by using the ALL A/C POSN, ALL A/C CODE, and ALL A/C ALT switches on the A-Box. The symbol for a non- selected target at a particular indicator is a small circle or the letter designator of the indicator that is tracking that particular target. A two- line data block is attached by a leader to the non-select target symbol. For untracked targets, the first line is four digits representing the aircraft's reported beacon code. For tracked targets at non-controlling positions, the first line (TWA14 in Figure 1-4) contains up to seven alphanumerics representing the aircraft identity <ACID>. The second line is three digits representing the Mode "C" altitude in hundreds of feet and corrected for local barometric pressure. The altitude may be replaced with the word "NEG" should the altitude become negative as a result of barometric discrepancies caused by mis-setting of related airborne altimeters, the PIDP, or actual flight level below mean sea level. The second line of a tracked target will also contain the class and ground speed of the track (Figure 1-4). If the target is tracked and is MSAW exempt, either by code block or by track, the altitude will be followed by a caret "<" at non-controlling positions. If the caret is steady, the target is not violating MSAW. If the caret is flashing, the target is violating MSAW but will not activate the audible alarm. If the target is tracked and is CA inhibited, the altitude will be followed by a "C" at non-controlling positions. If the "C" is steady, the target is not in conflict alert. If the "C" is flashing, the target is in conflict with another CA inhibited target. The audible alarm will not be activated.

2. The altitude, code, class and ground speed may be displayed/inhibited using a keyboard sequence described in paragraph 1-50. The entire non-select category may also be suppressed using a keyboard sequence described in paragraph 1-52.

Figure 1-4 Target Formats

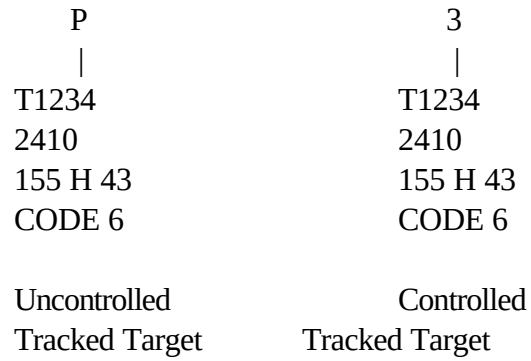
MSAW Exempt
(Not Violating MSAW)

MSAW Exempt
(Violating MSAW-caret flashes)



Non-Selected Targets

Selected Targets



Uncontrolled
Tracked Target

Controlled
Tracked Target

VFR Target
(1200 Beacon Code)

1-29 Selected Targets

1. Selected targets (Figure 1-4) are those targets that are code selected by the air traffic controller. The controller of a particular indicator may select up to five discrete beacon codes and/or two-digit code blocks to become selected targets. Codes or code blocks are selected through keyboard action similar to the code thumb wheels of the TPX-42 A-Box. (See paragraph 1-23-4 for exact keyboard sequence.)

2. The symbol for a selected target is the letter "X". The remaining portion of the format is the same as described for the non-selected target in paragraph 1-27. The altitude, code, class and ground speed may be displayed/ inhibited using a keyboard sequence described in paragraph 1-50. The entire selected category may be suppressed using a keyboard sequence described in paragraph 1-52.

1-30 Tracked Targets

1. Beacon targets replying on Mode 3/A codes may be tracked, either by automatic acquisition (auto-acquire) from previously entered flight plan data or through keyboard procedures. Only the track owner may control track format, initiate track handoff, modify track elements and delete the track. Track control as used in this sense should not be confused with procedural control of the aircraft. When a target is auto-acquired by the system, it is displayed at all indicators of the same type (arrivals, departures, en routes, or training) as an uncontrolled tracked target unless the local flight plan was initiated using the TRK key as the terminator or there is only one display of the type to view the track. If one of these conditions is true, the auto-acquired track will be displayed as a controlled track unless it is a training flight plan auto-acquire. The symbol for an uncontrolled track is either a "P" or an "N," with a four-line data block attached to the symbol by a leader (Figure 1-4). Uncontrolled tracks may be a product of auto-acquires of NAS or locally originated flight plans, special code reports (7700, 7600, 7500), or auto-track. Uncontrolled arrival and en route tracks originating from a NAS flight plan will have an "N" as the position symbol. All other uncontrolled tracks will have a "P" position symbol. The first line (T1234 in Figure 1-4) contains up to seven alphanumerics (the first character must be a letter) representing the aircraft identity <ACID>. The second line contains four digits representing the aircraft's beacon code, alternating with the aircraft type, followed by four character positions. The code may be followed by a pound sign. The third line contains the aircraft altitude in hundreds of feet (three digits), a blank space, a left caret, the aircraft class (B for heavy TCAS, F for Boeing 757, H for heavy IFR, L for TCAS-equipped Boeing 757, T for TCAS, U for heavy OTP, V for VFR, or W for heavy VFR), a blank space, and the aircraft ground speed (two digits representing ground speed in tens of knots). The fourth line is an optional message line of up to eight alphanumerics alternating with the airport fixes.

NOTE: Ground speed readout inaccuracies can be expected under various conditions of aircraft position and maneuvers. Readout should not be relied upon as an absolute value for purposes of traffic spacing.

2. Once the uncontrolled track is displayed, one of the indicators may take control of the track through keyboard sequence. The controlled track format is now identical to the uncontrolled track format except that the symbol changes to the letter designator of the indicator that is tracking the target on the non-controlling displays. (That is indicator A in the format shown in Figure 1-4). The symbol on the

controlling indicator will be a number designating the ID number assigned to the track for this display. The ID number will be displayed as a value from one through nine (1-9). Track number 10 through 19 will be displayed as a number one through nine enclosed in a circle, i.e., a 2 inside a circle equals track number 12. Numbers 20 through 29 will be displayed as a number with a box around it, i.e., 4 enclosed in a box equals track number 24. If a display is controlling more than 29 tracks, the symbol for tracks number 30 and up will be the letter identifier of the indicator. Individual elements of the four-line data block may be displayed/inhibited using the keyboard sequence described in paragraph 1-50. The entire tracked category cannot be inhibited.

3. For manual acquisition, the controller acquires the target by using the <PEM> or the aircraft's discrete beacon code. The controller now can enter the assigned <ACID> and any of the optional formats (class, aircraft type, fix one, fix two, or message).

4. Tracked targets have the following special system features that selected and non-selected targets do not have:

a. A tracked target can have its reflections identified with a question mark.

b. Tracked targets can be altitude monitored. If their altitude deviates by plus or minus 300 feet from an assigned altitude, the system will initiate audible and visual alarms.

c. You may handoff a tracked target to an indicator within the PIDP facility, to an adjacent PIDP/ARTS facility, to a NAS ARTCC, or to a JACC (see paragraph 1-38).

d. If tracked target reports cease, the track data block position will be automatically predicted (Coast - see paragraph 1-44), or held at the last reported position (Hold - see paragraph 1-45).

e. Audible and visual alarms will alert the controller if the track descends to an altitude at or below the preset MSAW altitude unless the track is in MSAW exempt status (see paragraph 1-41-1).

f. Audible and visual alarms will alert the controller when a tracked target is predicted to conflict with another target unless the tracked targets involved are in conflict alert inhibit or exempt status (see paragraph 1-49).

g. If a tracked target's beacon code changes and only one target with a discrete beacon code or emergency is found at the track's position, the track data block will coast for two scans. Then the new code and original code will flash until the controller decides to accept or reject the code change (Automatic Code Change - see paragraph 1-48). The automatic code change feature (ON at initialization) can be turned OFF/ON by a keyboard entry at the master indicator.

h. Trail dots for tracked targets can be initiated using the TRK D keyboard command.

5. Tracked targets that are within two miles of the antenna will be placed in dropped status when the mode "C" altitude is below the minimum altitude for auto-acquire. If the track is within two miles and the mode "C" is invalid, the track will be placed in dropped status when the ground speed is below 50 knots. In each case, the track will reacquire if the mode "C" altitude is at or above the minimum altitude for auto acquire, and if the target reappears between two and six miles from the antenna within 64 scans.

1-30-1 Track Initiate

In order to initiate a track on an aircraft, the controller has four options:

a. Use of the <CODE> and the RD key, for discrete codes only.

b. Use of <PEM> trackball and HOOK key for all codes.

c. Auto-acquire through a PIDP, FLIPS, or NAS initiated flight plan.

d. Auto track.

1-30-2 Manual Track Initiate

The purpose of the track initiate command is to allow the controller to manually identify a selected or non-selected target and change it to a tracked target.

EXAMPLES:

Def	Capt	Ident	Option	Execute	Remarks
2341	RD	TWA1234		ENTER	Search by <CODE>; no options entered.
<PEM>	HOOK	B		ENTER	Search by <PEM> using A/D List identifier for the flight plan.
<PEM>	HOOK	TWA13		ENTER	Search by <PEM> using matching <ACID> for the flight plan.
2340	RD	TWA12	CLS H	ENTER	Set class option.
2341	RD	EA267	CLS H MSG 2 AC	 ENTER	Set class and message options.

<PEM>	HOOK	TWA16		ENTER	Search by <PEM>; no options entered.
2341	RD	TWA1234	SP2 C141 ACID SPACE FSA SP3 SPA	ENTER	Search by <CODE>; set aircraft type and fix options.

Special Requirements:

1. The system will not allow keyboard action (HOOK) on emergency codes (7700, 7600, 7500) that are questionable (see paragraph 1-55b).

2. After target is captured, the preview area will be blank awaiting further controller inputs.

3. If a beacon code identifier is used, it must be a discrete beacon code.

4. The assigned <ACID> must have at least two characters with the first being an alpha (letter) character.

5. The assigned aircraft type must have at least two characters.

6. If the controller uses an A/D tab letter as the flight identifier, that letter must appear in the A/D List. The code for the target must match the code in the A/D List flight plan and must be non-discrete. The controller cannot do a code read sequence but must use the <PEM> as shown in the second example above.

7. If the controller uses an <ACID> as the flight identifier, that <ACID> must appear in the Flight Plan Table. The code for the target must match the code in the flight plan and must be non-discrete. The controller cannot do a code read sequence but must use the <PEM> as shown in the third example above. If there is a matching non-discrete code and a different <ACID> is entered, a separate track will be started leaving the non-discrete flight plan alone.

8. When a track is initiated, it will appear in the track format in use on the controller's display. If the controller has the code inhibited on all tracks, the new track will also have its code inhibited.

9. The PIDP can track only 15 targets of the same non-discrete code.

10. A manual track cannot be started with code 1236, 7500, 7600, or 7700.

11. A manual track cannot be started on a target that is already a controlled track in the system.

Results:

If all the requirements have been met, the target will become tracked and will appear on the controller's display in the current tracked target category format for that display. On non-discrete codes, if a flight plan A/D letter or <ACID> was used, the flight plan information will be used to start the track; and the flight plan will be deleted from the system. If the aircraft type and code are to be displayed, the aircraft type will be time-shared with the beacon code every scan. If fixes and a message to be displayed, the fixes will be time-shared with the message every scan.

Errors:

Error Condition	Preview
The <CODE> entered is not a discrete beacon code.	"DUPL BC!"
The <CODE> entered does not match any target in the system.	"NO MATCH"
The flight identifier <ACID> is already being used in the system.	"DUPL ID!"
The <A/D letter> entered is not in use on this display or the flight plan's code does not match code of target.	"NO MATCH"
Trying to HOOK a questionable target replying on an emergency code (see paragraph 1-55b).	"CAPTURED"
The target is currently having some function performed on it by another controller.	"CAPTURED"
Maximum number of tracks (200) are currently in the system.	"NO ROOM!"
Trying to start manual track on target with code 1236, 7500, 7600, or 7700.	"INVALID!"

1-30-3 Auto-Acquire Track

1. Auto-acquired (controlled) tracks occur for the following conditions:

    a. The local flight plan was initiated using the TRK key as the terminator.

    b. Only one display is a possible owner of the local flight plan.

    c. Auto track with only one display as a possible owner.

    d. Auto track with a designated owner (paragraph 1-30-4).

2. Auto-acquired (uncontrolled) tracks occur for the following conditions:

a. A discrete beacon code departure with valid Mode "C" whose flight plan is stored in the PIDP computer and whose altitude is within the auto-acquire limits.

b. A discrete beacon code arrival or en route aircraft whose flight plan is stored in the PIDP computer and whose range is within the auto-acquire limits.

c. A discrete beacon code departure without Mode "C" which is more than two miles from the antenna.

d. An untracked emergency, communications failure, or hijack.

e. Auto track.

3. Once a track is auto-acquired (uncontrolled), it is now possible for any eligible display to take control under the following conditions:

a. Only arrival configured displays may take control of tracks designated as arrivals in the flight plan or auto tracks outside six miles.

b. Only departure configured displays may take control of tracks designated as departures in the flight plan or auto tracks inside six miles.

c. Only en route configured displays may take control of tracks designated as en routes in the flight plan.

d. Displays configured as training displays are not checked for arrival, departure, or en route. Only training configured displays may take control of tracks designated as training in the flight plan. Training flight plans will not auto acquire if there are no training displays designated.

e. If there are no active displays designated as arrival, departure, or en route for an auto-acquired track of that type, the master display will be in control of the track.

f. Any display may take control of an uncontrolled emergency, communications failure, or hijack that does not have an ACID.

g. Should the auto-acquired track coast out prior to a display assuming control, it will be assigned to the master display and will appear in the master display's D/S List. The track may be repositioned or deleted only from the master display. If this track is repositioned either automatically or manually (see paragraph 1-30-6), it will be displayed as an uncontrolled track at only the appropriately configured display(s). Auto tracks will be deleted from the system.

h. Taking control of an auto-acquired track will automatically acknowledge any alarm condition the track is in except for a "DM" message failure.

EXAMPLES:

Target Identifier	Capture	Execute	Remarks
TWA1234	RD		Take control by use of <ACID>.
2430	RD		Take control by use of discrete beacon code.
<PEM>	HOOK		Take control by use of <PEM>.
<PEM>	HOOK	<ACID> ENTER	Take control of emergency, communications failure, or hijack that has no <ACID>.

Special Requirements:

1. When taking control of an uncontrolled emergency that has no <ACID>, an <ACID> must be entered.

2. If beacon code is used, it must be discrete.

3. Controllers should not take control of an auto-acquired NAS arrival/en route track until the automated facility controlling the aircraft initiates a handoff.

Errors:

Error Condition	Preview
Target identifier is not in the system.	"NO MATCH"
Beacon code used is non-discrete.	"DUPL BC!"

1-30-4 Auto Track

The auto track feature allows controllers to select code blocks that they wish to have automatically tracked without having to go through manual track start procedures. This is a master indicator function.

a. To utilize the auto track start feature, a controller selects and enters a start and stop code for the block desired, the call sign of two to five alpha characters, and/or a specified display ID(s). Up to eight code blocks can be assigned. The first two digits of the start and end codes must match.

b. Once the auto track feature is turned on, the system will start a track on all aircraft within the selected code block as long as:

(1) There is no track or flight plan with a duplicate code or ACID.

(2) The aircraft is within the auto-acquire area.

(3) The aircraft is on a discrete beacon code.

c. If the aircraft is within six miles of the antenna, only indicators configured as departure scopes will be able to take control of the auto track aircraft. Outside six miles, only arrival scopes can take control. If there are no active displays assigned as arrival or departure, the master display will be in control of the track. Controlled auto tracks will occur if only one display is a possible owner or if the controller specified an active indicator as an arrival and/or departure owner when the auto track feature was initiated.

d. The system starts an auto track by displaying the selected characters with the last two digits of the code as the aircraft's call sign. Example: A controller selects code block 2640-2665 with a call sign of DUKE. An aircraft squawks 2652. The system will display an uncontrolled track with a call sign of DUKE52.

e. If an operator deletes a controlled auto track target, the system will start a new track on the aircraft immediately as long as it is still within the auto-acquire boundaries. The only way to prevent this is to turn off the auto track function. The system will automatically delete uncontrolled auto tracks that are in coast mode. (See paragraph 1-43.)

EXAMPLES:

Function	Option	Execute	Remarks
SPEC	Z	ENTER	To turn on auto track.
SPEC	Z	DROP	To turn off auto track.
SPEC	ID	I	To read an existing entry.
SPEC	ID	INNNN ^ NNNN ^ AAAAA ^ (ARR DISP ID, DEP DISP ID) ENTER	To get prompt and enter code block/call sign/specified controlling display(s).
SPEC	ID	I DROP	To drop an existing entry.

I = 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8

Special Requirements:

1. The system will not auto track start a target outside the auto-acquire area.

2. The system will not auto track start a target within two miles of the antenna that has no mode "C".

3. The system will not allow a 7700, 7600, or 7500 code block to be entered for auto track.

4. The system will not auto track start a target if there is a track or flight plan with a duplicate code or ACID.

5. The system will not auto track start code 1236.

6. Command must be entered at the master display.

7. If no arrival display is designated but a departure is, use SPACE to denote no indicator selected.

Errors:

Error Condition	Preview
Attempt is made to change or turn on/off auto track from a non-master display.	"MST ONLY"

1-30-5 Track Modify

The purpose of the track modify command is to allow the controller to modify the contents (<ACID>, <CODE>, aircraft type, class, fix one, fix two, message, or leader direction) of one of the tracked targets owned by the display. Uncontrolled tracks cannot be modified.

EXAMPLES:

Target Identifier	Capture	Parameters to be Modified	Execute	Remarks
TWA1234	RD	TWA1235	ENTER	Modify <ACID>.
2306	RD	2307	ENTER	Modify <CODE>.
<PEM>	HOOK	NXT SP2 F4	ENTER	Modify <CODE> from specified code block and aircraft type.
<PEM>	HOOK	CLS H MSG 4AC	ENTER	Modify class and message
4	RD	<ACID SPACE> FSA SP3 SPA	ENTER	Modify fix 1 and fix 2
16	RD	1 NXT SP3 JFK	ENTER	Modify <CODE> from specified code block and message.
TWA1239	RD	TWA1230 CLS V MSG ILS	ENTER	Modify <ACID>, class, and message.
2	RD	CLS ^ SP2 ^ MSG ^ ^ SP3 ^	ENTER	Delete class, aircraft type, message, and fix two.

Special Requirements:

1. A tracked target can be modified as long as the assistant controller is not performing any functions on the target.

2. The beacon code entered must be a discrete beacon code.

3. The beacon code must not be 1236.

4. Only one type of aircraft identifier may be modified at a time; that is, <ACID> and <CODE> may not be modified in the same command.

5. Uncontrolled tracks cannot be modified.

6. To delete the aircraft type in a key sequence, one SPACE key entry must be inserted after the SP2 key.

7. To delete the class and message in one key sequence, one SPACE key entry must be inserted after the CLS and two SPACE key entries after the MSG key. To delete fix1, one SPACE key entry must be inserted after the <ACID SPACE> key. To delete fix2, one SPACE key entry must be inserted after the SP3 key.

8. If the NXT key or (OPTIONS: 1, 2, or 3) NXT key is used, the next available discrete beacon code of a specified code block (except 1236) will be displayed in the preview area, and this value will be the new code assigned (see paragraph 1-57).

Results:

Those format elements that were modified will be inserted into the track format and displayed on that track even if previously inhibited.

Errors:

Error Condition	Preview
Target is currently captured by another operator.	"CAPTURED"
Track ID number is not in use.	"NO MATCH"
Target identifier entered does not match any target in the system.	"NO MATCH"
Beacon code entered is not discrete.	"DUPL BC!"
Beacon code entered is 1236.	"INVALID!"
Modified flight identifier <ACID> matches one already in the system and does not meet the criteria for valid duplicate.	"DUPL ID!"
Modified discrete beacon code entered matches one already in the system and does not meet the criteria for valid duplicate.	"DUPL BC!"

1-30-6 Reposition A Dropped Track

A track that has dropped (paragraph 1-43) may be repositioned from the D/S List when the dropped target's beacon report is again received by the system.

EXAMPLES:

Target Identifier	Capture	Identify Dropped Track In D/S List	Execute	Remarks
<PEM>	HOOK	1	RPOS	Track identified will be repositioned to a non-discrete target identified by the <PEM>.
		1	RPOS	Track identified will be repositioned to a matching discrete code target inside the CA area.
1234	RD		RPOS	Track identified will be repositioned to a matching discrete code target inside the CA area.
TWA123	RD		RPOS	Track identified will be repositioned to a matching discrete code target inside the CA area.
<PEM>	HOOK			Dropped track will be repositioned to the discrete code target identified by the <PEM>.

Special Requirements:

1. Non-discrete target must be identified by the <PEM> and a D/S line number.

2. Track repositioned from the D/S List must match the code of the reacquired beacon target.

3. If there were two discrete targets with the same beacon code, the track will reposition on the target inside the auto-acquire area.

4. Targets outside the auto-acquire area must be identified by the <PEM> and a D/S line number.

Results:

Track will be established on target identified, and its entry deleted from the D/S List.

Errors:

Error Condition	Preview
Track identified is not in D/S List or no matching <CODE>/ <ACID> is found.	"NO MATCH"
Beacon code of target does not match code of track in D/S List.	"INVALID"

1-30-7 Track Termination (Delete)

1. The purpose of the track termination command is to allow the controller owning a tracked target to remove it from tracked status. Under the following conditions, the prompt "ARE YOU SURE?(Y/N)" will appear in the preview area when attempting to manually delete a track:

a. The track originated from a NAS departure or en route flight plan.

b. The track originated from a NAS arrival flight plan, and a handoff to the PIDP has not been completed.

2. This prompt alerts the controller that all inter-facility handoffs concerning this track have not been completed. If the controller is sure the track is no longer needed, then the track can be deleted from the PIDP system by entering a "Y". Subsequent attempts by another facility to make a handoff to the PIDP on this track will be automatically rejected. If the controller determines that the track is still needed for inter-facility handoff purposes, an "N" should be entered; and the PIDP system will retain the track. If a NAS track is deleted before a handoff is completed and it becomes necessary to restart the track with the proper flight plan, use the "RF" message on the FDS to force the flight plan back into the PIDP system. A local track in the D/S List will be automatically deleted from the system after 377 consecutive antenna scans. A NAS track will not be automatically deleted until the NAS handoff has been completed.

EXAMPLES:

Target Identifier	Capture	Execute	Remarks
TWA1234	RD	DROP	Target identified by <ACID>.
2460	RD	DROP	Target identified by <CODE>.
<PEM>	HOOK	DROP	Target identified by <PEM>.
3		DROP	Target identified by <D/S List Number>.
15	RD	DROP	Target identified by track ID number.

Special Requirements:

1. A tracked target may be deleted as long as the assistant controller is not performing any function on the target.

2. If the <CODE> identifier is used, it must be a discrete beacon code.

3. If the <D/S> number is used, it must be in use in the display's D/S List.

4. The target captured or identified must be a tracked target controlled by the display.

5. Uncontrolled tracks may not be deleted until control is assumed.

6. A track from a NAS originated flight plan should not be deleted until all NAS handoff actions are completed.

Results:

The tracked target identified by the controller will lose its tracked status and become an untracked target. If it was listed in the D/S List, that D/S entry will be deleted.

Errors:

Error Condition	Preview
Target identified is currently captured by another controller.	“CAPTURED”
No match found in the system for the target identified.	“NO MATCH”
Track ID number is not is use.	“NO MATCH”
Invalid <CODE> entered as target identifier (non-discrete beacon code).	“DUPL BC!”
D/S line number not currently in use by this display.	“NO MATCH”
Target identified is not tracked.	“INVALID!”
Attempting to delete a track (from a NAS originated flight plan) before a NAS handoff is completed.	“ARE YOU SURE?(Y/N)”

1-31 VFR Targets

Targets whose beacon code is 1200 (VFR) will be displayed with a special symbol, a circle with an “X” through it (Figure 1-4). A one-line data block containing the altitude is attached by a leader to the VFR target symbol.

SECTION VI - SPECIAL REPLIES

1-32 Introduction

Figure 1-5 illustrates the display of the various special replies permitted by the system. Included are the identification of position (IP) or special position identification (SPI) replies, emergency (7700 beacon code) reply, communications failure (7600 beacon code) reply, hijack (7500 beacon code) reply, military emergency reply, and suspect aircraft (1236 beacon code) reply. Descriptions of these special replies are provided in the following paragraphs.

1-33 IP And SPI (IDENT)

The IP or SPI (IDENT) target symbol appears as a "shrinking circle". For all categories of tracks and targets, detection of an IDENT causes the position symbol to change to the shrinking circle at all indicator positions at which the target is displayed.

1-34 Emergency, Communications Failure and Hijacks

1. Display of emergency, communications failure, and hijack beacon returns are processed in the same manner. Detection of these replies for untracked targets (selected or non-selected) causes the system to display the reply as an uncontrolled tracked target with a three-line data block. The first line is the four-digit beacon code for the condition detected (7700, 7600, or 7500). The second line is aircraft altitude, and the last line is a three-letter message specifying the condition detected (EMG, CMF, or HIJ). This format is displayed at all indicators, the entire format flashes, and an audible alarm sounds. The bearing and range of the target are displayed in the OP List in place of the next code line. When the emergency condition is acknowledged or clears, the next code line will be redisplayed. Up the three bearing and ranges can be displayed. The controller must acknowledge the condition by "hooking" the track and assigning it an <ACID>. Once this is done, the format will stop flashing and will change to a controlled track format on the indicator on which the emergency condition was acknowledged; and the audible alarm will cease. The emergency indication in line four will continue to flash. At all other displays, the P symbol is replaced with the letter designator of the controlling display, and the data block appears in a non-selected format with the emergency indicator in line two (see Figure 1-5, sheets 1 and 2). The class and ground speed will alternately display with the flashing emergency mnemonic. When uncontrolled emergency track starts are being inhibited, emergency returns outside conflict alert boundaries will be displayed as shown in Figure 1-5, sheet 3. Also, when the Track Table is full, new emergency returns will be displayed as shown in Figure 1-5, sheet 3.

Figure 1-5 Special Replies (Sheet 1)

IP AND SPI

```
    5
    |
PA592
1234
567 V 31
SPS LTS
```

Controlled Track

```
1234
567
 |
 o
```

Selected Target

```
1234
567
 |
 o
```

Non-Selected Target

EMERGENCY

```
   P
   |
7700
110
EMG
```

Uncontrolled Track (Flashing)

```
    9
    |
JUMBO
7700
110 H 21
EMG
```

EMG and Code Change Acknowledged by Display A ("EMG" Flashing)

```
JUMBO
110  EMG
       \
        A
```

At All Other Displays (Tracked by Display A) (Class and Ground Speed will display alternately with flashing "EMG")

Figure 1-5 Special Replies (Sheet 2)

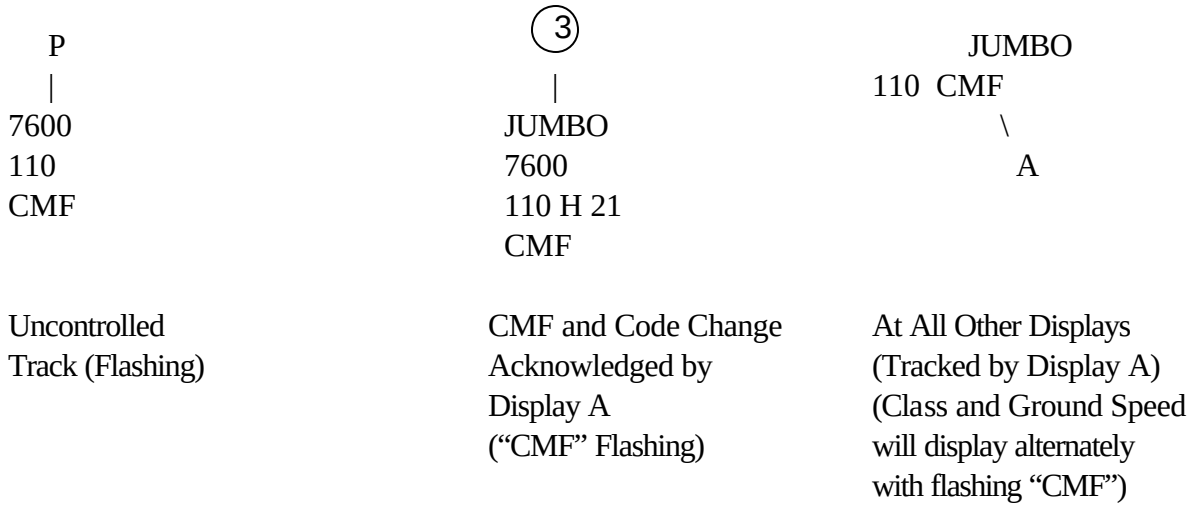
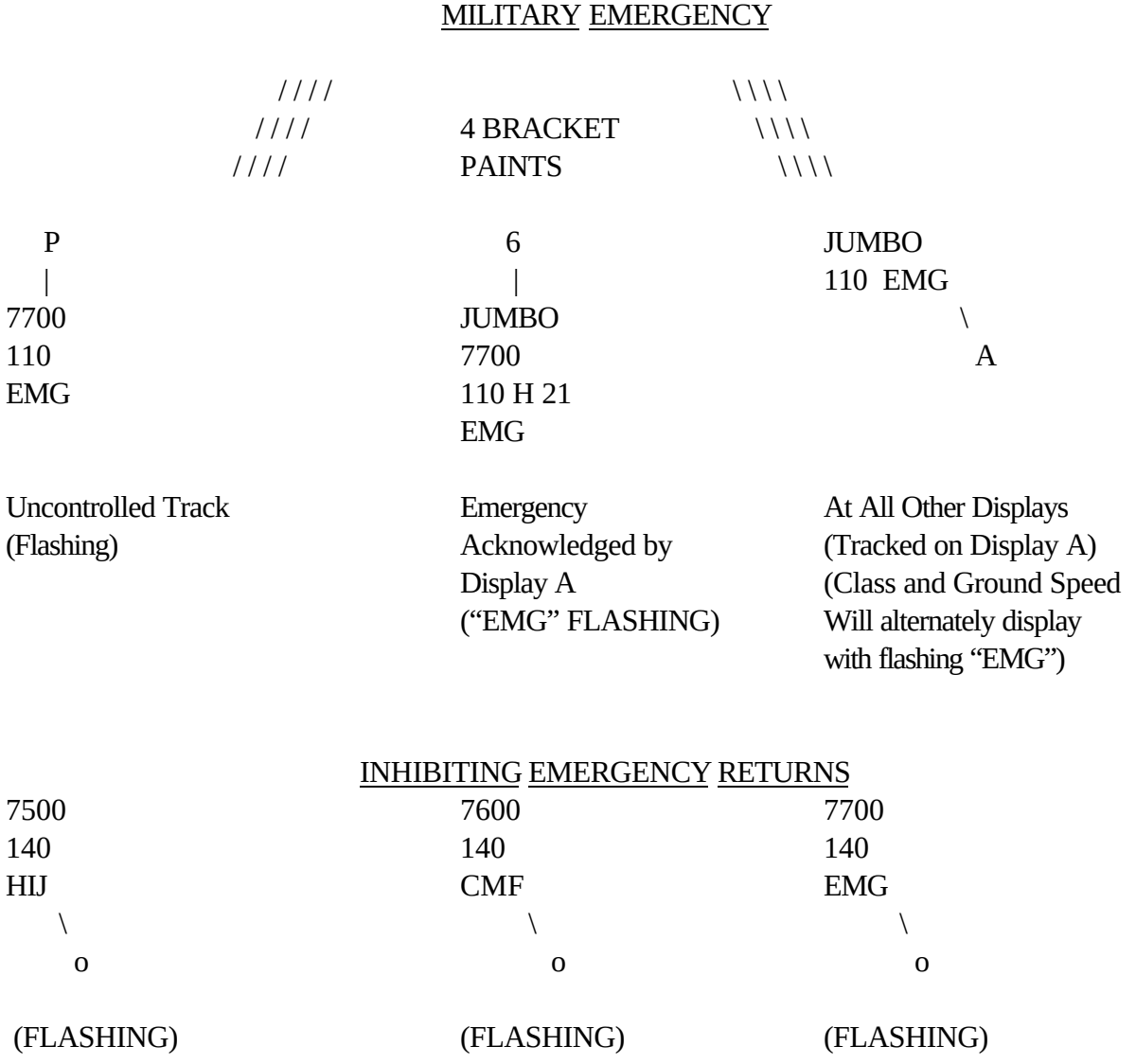


Figure 1-5 Special Replies (Sheet 3)



2. Detection of emergency, communications failure or hijack replies for a controlled tracked target causes the system to display the track's <ACID> with the new beacon code (7700, 7600, or 7500). The track message line will be preempted by a three-letter message specifying the condition detected (EMG, CMF, or HIJ) and the original beacon code of the track. This format is displayed only on the controlling display; the entire full format flashes and the audible and visual alarms are activated on the indicator control box. The controller may now acknowledge the condition by the sequences:

<PEM> HOOK or <ACID> RD

3. Once the condition is acknowledged, the alarm is automatically silenced and the full format will stop flashing, but the emergency message (EMG, CMF, HIJ) and the old and new codes will continue to flash. At all the other displays, the flashing emergency message will be displayed in the right half of the altitude line, time-shared with the class and ground speed. An emergency condition (EMG, CMF, HIJ) and code change must be acknowledged before any handoff can be started. If a handoff is already in progress on an aircraft that changes to an emergency code, the emergency condition is automatically acknowledged when the handoff is either recalled or accepted. As long as the tracked target remains in the system, the visual alarms in the OP List and the indicator control boxes will remain activated. Also see paragraph 1-55b.

4. Any target exhibiting one of the emergency conditions which coasts into the D/S List will cause the appropriate visual alarm(s) in the OP List and on the indicator control box to remain on until the target is deleted from the D/S List. Also see paragraph 1-24.

1-35 Military Emergency

Military emergencies (Figure 1-5, sheet 3) are handled in a manner similar to a civil (code 7700) emergency. Mode "1" and "2" military emergencies will be received only if an indicator control box in the PIDP system is set for "2C" or "1C" modes. When a Mode "3" military emergency is detected, the system will force the beacon code to be 7700. The audible alarm will sound and control procedures are the same as for a code 7700 emergency. The only difference is that the controller will see four bracket paints two miles apart. The bearing and range of the unacknowledged, uncontrolled emergency will be displayed in the OP List.

1-36 Suspect Aircraft

When a suspect aircraft target (code 1236) is detected in the system, a flashing "SA" alarm is inserted in the OP List. It is impossible to start a manual track on a suspect aircraft, but the PIDP will accept a handoff from NAS on an aircraft code 1236. If the suspect aircraft is within the range being displayed, the target will be forced through all filters.

SECTION VII - SYSTEM FEATURES

1-37 Introduction

This section contains a brief description of system features and applicable keyboard commands.

1-38 Handoffs

1. The purpose of a handoff is to allow the controller to select a track and transfer control responsibility of that track to another controller at a display in the PIDP facility (intra-facility handoff), or to the ARTCC or to a Japanese ACC, or an adjacent PIDP/ARTS facility (inter-facility handoff). Only controlled tracks can be handed off.

2. Intra-facility handoffs can occur only on a tracked target within the PIDP facility, and are initiated by the controlling display (Figure 1-6). When initiated, the target format will flash on the originating and destination displays. The track message will be preempted and replaced by HO. The HO will be followed by the letter designating the destination on the originator's display and receiver's display. When the handoff is accepted, the symbol will change to the track ID number on the controlling display and the new controlling display's ID on all other indicators. The format will stop flashing, and the format on the originator's display will change to select/non-select. The track fixes and/or message will reappear at the completion or recall of the handoff. If a track in handoff on point out status from/to the Japanese ACC can be canceled by the ACC. When this occurs, the message "CANCELED" will appear in the fourth line of the track data block.

3. Other messages can override the letters designating the handoff destination:

CONFLICT

MSAW

ABV

BLO

OLD BEACON CODE DURING CODE CHANGE

4. Inter-facility handoffs with the ARTCC, Japanese ACC, or an adjacent ARTS/PIDP can occur only with tracks having NAS/Japanese ACC originated flight plans except for ARSA handoffs. Facilities having PIDP-to-PIDP direct interface must have a track to initiate a handoff to the other facility.

5. On a PIDP departure, the system will auto-acquire the flight plan and send a departure message to NAS. The controller can take control via keyboard action (see paragraph 1-30-3). If the departure message is not acknowledged by NAS, a flashing "DM" message will appear in line two following the

beacon code (Figure 1-7, sheet 1). The departure message must then be forwarded by other means (FDS/FDIO/voice) or the ensuing handoff to ARTCC/ARTS/PIDP will be rejected. Once the departure message has been forwarded, "DM" can be cleared from the track's code line message area via keyboard action (see paragraph 1-38-7).

6. For examples of inter-facility handoff formats see Figure 1-7. Handing off to ARTCC/Japanese ACC/ARTS/PIDP causes the track format to flash. The message line will be replaced by "HO AAA" (AAA being three (3) alpha characters identifying the facility) for PIDP to ARTCC handoff or "HO AAANN" (NN being two (2) numeric characters identifying the sector ID), if handing off to a specific sector. The message line will be replaced by "HO AAA" when handing off to ARTS or "HO AAANA" (NA being one (l) numeric character and one (1) alpha character identifying the sector ID) if handing off to a specific sector. If the enhanced directed ARTCC/ARTS handoff is flashed other than where the handoff was originally directed, the handoff message line will alternate flashing the message of where the controller sent the handoff with where the computer designated the handoff sector. Handoffs to the Japanese ACC message line will read "HO N/T NN" (N indicating Naha and T for Tokyo followed by NN being two (2) numeric characters identifying the sector ID).

7. For ARSA handoffs, the message line will be replaced by "HO" "space" "*" "AAA", (AAA being three (3) alpha characters identifying the facility). Also, ARSA handoffs can be made to a specific ARTS sector. For ARSA handoffs to a specific ARTS sector, the message line will be replaced by "HO" "space" "*" "AAANA", (NA being one (1) numeric character followed by an optional alpha character identifying the sector ID). If the sector that you are handing off to does not take the handoff, the message line will flash "HO *AAANA" indicating what sector you sent the handoff to, with "HO *AAANA" indicating what sector actually took the handoff. ARSA handoffs cannot be made to a non-host ARTS/PIDP.

8. When ARTCC/ACC accepts the handoff, the PIDP will change the position symbol to a "Z" and display the track as far as the auto-acquire boundary before the track is automatically deleted. When ARTS/PIDP accepts the handoff, the PIDP will change the position symbol to a "Y" and display the track as far as the auto-acquire boundary before the track is automatically deleted. If the handoff is taken by other than designated, the message line will display who actually took it in non-flashing format. If enhanced, the directed ARTS handoff is accepted at a position other than where the handoff was directed, the track message line will contain "H" "space" "terminal number" "original keyboard subset number" "original sector identifier" "/" received keyboard subset number" "received sector identifier". The position symbol will change to a "N", and the format will not be flashing. If during the delay an alarm condition arises, the position symbol will remain an "N", and the emergency, MSAW, or conflict alert warning will flash in the data block. The alarm condition can be acknowledged without changing the delay status. Tracks in inter-facility handoff status from the PIDP to ARTCC/ARTS/PIDP will be automatically placed in hold mode (see paragraph 1-45) if beacon reports cease for more than four consecutive scans. The frozen data block will continue to be displayed in handoff format. This is to alert the controller that even though PIDP is not actively tracking the aircraft, the inter-facility handoff is still in progress.

9. An “IF” appearing in the second line of the track data block after attempting an inter-facility handoff or after accepting an inter-facility handoff indicates a NAS handoff failure (see Figure 1-7, sheet 1). If a NAS handoff failure occurs, coordination with the ARTCC/ARTS/PIDP will be required. The handoff to the ARTCC/ARTS/PIDP may be re-attempted. The “IF” can be cleared via keyboard action (see paragraph 1-38-8).

10. In ARSA handoffs, the system will send a flight plan message to the receiving facility. When the flight plan message has been acknowledged, the system will automatically send a handoff initiate message. If the flight plan message has not been acknowledged, a “FP” will appear in the second line of the track data block (Figure 1-7, sheet 1). The “FP” can be cleared via keyboard action (paragraph 1-38-9). After the handoff has been accepted, the fixes will display on the message line of the track data block.

11. On an arrival or en route handoff (ARTCC/ARTS/PIDP to PIDP), NAS will send a flight plan (A or E) prior to the handoff. Selected facilities not having a NAS interface will have handoff capability via a direct PIDP/PIDP interface. Handoff procedures are the same as for adjacent ARTS/PIDP procedures except that the receiving facility need not have a local track or flight plan before the handoff is initiated. If a discrete code flight plan has been received, it will auto-acquire when the target is within the auto-acquire limit. Controllers should not take track control of auto-acquired NAS arrival/en route tracks until the automated facility controlling the aircraft initiates a handoff. When the ARTCC initiates a handoff, the entire track format will flash (Figure 1-7 sheet 2), and the message line will be replaced with “HO AAA” (AAA being three (3) alpha characters identifying the facility) or if enhanced “HO AAANN” (NN being two (2) numeric characters identifying the sector ID) if handing off from a specific sector. When ARTS/PIDP initiates a handoff, the entire track format will flash (Figure 1-7 sheet 2), and the message line will be replaced with “HO AAA” or if enhanced “HO AAANA” (NA being one (1) numeric character and one (1) alpha character identifying the sector ID) if handing off from a specific sector. The controller can now accept the handoff using procedures in paragraph 1-38-3. The format will stop flashing.

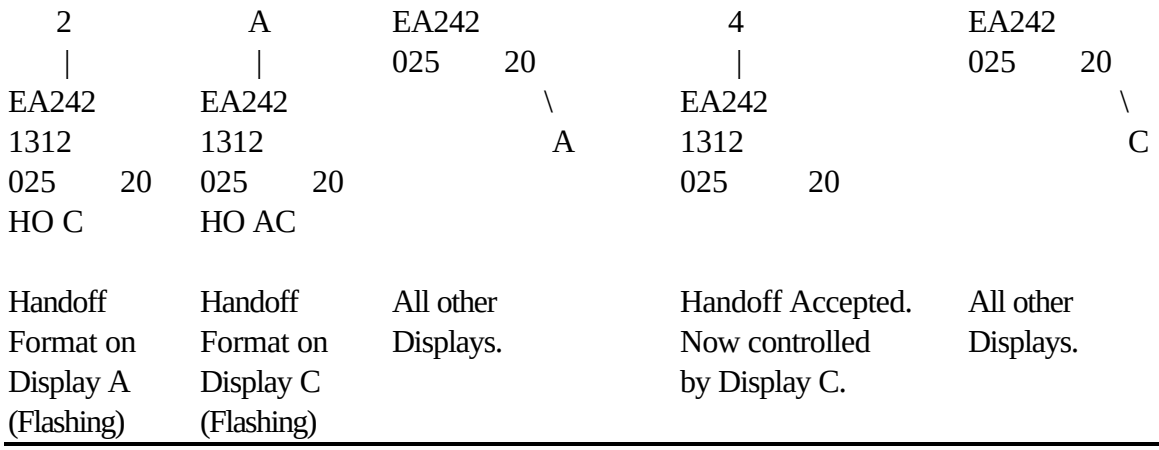
12. Three special designators are also used in the code line message area during an inter-facility handoff, which are: NAT, OLD, and AMB. These will not be seen at units interfaced with non-FAA facilities.

13. A NAT (not a PIDP track) (Figure 1-7, sheet 2) in the code line message area of an ARTCC/ARTS/PIDP to PIDP handoff signifies that the PIDP is not receiving a beacon report for that target. A special situation can arise if an auto-acquired arrival or en route ARTCC/ARTS/ PIDP track is in a display’s D/S List when the ARTCC/ARTS/PIDP initiates the automated handoff. In this case, the track will be taken out of the D/S List and displayed as an uncontrolled NAT track in handoff format at all arrival or en route displays as appropriate. The ARTCC/ARTS/ PIDP will continue to update the target position; and if the PIDP acquires the beacon target, the NAT will disappear from the code line message area for a discrete code. If the ARTCC/ARTS/ PIDP initiates a handoff and no PIDP target matches the target being handed off giving rise to a NAT condition, and if the ARTCC/ARTS/PIDP stops updating its position, an OLD will replace the NAT in the target’s code line message area (Figure 1-7, sheet 2). This will occur if the ARTCC/ARTS/PIDP no longer has a valid beacon report on the target.

14. In an ARTCC/ARTS/PIDP to PIDP handoff, should the position of the target shown by the receiving PIDP and the position shown by the initiating ARTCC/ ARTS/PIDP differ by more than two miles, an AMB will be placed in the code line message area of the format (Figure 1-7, sheet 2). This can indicate a possible problem in either system; and if it persists, maintenance action should be coordinated with the ARTCC/ARTS/PIDP.

15. Point Outs. This paragraph is for Japanese Only. The purpose of a point out is to allow the controller to transfer the radar identification of an aircraft to another controller if the aircraft will or may enter the airspace or protected airspace of another controller and radio communications will not be transferred. Point outs with the Japanese ACC can occur only with tracks having Japanese ACC originated flight plans. Point outs to/from Japanese ACC cause the track format to flash. The message line will be replaced by “PO N/T NN" (N indicating Naha and T for Tokyo followed by NN being two (2) numeric characters identifying the sector ID). When the point out is accepted, the position symbol will remain the same. The format will stop flashing, except for “PO” which will continue to flash in the message line right justified (Figure 1-7, sheet 2).

Figure 1-6 Intra-Facility Handoffs



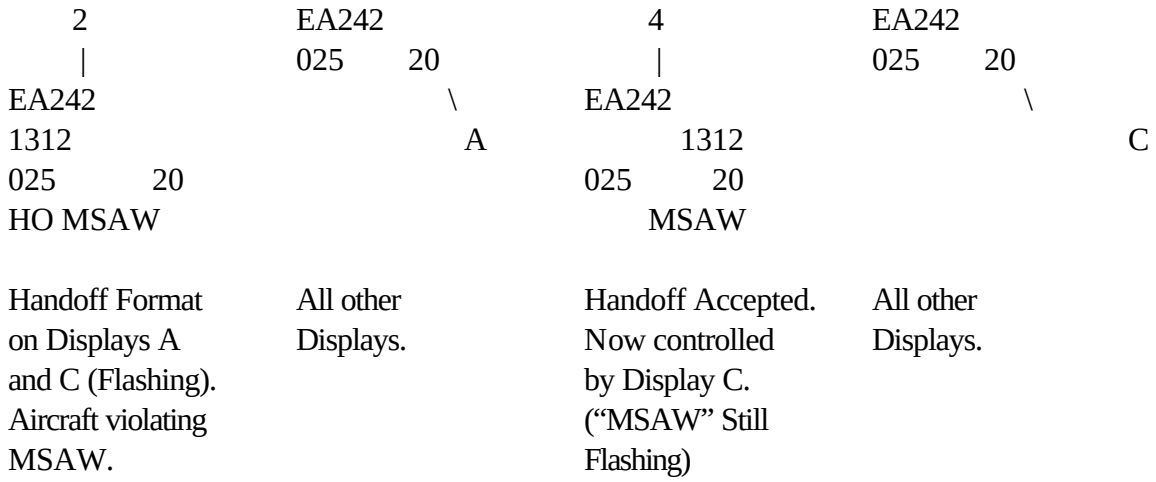
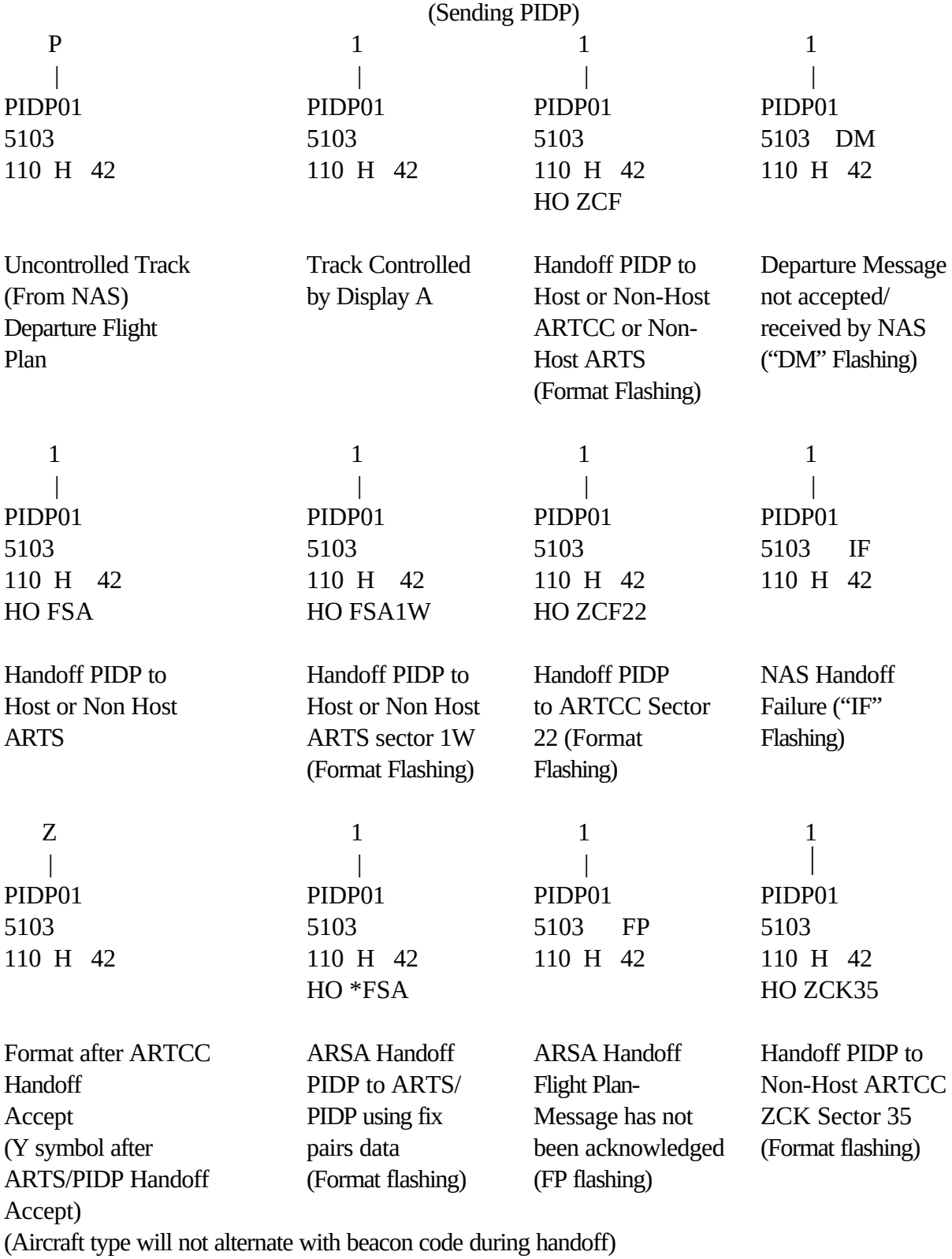
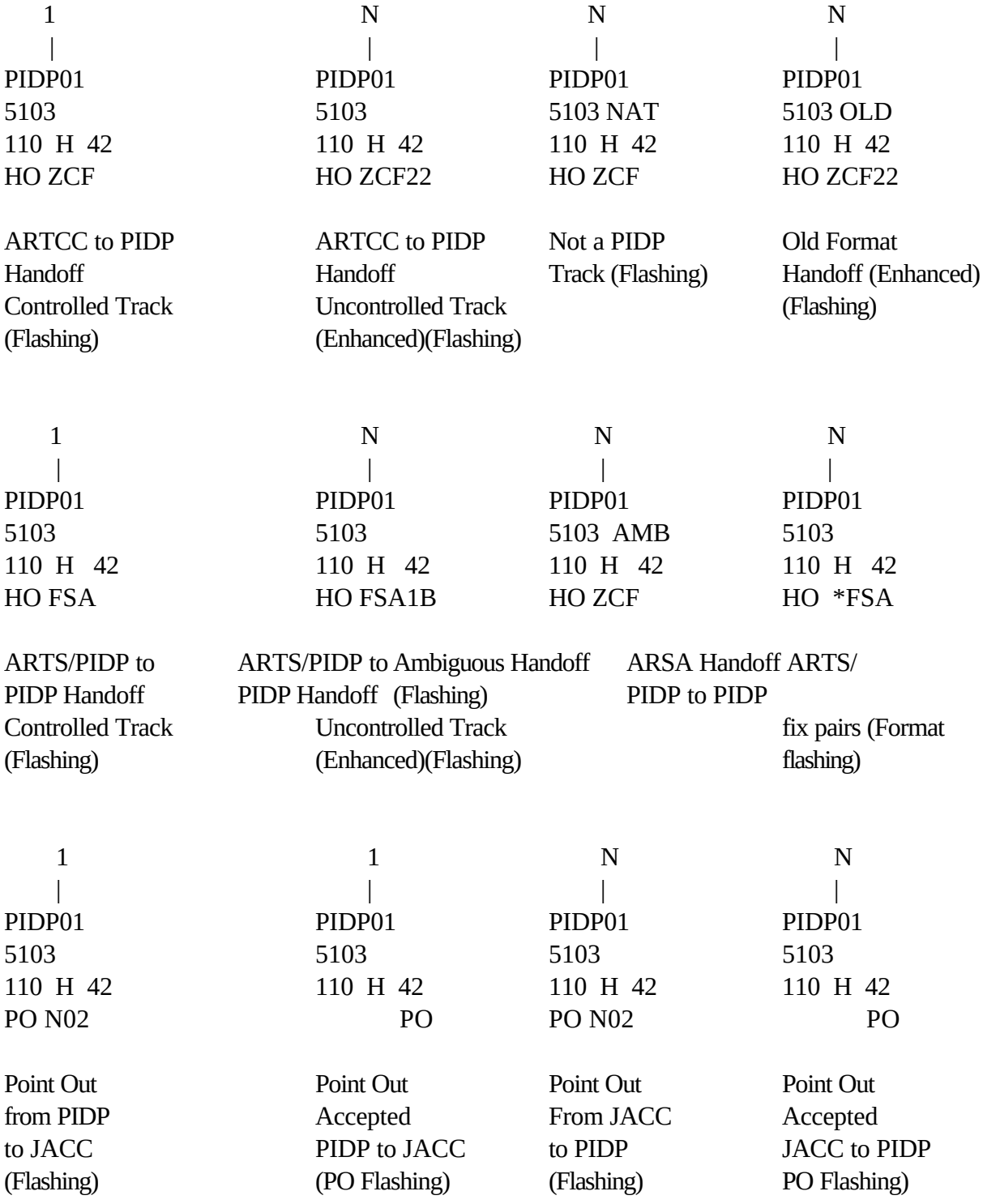


Figure 1-7 Inter-Facility Handoffs and Point Outs (Sheet 1)



(Aircraft type will not alternate with beacon code during handoff)

Figure 1-7 Inter-Facility Handoffs and Point Outs (Sheet 2)
(Receiving PIDP)



1-38-1 Handoff Initiate

The purpose of a handoff initiate is to allow the controller to identify a target currently being tracked by that display and attempt to assign the tracking responsibility to another display, an ARTCC, or an adjacent ARTS/ PIDP facility via the interface. Handoffs may be initiated on tracks in the D/S List.

EXAMPLES:

Target Identifier	Capture	Destination	Execute	Remarks
TWA1234	RD	A	HND	Handoff tracked target, identified by <ACID>, to display A.
2460	RD	H	HND	Handoff tracked target, identified by <CODE>, to display H.
<PEM>	HOOK		HND	Handoff tracked target, identified by <PEM>, to host, non-host ARTC or JACC.
3	RD	1 through 8	HND	Handoff tracked target, identified by <ACID>, to one of eight adjacent terminal facilities through the host, non-host ARTCC or JACC.
12	RD	01 thru 99	HND	Handoff tracked target to a specific sector at the ARTCC or JACC.
1234	RD	01 thru 99 A thru Z	HND	Handoff tracked target to a specific sector at the non-host ARTCC or JACC.
24	RD	1A thru 8D	HND	Handoff tracked target via ARSA procedures.
2367	RD	1A1	HND	Handoff tracked target to a specific sector at any of eight adjacent host or non-host terminal facilities.
5	RD	1A1A	HND	Handoff tracked target to a specific sector at any of eight adjacent terminal facilities via ARSA procedures.

Special Requirements:

1. A tracked target may be handed off as long as the assistant controller is not performing any function on the target.

2. Any emergency, communications failure, hijack, MSAW, conflict alert, or altitude monitor violation must be acknowledged before a handoff can be initiated.

3. If <CODE> is entered as the identifier, it must be a discrete beacon code.

4. A track handed off to the ARTCC or an adjacent NAS terminal facility must have been supported by a NAS generated flight plan unless it is being handed off via ARSA.

5. The target handed off must be a tracked target owned by the initiator's display.

6. The destination of the tracked target being handed off must be an active display, a host non-host ARTCC, or an adjacent NAS terminal facility.

7. A track handed off to the JACC must have been supported by a Japanese generated flight plan.

Results:

The tracked target specified will now be in handoff mode. It will appear in full tracked format on the destination display and will be flashing on both the originator's display and the destination's display. In the message area of the track data block on the originator's display will appear HO D (D = destination's ID).

Errors:

Error Condition	Preview
There is no match for the target identifier in the system.	"NO MATCH"
Target indicated is being used by some other controller performing a function on that target.	"CAPTURED"
The <CODE>, if used as an identifier, was not a discrete beacon code.	"DUPL BC!"
The destination display was the owner's display.	"INVALID!"
Initiating a handoff to the ARTCC or through ARTCC to an adjacent terminal facility that is not supported by a NAS generated flight plan, except handoffs via ARSA.	"INVALID!"

The destination display was not an active display.	"INACTIVE"
Initiating an inter-facility handoff when the interface is out.	"INVALID!"
There is not a valid entry in the Terminal ID table.	"INVALID!"
Track ID number is not in use.	"NO MATCH"

NOTE: If the handoff message is deleted before the track flashes in handoff status, and IF flashes in the data block, and the handoff is to an adjacent terminal facility, try to initiate the handoff again. The terminal may not have received its flight plan.

1-38-2 Handoff Recall

The purpose of a handoff recall is to allow the controller to resume responsibility for a tracked target that is owned by the display and is currently in handoff initiate status, thus canceling the handoff attempt.

EXAMPLES:

Target Identifier	Capture	Remarks
TWA1234	RD	Identify tracked target by <ACID> and cancel handoff.
2460	RD	Identify tracked target by <CODE> and cancel handoff.
<PEM>	HOOK	Identify tracked target by <PEM> and cancel handoff.
3	RD	Identify tracked target by owner ID number and cancel handoff.

Special Requirements:

1. The <CODE> entered must be a discrete beacon code.

2. The target identified must be a tracked target currently in handoff status.

3. For NAS handoffs, the recall is completed when it is acknowledged by the receiving computer. If the recall message is not acknowledged by the other computer, the track will remain in handoff status with "IF" in the data block. The "IF" can be cleared via keyboard action (see paragraph 1-38-8).

Results:

The target will stop flashing on both displays. The target will revert to tracked format on the owner's display and a non-select or select format on the former destination display.

Errors:

Error Condition	Preview
There is no match for the target identifier in the system.	"NO MATCH"
Target indicated is currently being used by some other operator in performing a function or is awaiting acknowledgment of inter-facility handoff recall.	"CAPTURED"
<CODE> identifier, if used, was not a discrete beacon code.	"DUPL BC!"
Track owner ID number is not in use.	"NO MATCH

1-38-3 Handoff Accept

The purpose of the handoff accept command is to identify a target and accept control responsibility either from another PIDP display, the ARTCC, or an adjacent ARTS/PIDP facility.

EXAMPLES:

Target Identifier	Capture	Remarks
TWA1234	RD	Identify target being handed off by <ACID> and accept it.
2460	RD	Identify target being handed off by <CODE> and accept it.
<PEM>	HOOK	Identify target being handed off by <PEM> and accept it.

Special Requirement:

1. The handoff will be completed if the target identifier matches a target in the system.

2. For NAS handoffs, the handoff is completed when acknowledged by the sending computer.

3. If <CODE> is entered as the target identifier, it must be a discrete beacon code.

Results:

The destination display has now assumed control of the tracked target. The symbol on the new owner's display will be it's target number. It will appear in tracked format on the new owner's display and as a non-select or select target on all others. The flashing will have ceased, and the handoff message will be replaced by the tracked target's message. If the target is MSAW exempt by track on the initiator's display, this MSAW exemption will be automatically canceled when the receiver accepts the handoff. If still needed, the destination display must enter the MSAW exempt by track mode.

Errors:

Error Condition	Preview
There is no match for the target identifier in the system.	"NO MATCH"
Target indicated is currently captured by another controller.	"CAPTURED"
<CODE> used as identifier was not a discrete beacon code.	"DUPL BC!"

1-38-4 Point Outs

Paragraphs 1-38-4, 1-38-5 and 1-38-6 are for Japanese Only. The purpose of a point out is to allow the controller to transfer the radar identification of an aircraft to another controller if the aircraft will or may enter the airspace or protected airspace of another controller and radio communications will not be transferred.

EXAMPLES:

Target Identifier	Capture	Destination	Mode	Execute	Remarks
TWA1234	RD	02	P	HND	Identified by <ACID> to a specific sector
2460	RD		P	HND	Identified by <CODE>
<PEM> to a	HOOK	01	P	HND	Identified by <PEM> specific sector
2	RD		P	HND	Identified by owner track ID number

Special Requirements:

1. Must have a Japanese generated flight plan.

2. If <CODE> is entered as the identifier, it must be a discrete beacon code.

3. The track must be owned by the display entering the command.

Results:

The tracked target specified will now be in point out mode. It will appear in full tracked format on the display and will be flashing on the originator's display. In the message area of the track data block on the originator's display will appear PO D (D = destination's ID).

Errors:

Error Condition	Preview
There is no match for the target identifier in the system.	"NO MATCH"
The <CODE>, if used as an identifier, was not a discrete beacon code.	"DUPL BC!"
Target indicated is being used by some other controller performing a function on that target.	"CAPTURED"
Track ID number is not in use.	"NO MATCH"
Initiating a point out to the JACC that is not supported by a Japanese generated flight plan.	"INVALID!"

1-38-5 Point Out Recall

The purpose of a point out recall is to allow the controller to resume responsibility for a tracked target that is owned by the display and is currently in point out initiate status, thus canceling the point out attempt.

EXAMPLES:

Target Identifier	Capture	Remarks
TWA1234	RD	Identify tracked target by <ACID> and cancel point out initiate
2460	RD	Identify tracked target by <CODE> and cancel point out initiate
<PEM>	HOOK	Identify tracked target by <PEM> and cancel point out initiate
3	RD	Identify tracked target by owner ID number and cancel point out initiate

Special Requirements:

1. The <CODE> entered must be a discrete code.

2. The target identified must be a tracked target currently in point out initiate status.

3. The point out recall is completed when it is acknowledged by the receiving computer. If the point out recall is not acknowledged by the JACC, the track will remain in point out status.

Errors:

Error Condition	Preview
There is no match for the target identifier in the system.	"NO MATCH"
Target indicated is currently being used by some other operator in performing a function.	"CAPTURED"
<CODE> identifier, if used, was not a discrete code.	"DUPL BC!"
Track owner ID number is not in use.	"NO MATCH"

1-38-6 Point Out Accept

The purpose of the point out accept command is to identify a target and accept the notification. The control responsibility will remain with the originator of the point out.

EXAMPLES:

Target Identifier	Capture	Remarks
TWA1234	RD	Identify target being pointed out by <ACID> and accept the notification
2460	RD	Identify target being pointed out by <CODE> and accept the notification
<PEM>	HOOK	Identify target being pointed out by <PEM> and accept the notification

Special Requirements:

1. The point out will be completed if the target identifier matches a target in the system.

2. The point out is complete when acknowledged by the sending computer.

3. If <CODE> is entered as the target identifier, it must be a discrete beacon code.

Results:

The destination display has now acknowledged receipt of the point out. The symbol will remain the same. The flashing will have ceased except for the "PO" which will continue to flash until the track is dropped, handed off or deleted.

Errors:

Error Condition	Preview
There is not match for the target identifier in the system	"NO MATCH"
Target indicator is currently captured by another controller	"CAPTURED"
<CODE> used as identifier was not a discrete beacon code	"DUPL BC!"

1-38-7 Clear DM Flag

This command allows the controller to clear the DM flag from the code line message area of a track. The DM flag should not be cleared until after the departure message has been forwarded to NAS by alternate means.

EXAMPLES:

Target Identifier	Capture	Remarks
TWA1234	RD	Identified by <ACID>
2460	RD	Identified by <CODE>
2	RD	Identified by owner track ID number
<PEM>	HOOK	Identified by <PEM>

Special Requirements:

1. If <CODE> is used as an identifier, it must be a discrete beacon code.

2. The track must be owned by the display entering the command.

Result:

The “DM” flag will be removed from the track data block.

Errors:

Error Condition	Preview
Target identified is currently captured by another controller.	“CAPTURED”
<CODE> entered was not a discrete beacon code.	“DUPL BC!”
Track owner ID number is not in use.	“NO MATCH”

1-38-8 Clear IF Flag

This command allows the controller to clear the “IF” flag from the second line of a track. The “IF” flag should not be cleared until coordination with the ARTCC/ARTS/PIDP has been accomplished. It is not

necessary to clear the “IF” flag prior to initiating a <RD> key sequence. The <RD> key sequence will automatically delete the “IF” flag.

EXAMPLES:

Target Identifier	Capture	Remarks
TWA1234	RD	Identified by <ACID>
2460	RD	Identified by <CODE>
2	RD	Identified by target ID number
<PEM>	HOOK	Identified by <PEM>

Special Requirements:

1. If <CODE> is used as an identifier, it must be a discrete beacon code.

2. The track must be owned by the display entering the command.

3. If <DEF> is used solely to clear the "IF" flag, it must be followed by the CLEAR key.

Result:

The "IF" flag will be removed from the track data block.

Errors:

Error Condition	Preview
Target identified was currently captured by another controller.	"CAPTURED"
<CODE> entered was not a discrete beacon code.	"DUPL BC!"
Track owner ID number is not in use.	"NO MATCH"

1-38-9 Clear FP Flag

This command allows the controller to clear the "FP" flag from the code line message area of a track. This flag will only occur when initiating a handoff via ARSA procedures. It is not necessary to clear the "FP" flag prior to initiating a <RD> key sequence. The <RD> key sequence will automatically delete the "FP" flag.

EXAMPLES:

Target Identifier	Capture	Remarks
TWA1234	RD	Identified by <ACID>.
2460	RD	Identified by <CODE>.
2	RD	Identified by track owner ID number.
<PEM>	HOOK	Identified by <PEM>.

Special Requirements:

1. If <CODE> is used as an identifier, it must be a discrete beacon code.

2. The track must be owned by the display entering the command.

3. If <DEF> is used solely to clear the "FP" flag, it must be followed by the CLEAR key.

Result:

The "FP" flag will be removed from the track data block.

Errors:

Error Condition	Preview
Target identified is currently captured by another controller.	"CAPTURED"
<CODE> entered was not a discrete beacon code.	"DUPL BC!"
Track owner ID number is not in use.	"NO MATCH"

1-39 Reflection Discrimination

1. At many ATC sites, reflections of beacon (secondary) targets have become a major problem with automated systems, such as the ARTS-III and non-PIDP TPX- 42s. Reflections are caused by high buildings, hangars near the flight line, and other obstructions. These reflections cause the aircraft's

transponder to squawk when the radar antenna is not pointing at the aircraft. Thus, two targets are created, one true and one false (see Figure 1-8).

EXAMPLES: The antenna in Figure 1-8 is pointing NW and the path of the radar signal is, hangar - true target - hangar - antenna. The radar system will place a target at the position of the antenna (NW) and at a range equal to the true target plus the distance to the reflector.

NOTE: Reflections should not be confused with so-called ring-around (three or more targets) which is caused by misalignment of the TPX-42, operating on HIPOWER, or a defective airborne transponder.

2. The PIDP will identify only false targets of a true target that is tracked. Reflections will be flagged provided reflection data has been submitted for your facility. Those targets that are identified as reflections are displayed as a non-select target with a "?" after the altitude (Figure l- 8).

Special Requirements:

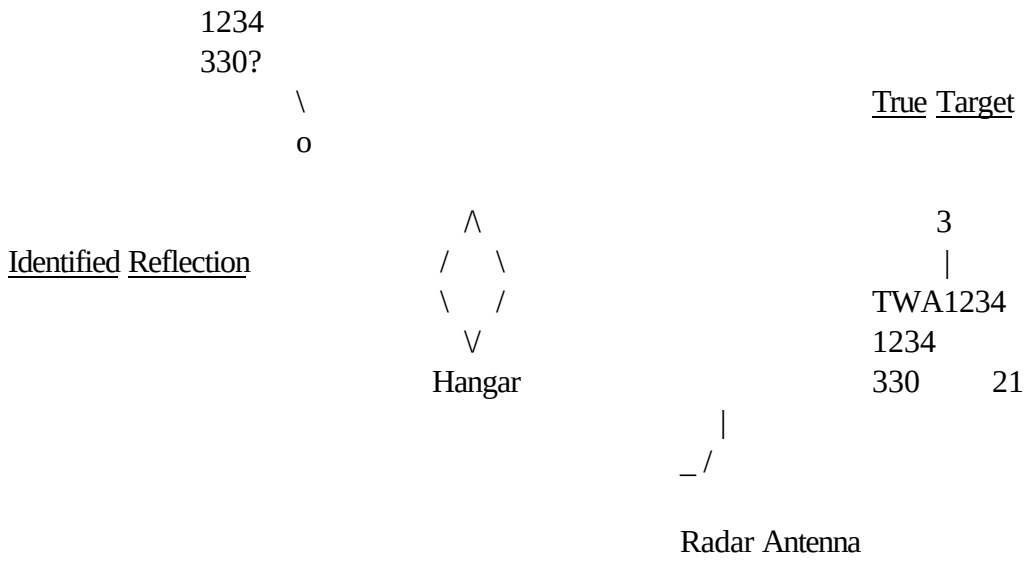
Targets must be tracked for related false targets to be identified.

Results:

False targets will be identified and displayed.

Errors: None.

Figure 1-8 Reflection Discrimination

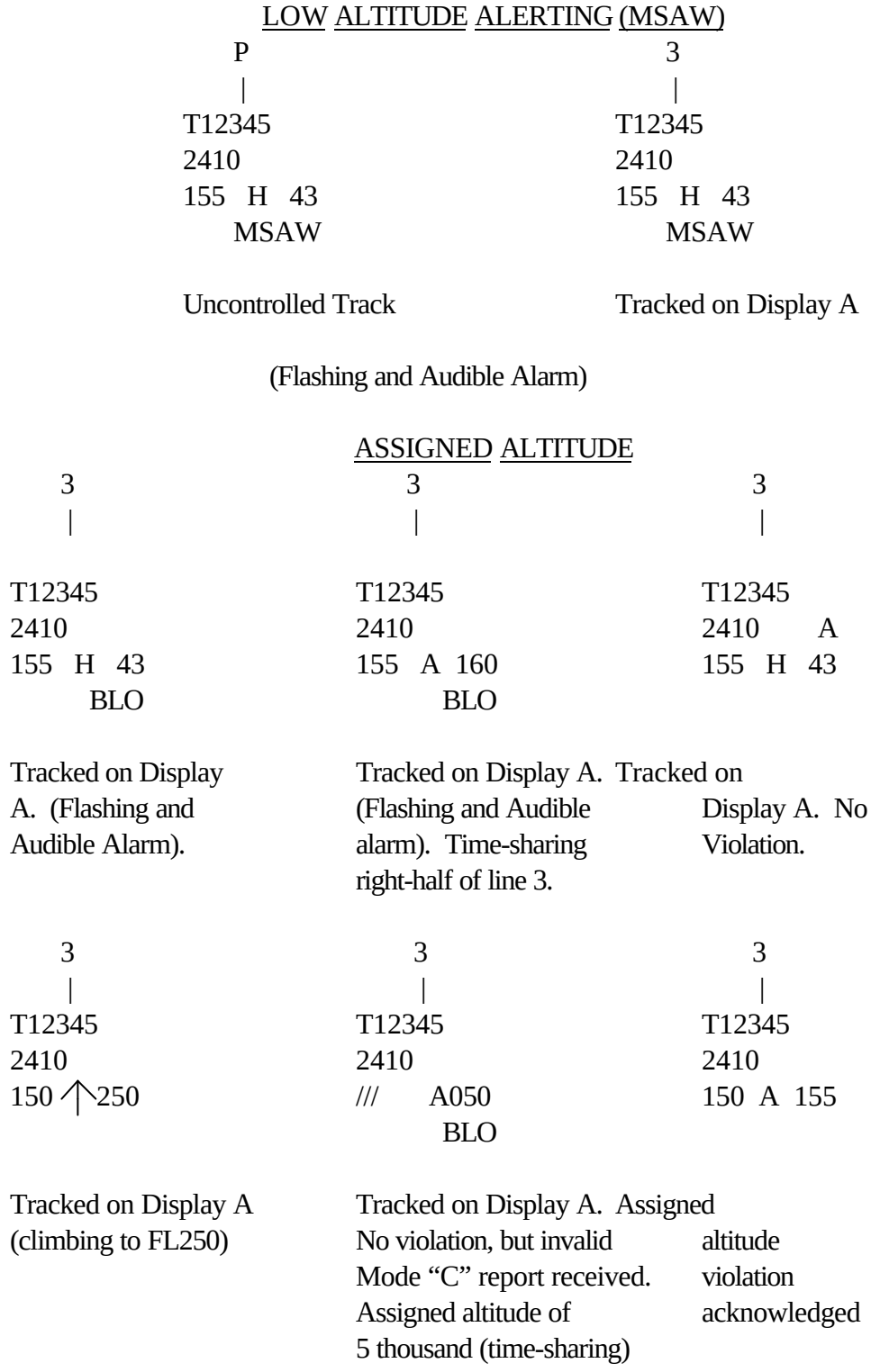


1-40 Assigned Altitude

1. Each indicator position is capable of performing altitude monitoring by assigned altitude on controlled tracked targets. By so selecting the target, the system will alert the controller when the target is 300 feet above or below an assigned altitude level. If a value is not entered when setting the assigned altitude, the current altitude of the target will be used as the altitude to monitor. When the altitude entered differs from the current altitude displayed, the assigned altitude will be displayed by time sharing the class and ground speed positions of the data block every scan. Until the tracked target reaches the assigned altitude, an up-arrow or down-arrow will be displayed with the assigned altitude indicating whether the track should be climbing or descending. When the tracked target comes within 300 feet of the assigned altitude, the time sharing will stop; and an "A" will be displayed in the right half of line two of the data block. If an invalid Mode C is received (///), the assigned altitude will be time shared on line three of the data block preceded by an "A". Should the target exceed the limit in either direction as shown in Figure 1-9, the full track format begins to flash; and the audible alarm sounds. In addition, the message line in the format is preempted and replaced with the message "ABV" or "BLO" depending on the direction which has been exceeded; and the assigned altitude, preceded by an "A", will time share with class and ground speed. The three-character message "ABV" or "BLO" appears in the last three character positions. The controller may now acknowledge the condition by the sequence: <PEM> HOOK, <ACID> RD, or <Discrete Code> RD.

2. Once the condition is acknowledged, the alarm is automatically silenced and the full format will stop flashing, but the message "ABV" or "BLO" will continue to flash. An assigned altitude violation must be acknowledged before any handoff can be started. If a handoff is already in progress on an aircraft that violates its assigned altitude, the handoff can either be recalled and the violation acknowledged, or completed and the violation acknowledged by the receiving controller. If the track is deleted, the pilot corrects the condition, or if the assigned altitude function is dropped, the computer will automatically drop the visual and audible warning.

Figure 1-9 MSAW and Assigned Altitude



EXAMPLES:

Target Identifier	Capture	Assign Alt	Execute	Remarks
2460	RD	A	ENTER	Monitor tracked target with beacon code of 2460 ±300 feet of current altitude.
3	RD	A	ENTER	Monitor tracked target with track owner ID of 2 ±300 feet of current altitude.
<PEM>	HOOK	060 A	ENTER	Monitor track identified by <PEM> ±300 feet of 6,000 feet.
<PEM>	HOOK	A	DROP	Discontinue assigned altitude monitoring of target identified by <PEM>.
TWA1234	RD	A	DROP	Discontinue assigned altitude monitoring of target identified by <ACID>.
4	RD	A	DROP	Discontinue assigned altitude monitoring of target identified by track owner ID.

Special Requirements:

1. The target identifier entered must match a tracked target not captured by another keyboard.

2. If <CODE> is entered as the identifier, it must be a discrete beacon code.

3. The target entered must be a tracked target owned by the controller's display.

Results:

A target placed in assigned altitude monitor will have an "A" in the code line message area of the data block. Should the target exceed the limits set, "ABV" or "BLO" will appear in line four of the data block; and the audible alarm will sound.

Errors:

Error Condition	Preview
No match in the system for target identifier.	"INVALID!"
Target indicated being used by another operator in performing some function.	"CAPTURED"
<CODE> if used as the target identifier was not a discrete beacon code.	"DUPL BC!"
Target not reporting a valid mode "C" altitude.	"INVALID!"
Track owner ID number is not in use.	"NO MATCH"

1-41 Minimum Safe Altitude Warning (MSAW)

1. A low altitude alerting called MSAW is built into the PIDP program. Anytime a tracked target is at or below the altitude set for that sector, the full track format begins to flash and the audible alarm is sounded, except for those codes or tracks exempted (paragraph 1-41-1). In addition, the message "MSAW" is placed in the last four character positions of line four in the data block (Figure 1-9). The controller may now acknowledge the condition by the sequence: <PEM> HOOK, <ACID> RD, or <Discrete Code> RD.

2. Once the condition is acknowledged, the alarm is automatically silenced and the full format stops flashing. The message "MSAW" will continue to flash. An MSAW violation must be acknowledged before any handoff can be started. If a handoff is already in progress on an aircraft that violates MSAW, the handoff can either be recalled and the violation acknowledged, or accepted and the violation acknowledged. If the track is deleted or the pilot corrects the condition, the computer will automatically drop the visual and audible warning.

Note: See paragraph 1-73 MSAW Readout.

1-41-1 MSAW Exemption by Code Block

This command will exempt a certain code or code block from MSAW alarming (see paragraph 1-41).

EXAMPLES:

Command	Type	MSAW Exempt Code	Execute	Remarks
SPEC	M	1211	ENTER	Set code 1211 as MSAW exempt.
SPEC	M	1212 ^ 1415	ENTER	Set code block 1212-1415 as MSAW exempt.
SPEC	M		DROP	Deletes MSAW exemption; either code or code block.

Special Requirements:

1. Command must be entered at the master display.

2. Code or code block must be in valid code range (0000 - 7477).

Results:

The result is to set a code or a code block that will be exempt from MSAW alarming. A visual indication (a left caret (<) following the altitude) will be displayed in the data blocks of those tracks that fall within the code or code block (Figure 1-10).

Errors:

Error Condition	Preview
Attempt is made to enter MSAW exemption code or code block or delete the code or code block from a non-master display.	"MST ONLY"
Attempt to enter code or code blocks outside of range (0000 - 7477).	"BAD CODE"
Attempt to enter a code less than the first code when entering a code block.	"INVALID!"

1-41-2 MSAW Exemption by Track

This command will exempt a certain track from MSAW alarming. (See paragraph 1-41).

EXAMPLES:

Track Identifier	Capture	Mode	Execute	Remarks
<PEM>	HOOK	X	ENTER	Set the track as MSAW exempt by <PEM>.
2430	RD	X	ENTER	Set the track as MSAW exempt by <CODE>.
TWA1234	RD	X	ENTER	Set the track as MSAW exempt by <ACID>.
4	RD	X	DROP	Delete the MSAW exemption.

Special Requirements:

Command must be associated with a valid tracked target on that display.

Results:

The result is to set a track exempt from MSAW alarming. A visual indication (a left caret (<) following the altitude) will be displayed in the data block of the track(s) that are MSAW exempt.
NOTE: If the track in MSAW exemption, either by code block or by track, violates the altitude for MSAW alarming, the left caret (<) will begin to flash; but no audible alarm will sound. The caret will continue to flash until the altitude of the track is above the minimum altitude for that MSAW sector (Figure 1-10). Also, if the target is exempt by track, the exemption will be cleared when a handoff is accepted on that track. This places the responsibility of MSAW exemption by track on the receiving display.

Errors:

Error Condition	Preview
No march in the system for target identifier.	"INVALID"
Target indicated is being used by some other operator in performing some function at this time.	"CAPTURED"
<CODE> if used as the target identifier was not a discrete beacon code.	"DUPL BC!"
Track owner ID number is not in use.	"NO MATCH"

1-41-3 MSAW Alarm Verification

This feature will enable the controller to verify that the MSAW Alarm is working. To check the alarm enter an altitude greater than the MSAW value, and depress ENTER. (If MSAW value for the area being checked is unknown, move <PEM> to the area enter OP M, the MSAW value of the area identified by the PEM will be displayed in the preview area of the requesting display.) A target with a beacon code of 0001 with the input altitude and an ACID of "MSAW CK" appears on the scope (Figure 1-10). The altitude will descend 100 feet per sweep until it reaches the MSAW altitude and will alarm for three (3) sweeps, then start ascending until it reaches the input altitude, then it is deleted.

EXAMPLES:

Target Identifier	Capture	Assign Alt	Execute	Remarks
<PEM>	HOOK	023	ENTER	Start MSAW track with altitude of 2300 feet.
<PEM>	HOOK	253	ENTER	Start MSAW track with altitude of 25300 feet.

Special Requirements:

1. Target area must be within an MSAW zone.

2. Only one MSAW check track can be started in the system at a time.

3. Track should be started above MSAW altitude.

Results:

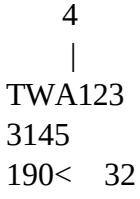
A target with a beacon code of 0001, the input altitude, and an ACID of "MSAW CK" will appear on the scope. The track will start descending 100 feet per sweep until it reaches the MSAW value; the track data block will start flashing with an alarm sounding for three (3) sweeps. The track will ascend to the input altitude and then be deleted.

Errors:

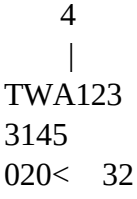
Error Condition	Preview
If there is a "MSAW CK" target already started.	"CAPTURED"
If "CENRAP" is on.	"INVALID"

Figure 1-10 MSAW Exemptions and Alarm Verifications

EXEMPTIONS BY CODE, CODE BLOCK, AND TRACK

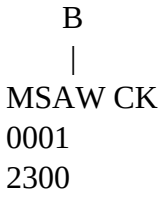


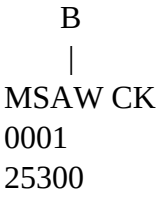
MSAW Exempt
(not violating MSAW altitude)



MSAW Exempt (caret flashes)
(violating MSAW altitude)

ALARM VERIFICATION





(Track Block Flashing)

1-42 Quick-Look

1. The quick-look command allows a controller to view the full track format of targets that another display is tracking.

2. The controller shall be able to display the symbol and data block of individual targets being tracked by other control positions. The targets to be viewed will be designated one at a time.

EXAMPLES:

Command	Display	Execute	Remarks
QL	C		Quick-look tracked targets from display C.
QL		DROP	Revert to select/non-select format on display C's tracked targets.
(DEF)		QL	Quick-look a specific target which is not being controlled by that display.

Special Requirements:

1. A controller can quick-look only one display at a time.

2. A different indicator can be quick-looked by entering a new quick-look command. It is not necessary to drop the existing quick-look first.

3. The indicator specified must be active when the command is entered.

4. If a position activates selective quick-look on a specific target and then activates quick-look of the position owning that track, the track will become a part of the position quick-look.

5. The <DEF> QL command is a flip-flop (on-off, off-on) type.

6. A controller is not trying to quick-look the display that he/she is quick- look inhibiting.

Results:

1. The tracked targets of the indicator the controller is quick-looking will appear in full track format on the initiating controller's display. "QL D" will appear in the OP List of that indicator. (D = display ID of the display being quick-looked). When quick look is dropped, the tracked targets from the indicator the controller was quick-looking will resume select/non-select format and the QL message in the OP List will

disappear. Quick-looking will not affect the display being quick-looked. If the display being quick-looked is disengaged, the quick-look status will remain the same until changed by keyboard entry.

2. The individual tracked target the controller is quick-looking will appear in full track format on the initiating controller's display. When individual quick-look is dropped, the individual tracked target from the indicator the controller was quick-looking will resume select/non-select format.

3. A track that is being individually quick-looked by another display will remain in individual quick-look even after it is handed off to another indicator.

Errors:

Error Condition	Preview
Controller trying to quick-look his/her own display.	"INVALID!"
Trying to quick-look a non-active display.	"INACTIVE"
Controller tries to drop the quick-look but is not quick-looking any display.	"INVALID!"
Controller tries to quick-look a display he/she is quick-look inhibiting.	"INVALID!"
Controller tries to quick-look a specific target which is in the D/S List.	"INVALID!"

1-43 Quick-Look Inhibit

The quick-look inhibit command allows a controller to inhibit display of the tracked targets controlled by another indicator.

EXAMPLES:

Command	Display	Execute	Remarks
QL I	B		Inhibit the display of all tracks owned by indicator B.
QL I		DROP	Revert to select/non-select format for display B's tracked targets.

Special Requirements:

1. A controller can quick-look inhibit only one display at a time.

2. A different indicator can be quick-look inhibited by entering a new quick- look inhibit command. It is not necessary to drop the existing quick-look inhibit first.

3. The indicator specified must be active when the command is entered.

4. A controller is not trying to quick-look inhibit the display that is currently being quick-looked.

Results:

The tracked targets of the indicator the controller is quick-look inhibiting will not be displayed on the initiating controller's display. "QI D" will appear in the OP List of that indicator alternating with "QL D". ("D" equals the display ID of the display being quick-look inhibited.) When quick-look inhibit is dropped, the tracked targets from the indicator the controller was quick-look inhibiting will be displayed; and the QI message in the OP list will disappear. Quick-look inhibit will not affect the display being inhibited.

Errors:

Error Condition	Preview
Controller trying to quick-look inhibit his/her own display.	"INVALID!"
Trying to quick-look inhibit a non-active display.	"INACTIVE"
Controller tries to drop the quick-look inhibit but is not quick-look inhibiting any display.	"INVALID!"
Controller tries to quick-look inhibit a display he/she is currently quick-looking.	"INVALID!"

1-44 Coast Mode

When a tracked target's beacon report is not received for one scan or more, it is said to be coasting. The position of a coasting track will automatically be predicted each scan using its past direction and ground speed data; however, altitude data will not be updated. While coasting, the code line message area of the data block will be replaced with the flashing letters "CST". Should coasting continue for more than four consecutive scans, the data block will be removed from the display (dropped), with the <ACID> and beacon code appearing in the D/S List. If the discrete beacon report reappears within 15 scans from the time coasting began, the track will automatically associate on the target, even if the track was in the D/S List. If the target reappears after 15 scans, the track can be manually repositioned, using

the procedures in paragraph 1-32-6. Tracks within two miles of the antenna which are placed in dropped status due to Mode "C" altitude dropping below maximum auto-acquire altitude, Mode "C" altitude invalid, or ground speed dropping below 50 knots, will automatically reacquire if the discrete beacon report reappears at a range between two and six miles before 64 scans have elapsed. Tracks not automatically acquiring may be manually repositioned. Tracked targets which are coasting will be displayed at the owner display only. If this coasting target is involved in a quick- look or handoff, the initiator and receiver displays will be the only displays to output the coasting target in full track format.

1-45 Hold Mode

1. The controller may place any tracked target into hold mode. When this is done, any loss of target reports will cause the format to remain frozen in its last reported position. If beacon reports cease for more than four consecutive scans, the target's <ACID> and beacon code will appear in the D/S List but the entire format will remain at the last reported position until the hold mode is dropped on the aircraft. If discrete beacon reports are received before 15 scans have elapsed, the format will resume its normal path.

2. The hold mode is useful when the system tracks emergencies or hijacks as the last known position will remain on the controlling display. Tracks may be placed in hold mode even though they are already in dropped status.

3. Tracks in inter-facility handoff status from the PIDP to ARTCC/ARTS/PIDP will be automatically placed in hold mode if beacon reports cease for more than four consecutive scans. The frozen data block will continue to be displayed in handoff format. This is to alert the controller that even though PIDP is not actively tracking the aircraft, the inter-facility handoff is still in progress.

EXAMPLES:

Target Identifier	Capture	Mode	Execute	Remarks
<PEM>	HOOK	H	ENTER	Assign hold mode to target identified by <PEM>.
2430	RD	H	ENTER	Assign hold mode to target identified by <CODE>.
TWA1234	RD	H	DROP	Delete hold mode on target identified by <ACID>.
3	RD	H	DROP	Delete hold mode on target identified by track owner ID number.

Special Requirements:

1. Target must be a tracked target owned by the controller's display.

2. Dropped tracks may be placed in hold mode and the last reported position will be displayed.

Results:

A target placed in hold mode will have an "H" placed in the code line message area of the data block. Should target reports cease, the data block will remain in its last known position; and a flashing "HLD" will be placed in the code line message area of the data block.

Errors:

Error Condition	Preview
Target identified is being used by the assistant controller.	"CAPTURED"
Target identified has no match in the system.	"NO MATCH"
<CODE> identified by the controller is not a discrete beacon code.	"DUPL BC!"
Track owner ID number is not in use.	"NO MATCH"

1-46 Suspend Tracked Target

Suspend status is a way to eliminate the total format of a tracked target, thus reducing display clutter, yet still maintain the advantages of a track (reflection discrimination, altitude monitoring, and MSAW). When the controller suspends a target, the target's <ACID> and beacon code will appear in the D/S List and the format will disappear and appear as a number (1-0) corresponding to the number in the D/S List where the target's <ACID> and beacon code can be found. The symbol will change to the display ID instead of the track owner ID number. If the D/S List is full, a suspended track entry will override a dropped track entry.

EXAMPLES:

Target Identifier	Capture	Execute	Remarks
TWA1234	RD	SUS	Identified by <ACID>.
2460	RD	SUS	Identified by <CODE>.
<PEM>	HOOK	SUS	Identified by <PEM>.
4	RD	SUS	Identified by track owner ID number.

Special Requirements:

1. To place a track in suspend status, the <ACID> identifier entered must match a target tracked on the display.

2. The assistant controller must not be performing a function on that target.

3. The <CODE> identifier entered must be a discrete beacon code.

4. The target must be a tracked target owned by the controller and may not currently be in suspend or dropped status.

5. There must be room in the controller's D/S List for the new entry.

6. Emergency tracks (7500, 7600, 7700) cannot be placed in suspend status.

Results:

The track will appear in suspend status on the owner's display and will be listed in its D/S List. The letter identifier of the owning indicator will be displayed as the position symbol on suspended tracks.

Errors:

Error Condition	Preview
Target identified is currently being used by another controller to perform a function.	"CAPTURED"
Target identifier does not match any targets in the system.	"NO MATCH"

Track owner ID number is not in use.	"NO MATCH"
<CODE> entered was not a discrete beacon code.	"DUPL BC!"
Target identified is currently in dropped or suspend status.	"INVALID!"
Target identified is an emergency track (7500, 7600, 7700).	"INVALID!"
An attempt is made to suspend another tracked target when there are ten suspended entries in the D/S List.	"NO ROOM!"

1-47 Reposition Suspended Tracks

The reposition command allows a controller to reactivate a tracked target that has been previously suspended.

EXAMPLE:

Target Identifier	Capture	Execute	Remarks
3		RPOS	Reposition suspended target by D/S List identifier.
1234	RD	RPOS	Reposition suspended target by <CODE>.
TWA123	RD	RPOS	Reposition suspended target by <ACID>.
<PEM>	HOOK		Reposition suspended target by positioning the <PEM>.

Special Requirement:

The D/S number entered must correspond to a suspended target on the controllers display.

Results:

The target will be released from suspend status and reappear in its previous format. The D/S List entry will be deleted for that target.

Errors:

Error Condition	Preview
Tab number entered by the controller is not in the D/S List.	"NO MATCH"

1-48 Automatic Code Change

If the automatic code change feature has not been turned off and a tracked target changes its beacon code, the new code will be displayed in place of the old one; and the old code will be displayed in the right half of the message line. Both codes will be flashing.

1-48-1 Automatic Code Change Off/On

This command allows automatic code change feature to be turned off/on from the master indicator. At initialization, the feature is turned on.

EXAMPLES:

Command	Execute	Remarks
SPEC X	DROP	Turn automatic code change feature off.
SPEC X	ENTER	Turn automatic code change feature on.

Special Requirements:

1. The automatic code change feature must be turned off/on from the master display.

2. The automatic code change feature must be on in order for automatic code changes to occur. (The feature is ON when the system is initialized.)

Results:

If the automatic code change feature is turned off, code changes to tracked targets must be done manually. If it is turned on, the code changes will be done automatically.

Error:

Error Condition	Preview
Trying to turn the automatic code change feature off/on from a display other than the master.	"MST ONLY"

1-48-2 Automatic Code Change Acknowledge

This command allows the controller the option to accept or reject a code change.

EXAMPLES:

Target Identifier	Capture	Execute	Remarks
1234	RD	ENTER	Identified by new <CODE> to accept code change.
TWA123	RD	ENTER	Identified by <ACID> to accept code change.
5	RD	ENTER	Identified by track owner ID number to accept code change.
<PEM>	RD	ENTER	Identified by <PEM> to accept code change.
1111	RD	DROP	Identified by new <CODE> to reject code change.

Special Requirements:

1. If code changes to an emergency, communications failure, or hijack, the emergency must be acknowledged first and then the code change acknowledged.

2. If a tracked target violates MSAW while a code change is in process, the MSAW alarm must be acknowledged first and then the code change acknowledged.

3. If a tracked target is in conflict alert while a code change is in process, the conflict alert must be acknowledged before the code change is acknowledged.

4. If a tracked target is in handoff status while a code change is in process, handoff procedures must be accomplished, and then the code change acknowledgment must be done by the controller who has control after the acknowledgment.

5. If code change is rejected and a matching discrete target on the old assigned code exists within the auto-acquire area, the track will acquire on the matching target.

6. If code change is rejected and there is not a matching discrete target on the old assigned code, it will immediately go into drop status.

7. If code change is rejected and the old assigned code was emergency, communications failure, or hijack, it will immediately go into drop status.

8. If code changes to a non-discrete, the old assigned code will go to drop status.

9. If code change is not acknowledged and the beacon report ceases, the track will immediately go to drop status on the old assigned code.

10. Automatic code change will occur only on tracked targets with discrete beacon codes within the airspace boundary, and all tracked targets that change to emergency, communications failure, or hijack code.

Results:

The new code on the code line and the old assigned code in the last four positions of the message line will flash continuously until the controller does one of two options:

a. Accepts the code change, which will clear the old assigned code from the message line and cease the flashing of the new code on the code line.

b. Rejects the code change, which will put the track with the old assigned code in the Drop/Suspend List.

Error:

Error Condition	Preview
Trying to modify a track which is in code change status.	"CODE CHG"
Track owner ID number is not in use.	"NO MATCH"

1-49 Conflict Alert

1. This feature will alert the controller when a tracked target is predicted to conflict with another tracked target or when a tracked target inside the conflict alert area is predicted to conflict with another target within the next ten sweeps. All targets within the conflict alert area are tracked by the system. The conflict alert area is the auto-acquire area with a ten mile buffer added. If the conflicting targets have valid altitudes, the audible alarm will sound and the data block will flash with the projected flight paths displayed in flashing dots and the word "CONFLICT" in the data block. If one altitude is invalid, CA will be displayed in the data blocks, the projected flight path dots will be steady instead of flashing and the audible alarm will not sound. The controller may acknowledge the conflict alert by the following sequence: <PEM> HOOK, <ACID> RD, or <DISCRETE CODE> RD.

2. When acknowledged, the audible alarm will silence. A conflict alert must be acknowledged before any other keyboard action on the targets involved. When the conflict no longer exists, the visual and audible alarms will stop.

1-49-1 Conflict Alert Exempt

1. Exempt by Code Block: This command will exempt a code or code block from conflict alert processing.

EXAMPLES:

Command	Exempt Code/Block	Execute	Remarks
SP3 C	1200	ENTER	Sets code 1200 as exempt.
SP3 B	1300 1377	ENTER	Sets code block as exempt.
SP3 C		DROP	Delete code exemption.
SP3 B		DROP	Delete code block exemption.

Special Requirements:

1. Command must be entered at the master display.

2. Code or code block must be in valid range (0000-7477).

3. First two digits of the code block entries (1400-1435) must be the same.

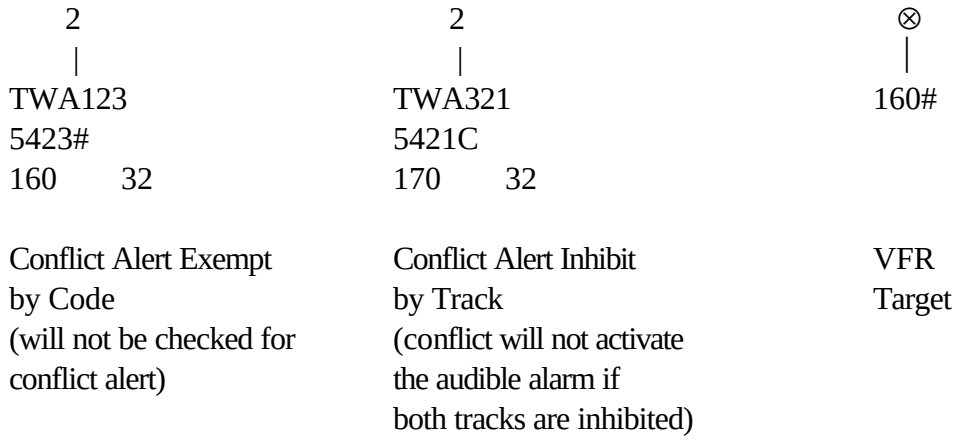
4. Limit of one code and one code block.

Results:

The result is to identify a code and a code block that will be excluded from conflict alert processing. A visual indicator (#) will be displayed in the data blocks of those targets that fall within the code/code block, and the target will be excluded from conflict alert processing. Use of this feature should be determined by the Chief Controller.

Errors:

Error Conditions	Preview
Attempt to enter code/code block from a non-master indicator.	"MST ONLY"
Attempt to enter code/code block outside range (0000-7477).	"BAD CODE"
Attempt to enter the second code of a code block that is less than the first code or has a different first two digits.	"INVALID"



2. Inhibit by Track: This command will inhibit a certain track from conflict alert audible alarm if both tracks have been inhibited.

Examples:

Track Identifier	Capture	Mode	Execute	Remarks
<PEM>	HOOK	Y	ENTER	Set inhibit.
2430	RD	Y	ENTER	Identify by code.
AF12345	RD	Y	ENTER	Identify by ACID.
<DEF>		Y	DROP	Delete inhibit.

Special Requirements:

Command must be associated with an active tracked target on that display or a target inside the conflict alert area.

Results:

The specified track or target will be inhibited only from conflict audible alarming. A "C" will be displayed in the data block of all targets that are inhibited. If a track that is inhibited from conflict alert alarm is in conflict with another inhibited track, the "C" will flash. If the inhibited track is in conflict with a track that is not inhibited, the tracks will receive the conflict alert audible and visual alarms.

Errors: None.

1-49-2 Conflict Alert Limits

These commands will permit the definition of a special area around the antenna (one to ten-mile radius) below an altitude (1000 to 3000 ft AGL) in which the tracks' position will be predicted for a special number of sweeps (zero to ten) for conflict.

EXAMPLES:

Command	Range	Execute	Remarks
SP3 R	10	ENTER	Set range to 10 miles. (Default = 0.)
SP3 A	30	ENTER	Set altitude to 3000. (Default = 0.)
SP3 S	6	ENTER	Sweeps to predict set to six. (Default = 10.)
SP3 R		DROP	Set range to 0 miles.
SP3 A		DROP	Set altitude to 0.
SP3 S		DROP	Set sweeps to predict to 10.

Special Requirements:

Values for range, altitude and number of sweeps must be within the limits shown above.

Results:

In the above example, the number of sweeps to predict for conflict alert is set to six for tracks that are within a ten mile radius of the antenna and below 3000 feet AGL.

NOTE: At an antenna RPM of 12 per minute, each sweep that the conflict alert is displayed provides an additional five seconds warning. If the number of sweeps is set to six instead of the normal ten, the warning time is reduced from 50 seconds to 30 seconds or less.

Errors:

Error condition	Preview
Attempt to input a range greater than ten miles.	"INVALID"
Attempt to input an altitude greater than 3000 (30).	"INVALID"
Attempt to input a number of sweeps greater than ten.	"INVALID"

1-50 Target Element Control

The PIDP allows the controller to selectively control which format elements are to be displayed or inhibited for the indicated target category. The initial data block is 3 lines long and contains, ACID, Code, Alt, Class, Ground Speed, and aircraft type.

EXAMPLES:

Category	Format Elements	Execute	Remarks
SEL	C LDR 6 GSP	ENTER	Display/inhibit code and ground speed for all select targets and have leader direction facing east for select category.
NSL	ALT LDR CLS	ENTER	Display/inhibit altitude and class for all non-select targets and change leader direction by 45 degrees clockwise from current direction.
TRK	ID C ALT GSP CLS MSG SP2 ACID SPACE SP3	ENTER	Display/inhibit the following elements for all tracked targets -<ACID>, <CODE>, altitude, ground speed, class, message, aircraft type, fix 1, and fix 2.
LDR			Change leader direction by 45 degrees clockwise from current direction for all tracked targets.

Special Requirements:

1. All the format elements are flip-flop (on-off, off-on) types. If they are displayed prior to the command, they will be inhibited after the command. If the element was inhibited prior to the command, it will be displayed after the command.

2. The leader direction, if not specified, rotates 45 degrees clockwise.

3. Non-select or select target format elements are C (CODE), ALT, or LDR.

4. Track format elements are C (CODE), ALT, LDR, <ACID>, CLS, GSP, SP2 (aircraft type), MSG, ACID SPACE (fix 1), or SP3 (fix 2).

5. First key entry of LDR rotates all tracked targets 45 degrees clockwise.

6. The leader cannot be manually inhibited.

7. The leader direction, if not specified, rotates 45 degrees clockwise.

8. Select or non-select controlled track format elements at non-controlling positions are C (code), <ACID>, ALT, CLS, GSP, or LDR.

Results:

The elements will be inhibited/displayed after the command. If all the format elements are inhibited for the category, the leader will be inhibited automatically. As soon as one of the format elements is displayed, the leader will be displayed.

Errors: None.

1-51 Specific Tracked Target Element Control

The command sequence below allows the controller to inhibit or display the various elements of a specific tracked target.

EXAMPLES:

Target Identifier	Capture	Format Elements	Execute	Remarks
TWA1234	RD	ID ALT C SP3	ENTER	Display/inhibit <ACID>, altitude, <CODE>, and fix 2.
2460	RD	CLS SP2 MSG	ENTER	Display/inhibit class, aircraft type and message.
<PEM>	HOOK	GSP ID LDR 2	ENTER	Display/inhibit ground speed, <ACID>, and change leader direction to north.
2437	RD		ENTER	Restore complete tracked target format.

Special Requirements:

1. The target identified will be captured providing it finds a match in the system and the assistant position is not performing some function on the target.

2. If (CODE) is used as an identifier, it must be a discrete beacon code.

3. Track format elements are (ACID), C (CODE), GSP, ALT, LDR, CLS, SP2 (aircraft type), MSG, ACID SPACE (fix 1), or SP3 (fix 2).

4. The leader is automatically inhibited if all of the items in the tracked targets data block are inhibited. As soon as one is displayed, the leader will be displayed. The leader cannot be manually inhibited.

5. This command is a flip-flop (on-off, off-on) type. If the format element is displayed and then entered in the command, it will be inhibited. If it was inhibited, it will be displayed.

6. The target identified must be a tracked target owned by that display.

7. If the target is MSAW exempt, the altitude cannot be inhibited.

Results:

When a specific data block is modified so the data block is not the same format as track category data block format for that position, changes to the track category data block format will not affect the data block(s) modified individually. A command entered without any elements listed will restore complete tracked target format with all the data block items displayed. The leader will be displayed if any items in

the data block are displayed. If there is no data displayed, the leader is inhibited. When all elements are being displayed and a command is entered without listing any elements the format will be set to the display's standard track format.

Errors:

Error Condition	Preview
Target identified has no match in the system.	"NO MATCH"
Target identified is being used by another controller.	"CAPTURED"
<CODE> entered as the identifier was non-discrete.	"DUPL BC!"
Target identified is MSAW exempt and trying to inhibit altitude.	"INVALID!"

1-52 Display/Inhibit Target Category

The command sequence below allows the controller to display/inhibit a particular target category (select, non-select).

EXAMPLES:

Target Category	Execute	Remarks
SEL	ENTER	Inhibit/display all select targets.
NSL	ENTER	Inhibit/display all non-select targets.

Special Requirements:

1. This command is a flip-flop (on-off, off-on) type. If the target category is displayed and the command is entered, the category will be inhibited. If the command is entered again, the category will be displayed.

2. If data blanking is in progress, do not inhibit and then redisplay non- select targets.

Results:

The category specified will be displayed or inhibited on the controller's display, depending on whether it was inhibited or displayed prior to the entering of the command. If select category is inhibited, "SL" will

be displayed in the controller's OP List indicator alarm line. If the non-select category is inhibited, "NS" will be displayed in the controller's OP List indicator alarm line.

Errors: None.

1-53 Inhibit Targets Outside Conflict Alert Area

Input targets outside the conflict alert area may be inhibited. All tracks, emergency replies, and suspect aircraft will still be displayed. Conflict alert will be displayed on targets outside the auto-acquire area but inside the ten-mile buffer.

EXAMPLES:

Special Function	Command	Remarks
SPEC	AA	All input targets outside the CA area will be inhibited/displayed.

Special Requirements:

This command is a flip-flop (on-off, off-on) type. If the targets are displayed and the command is entered, the targets will be inhibited. If the command is entered again, the targets will be displayed.

Results:

Targets will be displayed or inhibited on the controller's display. If the targets are inhibited, "AI" will appear in the display's alarm line.

Errors: None.

1-54 Leader Control

Figure 1-11 illustrates the leader and format arrangements. The leader position (one of eight) can be controlled separately for each of the three target categories, or individually for tracked targets. All of this is done via keyboard commands illustrated below.

a. Leader change by target category:

EXAMPLES:

Category	Format Elements	Direction	Execute	Remarks
SEL	LDR	2	ENTER	Change all select target leaders to north direction.
NSL	LDR	8	ENTER	Change all non-select target leaders to south direction.
TRK	LDR		ENTER	Rotate all tracked target leaders 45 degrees clockwise.
SPEC	LDR	2		Set leader direction of auto-acquire tracks to north.

Special Requirements:

1. If no value for leader direction is entered, the leader direction will rotate 45 degrees clockwise from its present position.
2. Leader direction value must be entered to set auto-acquire leader direction.

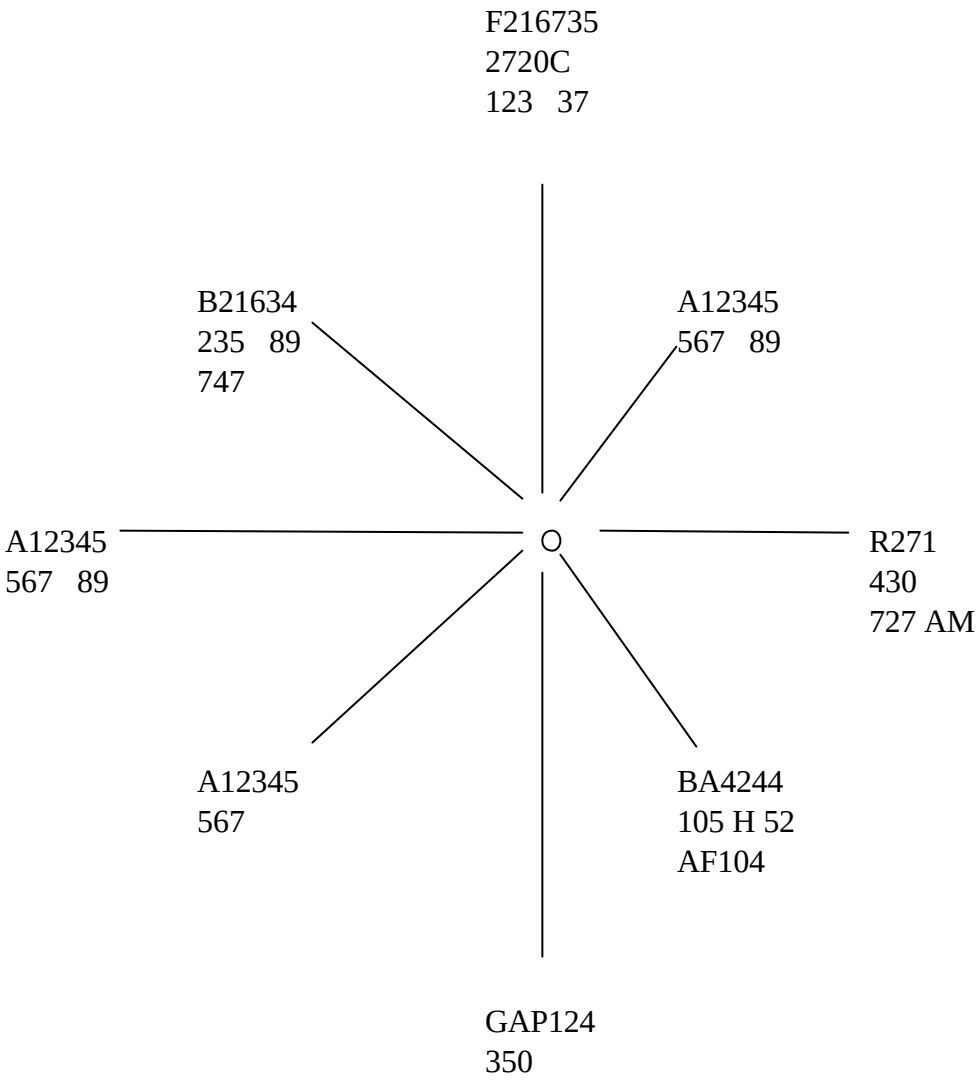
3. Leader direction corresponds to the arrows on the numeric keys.

Results:

The leader direction and format block of the category of targets indicated will be changed to the direction specified. If no direction was specified, it will rotate 45 degrees clockwise. The leader direction and format block for auto-acquire tracks will change to the direction specified at that keyboard position.

Errors: None.

Figure 1-11 Leader and Format Arrangements



b. Leader Control of Individual Targets:

EXAMPLES:

Target Identifier	Capture	Format Elements	Direction	Execute	Remarks
2430	RD	LDR	2	ENTER	Change leader direction of target with code 2430 to north.
<PEM>	HOOK	LDR	8	ENTER	Change leader direction of target identified by <PEM> to south.

Special Requirements:

1. Tracked target must be controlled.

2. If no value for leader direction is entered, the leader direction will rotate 45 degrees clockwise.

3. Leader direction corresponds to the arrows on the numeric keys.

Results:

The leader and format block will change to the new direction specified. If no direction is specified, it will rotate 45 degrees clockwise.

Errors:

Error Condition	Preview
Target identified is currently used by the assistant controller position.	"CAPTURED"
Target identified does not match any target in the system.	"NO MATCH"
<CODE> identifier entered was a non-discrete beacon code.	"DUPL BC!"

1-55 Format Swapping

1. Non-emergency Codes. Format swapping can occur only on targets reporting the same non-discrete code and only if at least one of the targets involved is being tracked. When potential format swapping does occur, both targets are displayed with a non-select symbol, leader and a "?" in place of their target data blocks. The tracked target or targets are put in the D/S List as dropped targets. When the

possibility no longer exists for format swapping, the format may be repositioned using procedures in paragraph 1-30-6.

2. Emergency Codes. When two or more emergency targets with the same code (7700, 7600, or 7500) get so close together that they become questionable, the controlled tracks coast to the D/S List; and the uncontrolled tracks are deleted after coasting. This is a type of format swapping, but the data blocks are not replaced with a "?". The audible alarm, if activated, is silenced; and the targets are displayed as non-select until the questionable condition ends. The non-select formats are then changed to uncontrolled emergency track formats, and the system alarm is activated. A dropped entry cannot be repositioned from the D/S List. The system will not allow keyboard action (HOOK) on emergency codes that are still questionable.

1-56 Altitude Replies

Four types of altitude replies may be displayed in the data block (tracked or untracked). If the Mode "C" reply is between 0 - 99,900, the altitude will be displayed as three digits in hundreds of feet. If the Mode "C" reply is less than zero, "NEG" will be displayed indicating the aircraft is below sea level. If the Mode "C" reply is above 99,900, "---" will be displayed. If a garbled or no Mode "C" reply is being received, "///" will be displayed. Any altitude replies not between 0 - 99,900 will be forced through the altitude filter limits.

1-57 Multiple Next Code Assignment

1. Each display can sequentially assign a discrete code by use of the NXT key or (OPTION: 1, 2, or 3) NXT keys. In flight plan initiate, each display may also sequentially assign a discrete beacon code by use of the FD key or (OPTIONS: 1, 2, or 3) FD keys. This code is set up as a code block by use of the SPEC key or (OPTIONS: 1, 2, or 3) SPEC keys (codes XXXX-YYYY) by keyboard action. The codes must be in the same code block. However, code 1236 will not be assigned by use of the NXT key or (OPTIONS: 1, 2, or 3) NXT keys. There may be up to four code blocks set up by keyboard action. The code block cannot overlap any of the other three for the display.

2. After the NXT key or (OPTIONS: 1, 2, or 3) NXT keys are pressed, it is not necessary to press the CLEAR key before entering a new keyboard command. To clear a code block, use the SPEC key or (OPTIONS: 1, 2, or 3) SPEC 0000 SPACE 0000 ENTER.

EXAMPLES: If the code block entered is 1001-1077, the NXT key or (OPTIONS: 1, 2, or 3) NXT keys indicates 1001 as the next available code of the specified code block. After 1001 is assigned and the NXT key or (OPTIONS: 1, 2, or 3) NXT is pressed again, the next available code to be assigned indicates 1002 and so on until 1077 is reached.

EXAMPLES:

Special Function	Code Block	Execute	Remarks
SPEC	1001 ^ 1077	ENTER	Set up first code block 1001 - 1077.
3SPEC	2001 ^ 2077	ENTER	Set up fourth code block 2001 - 2077.
SPEC	0000 ^ 0000	ENTER	Delete first code block.

Special Requirements:

1. Codes issued with the NXT key or (OPTIONS: 1, 2, or 3) NXT keys will be discrete.

2. Codes will be sequentially assigned except for 1236.

3. Code blocks assigned to one indicator cannot overlap.

4. Codes must be in the same code block.

Results:

1. Up to four code blocks can be assigned to each display. Next available code can be viewed in the preview area by pressing NXT key or (OPTIONS: 1, 2, or 3) NXT keys. If all the special requirements have been met, the next code of each next code block will appear in the controller's OP List. The next code in the OP List will be updated as the code is used.

2. If all the codes in a block are in use, "FULL" will replace the next code value.

Errors:

Error Condition	Preview
Using the NXT key or (OPTIONS: 1, 2, or 3) NXT keys when no code block has been assigned.	"USED/NA "
Entering the upper code block limit first.	"INVALID!"
Next codes not in the same code block (0400-0577)	"INVALID!"
Using the NXT key or (OPTIONS: 1, 2, or 3) NXT keys when all codes are in use	"USED/NA "

1-58 Cursor Bearing and Range Strobe Control (OD-153/T)

The OD-153/T indicator group contains a four push button <PEM>. Two of these buttons allow the controller to rotate the cursor bearing and to vary the range of the strobe on the cursor.

EXAMPLES:

Command	Position	Remarks
BEARING ON	<PEM>	Rotate cursor to position desired by <PEM>.
STROBE ON	<PEM>	Position range strobe by using <PEM>.
BEARING ON STROBE ON	<PEM>	Simultaneously position range and bearing.

Special Requirements:

1. The controller must be using a four-button <PEM> on an OD-153/T indicator.

2. The switch the controller enters will be lit in the "ON" position. It is a flip-flop (on-off, off-on) type of switch. Enter once, and it is ON; enter it again, it is OFF.

Results:

The bearing and range between the origin of the cursor and the range strobe will be indicated in the OP List of the controller's display. "C 000.0" will be bearing in degrees and "S 000.0" will be range in nautical miles.

Errors: None.

1-59 Off-Center Sweep or Cursor (Computer Engaged)

The sweep/cursor off-center command allows the controller to control the sweep offset and the location of the cursor center origin.

EXAMPLES:

Front Panel Selection
Cursor: Decenter Sweep: Off-center

Position	Capture	Item	Remarks
<PEM>	HOOK	S	Display center will be at position indicated by <PEM>.
<PEM>	HOOK	C	Position cursor origin to position indicated by <PEM>.

Special Requirements:

1. The controller's display must be in computer engage mode.

2. The <PEM> must be positioned at the place the controller requires the cursor to originate from.

3. The <PEM> must be positioned on the area the operator wants centered on the display, and should not be placed over a target (symbol or bracket video) prior to pressing HOOK. The location of the <PEM> at the time ENTER is pressed is the location used.

Results:

The cursor will be displayed as originating from the position indicated by the controller, or the area indicated by the controller will be centered on the display with the sweep off-centered.
Errors: None.

1-60 Center Sweep, Cursor, or <PEM> (Computer-Engaged)

The commands below allow the controller to position the sweep, cursor, or <PEM> at the center of the CRT.

a. NORMAL OPERATION:

EXAMPLES:

Item	Execute	Remarks
S	ENTER	Sweep origin will be at display center.
C	ENTER	Cursor origin will be at display center.
P	ENTER	<PEM> position will be at display center.

Special Requirements:

1. The indicator control box must be set to COMPUTER-ENGAGE.

2. The display is in normal operation (non-diagnostic) mode.

Results:

The item specified (sweep, cursor, or <PEM>) will be at the center of the controller's display.

Errors: None.

b. DIAGNOSTIC TEST MODE:

EXAMPLES:

Position	Capture	Item	Remarks
<PEM>	HOOK	S	Sweep origin will be at display center.
<PEM>	HOOK	C	Cursor origin will be at display center.

Special Requirements:

1. The indicator control box must be set to COMPUTER ENGAGE.

2. The <PEM> cannot be centered in diagnostic mode by the use of a keyboard sequence.

Results:

The sweep or cursor will be at the center of the display.

Errors: None.

1-61 OD-153/T Off-Center Sweep and Cursor (Computer-Disengaged)

The sweep/cursor off-center command off-centers the sweep or cursor on the display by the use of a four-button <PEM> on the display, in the computer- disengaged mode.

EXAMPLES:

Position	Command	Remarks
<PEM>	SWEEP	Off-center sweep so position indicated by <PEM> is centered.
<PEM>	CURSOR	Off-center cursor so position indicated by <PEM> is the origin of the cursor.

Special Requirements:

1. The OD-153/T display must be in DISENGAGE mode.

2. The <PEM> the controller is using must have four buttons. The "SWEEP" and "CURSOR" buttons must be lit.

3. The front panel sweep center/off-center switch must be in OFFCENTER.

4. The position to be centered on the display is indicated by using the <PEM> and SWEEP.

5. The BEARING ON and STROBE ON switches of the <PEM> must be off.

6. The origin of the cursor is to be indicated by using <PEM> and entering CURSOR.

7. The cursor center/decenter must be in decenter.

Results:

The area indicated by the <PEM> will be at the center of the display after the SWEEP button is entered. If the CURSOR button is entered, the cursor will originate from where the <PEM> was positioned.

Errors: None.

1-62 System Configuration Change

The configuration change command allows the controller of the master display to change the configuration of the system; that is, to reassign which displays will be assigned as master, arrivals, departures, and en routes.

EXAMPLES:

Command	Master (M=?)	Arrivals (A=?)	Departures (D=?)	En Routes (E=?)	Execute	Remarks
SPEC C	A ^	ABF ^	BCD ^	AF	ENTER	Assigns display A as master, ABF as arrivals, BCD as departures, and AF as en routes
SPEC C	C ^	^	ABD ^	^	ENTER	Assigns display C as master, ABD as departures, and does not change arrivals or en routes.
SPEC C	^	^	ABCD ^	AB	ENTER	Assigns displays ABCD as departures, AB as en routes, and does not change the master or arrivals.
SPEC C	C ^	AB ^	^	DEF	ENTER	Assigns display C as master, AB as arrivals, DEF as en routes, and does not change departures.
SPEC C	^	^	^	T	ENTER	Assign Display T as en route and does not change the master, arrivals, or departures.

Special Requirements:

1. Only one display can be assigned as the master display, and it cannot be designated as training or be in test.

2. If there is no change in master, arrival, departure, or en route designations entered (using the SPACE key), the assigned displays will remain the same as prior to entering the command; and all A/D Lists except on training indicators will be cleared and sent on the next minute update.

3. Reminder - If the display's configuration is changed, the Arrival/ Departure/En Route Lists on the displays will be cleared and rewritten. The new master has control of the old master's message.

Note: If there are more than ten displays, the configuration command must be done twice, i.e., change departure and en route displays; then change master and arrivals.

Results:

The Arrival/Departure/En Route Lists of the displays will change to the type assigned to each display. Displays designated as training will not show the new configuration in the OP List.

Errors:

Error Condition	Preview
Attempt to reconfigure from a non-master display.	"MST ONLY"
Attempt to backspace past the master, arrival, departure, or en route prompt.	"∃"

1-63 Diagnostic Test Pattern

1. The diagnostic test pattern is used to test, align, and troubleshoot the indicators. The diagnostic test pattern has the following features:

a. Full alphanumeric repertoire in the OP List.

b. "Echo back" from the computer to allow testing of the keyboards.

c. A/D List with target entries.

d. D/S List with target entries.

e. Blinking SPI to check the ident feature.

f. Various target blocks used to check format elements.

2. The diagnostic may be displayed on any display except the master. The controller can put only his/her own display in diagnostic, but the master indicator can put any other display into diagnostic.

3. To display the diagnostic test pattern at your indicator: SPEC T ENTER.

4. To display the diagnostic test pattern from the master indicator: SPEC T <Display ID> ENTER.

5. To remove the test pattern, simply disengage and reengage the indicator.

NOTE: In order to allow indicator alignment, the master indicator may be put in test mode (SPEC T ENTER) when there is only one engaged indicator and there is no active inter-facility interface. When the master is put in test, or the last indicator is disengaged, the program will continue to operate and the first indicator to be engaged will be the master.

Errors:

Error Condition	Preview
Attempt to put master display in diagnostic.	"INVALID!"
Attempt to place another display in diagnostic from a non-master display.	"MST ONLY"

1-64 NAS Purge

If the NAS interface fails for a sufficiently long period of time, the PIDP computer should be cleared of all NAS initiated flight plans as they may be obsolete. The PIDP facility should then have the ARTCC/Data Systems Coordinator (DSC) send all current flight plans.

EXAMPLES:

Special Function	Command	Execute	Remarks
SPEC	P	ENTER	All NAS initiated flight plans are deleted from the system.

Special Requirements:

1. Purging NAS flight plans takes three antenna sweeps until all data is removed from the system and displays.

2. Only the master display can initiate a NAS purge.

Results:

After the command is entered and three sweeps of the antenna occurs, all NAS initiated flight plans will be deleted from the system.

Errors:

Error Condition	Preview
NAS purge is attempted from a display other than the master.	"MST ONLY"

1-65 Change NAS and PIDP IDs

This command allows the controller of the master display to change the NAS and PIDP identifiers. A NAS and PIDP identifier change is only necessary for testing and maintenance purposes. Under normal operations, the identifiers must not be changed.

EXAMPLES:

Command	Type	Change NAS and PIDP IDs	Execute	Remarks
SPEC	N	ZCK ^ END	ENTER	Set NAS ID to ZCK and PIDP ID to END.

Special Requirements:

1. Command must be entered at the master display.

2. Command can only be entered when the flashing "IF" alarm is present in the OP List (see paragraph 2-19).

Results:

The result is to change the NAS and PIDP identifiers for testing and maintenance. Prior to resuming normal NAS interface operations, the assigned NAS and PIDP identifiers must be entered.

Errors:

Error Condition	Preview
Attempt is made to change the NAS and PIDP identifiers from a non-master display.	"MST ONLY"
Attempt is made to change the NAS and PIDP identifiers when flashing "IF" alarm is not present in the OP List.	"INVALID!"

1-66 Master Reassignment of Tracks and Special Local Flight Plans

If an indicator fails, is disengaged, or is in test mode, the master display can assign control of the tracks of a failed indicator to another display. The master display will also assign local flight plans which have been entered by TRK key.

EXAMPLES:

Special Function	ID of Failed Display	ID of Receiving Display	Execute	Remarks
SPEC TRK	A	B		Gives control of tracks and special local flight plans from display A to display B.
SPEC TRK	A		ENTER	When a receiving display is not designated, track control and special local flight plans go to master display.

Special Requirements:

1. Only the master display can designate a track assignment and assignment of special local flight plans.

2. The display whose tracks and special local flight plans are being assigned must be inactive or in test.

3. The receiving display must be active and not in test.

Results:

After the command is entered, the control of all tracks is delegated to the receiving display and will appear in full track format. All dropped tracks will go into the receiving display's D/S List. After the command is entered, the assignment of all special local flight plans will appear in the receiving display's A/D List.

Errors:

Error Condition	Preview
Command attempted by other than master display.	"MST ONLY"
Designation of control of tracks and assignment of special local flight plans to an inactive display.	"INACTIVE"
Designation of control of tracks and assignment of special local flight plans from a display that is still active.	"INVALID!"

1-67 Inhibit Emergency Track Starts

This command will inhibit the start of uncontrolled emergency tracks outside the conflict alert area. Emergency target returns will be displayed. There will be no audible alarm and no track will be started.

EXAMPLES:

Special Function	Item and Execute	Remarks
SPEC	E	See Results.

Special Requirements:

1. Only the master display can inhibit emergency track starts.

2. This command is a flip-flop (on-off, off-on) type.

Results:

An “EI” will appear on the alarm line of all indicators when emergency track starts are inhibited (Figure 1-2).

Errors:

Error Condition	Preview
Command attempted by other than master display.	“MST ONLY”

Emergency (non-select) outside CA area

Emergency (select) outside CA area

1-68 Simulation Routine

WARNING: While the simulation routine is in use, NO live traffic may be controlled. If interfaced with NAS, the interface must be disabled.

The PIDP operational program contains a simulation routine that may be used for familiarization and keyboard proficiency training. The simulation routine operates as selected by a master keyboard command. The letters “SM” will be displayed in the OP List of all indicators.

EXAMPLES:

Special Function	Mode	Execute	Remarks
SPEC	S	ENTER	Turn on simulated targets.
SPEC	S	DROP	Return system to normal operations.

NOTE: When the master command ‘SPEC S ENTER” is made, the simulation routine will internally generate 12 beacon targets with fixed flight paths, transponder codes, and altitudes. Nine of these targets

will fly clockwise, one counterclockwise, one north/south and one east/west. All PIDP functions (auto-acquire, tracking, format control, etc.) apply to these simulated targets.

1-69 Keyboard Dump

If something unusual is occurring and the facility is too busy to turn off the PIDP to accomplish a regular dump, a keyboard dump can be done without interfering with normal PIDP operation. (This dump will not be a "snapshot" of the system because the targets, tracks, NAS and FLIPS messages, keyboards, etc. are changing as the dump is being done.)

EXAMPLE:

Special Function	Execute	Remarks
OP	X	The dump to the floppy disk will begin.

Special Requirements:

A dump disk must be in the floppy disk drive. CAUTION: If the program disk is left in the drive, the dump (automatic, keyboard, or regular) will overwrite the program on the disk.

Results:

Memory will be recorded on the disk in the floppy disk drive.

Errors:

Error Condition	Preview
A keyboard dump is currently in progress.	"INVALID"

1-70 Training Configuration

If training is desired, any non-master indicator can be designated as training display(s). Training flight plans that are forwarded from FLIPS to PIDP will be assigned only to those displays that are configured for training. If none are configured, the training flight plans from FLIPS will be discarded. To remove the training designation, simply disengage and engage the indicator.

EXAMPLES:

Special Function	Execute	Remarks
SPEC	G	AR DE EN in the OP area will be replaced with TG.

Special Requirements:

The master indicators cannot be configured for training.

Results:

1. A "TG" will appear in the OP List instead of "AR DE EN". Any non-training flight plans in the A/D List will be removed. Only training flight plans will be assigned to training displays except for flight plans entered using the TRK key as the terminator.

2. If there are no training displays assigned when FLIPS transmits training flight plans, the flight plans will be discarded. If the training display(s) is restored to normal operation, the training flight plans will remain in the system until automatic deletion time or manual deletion. This allows a training exercise to be interrupted and resumed without sending all the flight plans from FLIPS again.

Errors:

Error Condition	Preview
Command attempted by the master display.	"INVALID"

1-71 CENRAP (Center Radar Arts Presentation) Configuration

WARNING: In normal PIDP operations, target positions are updated every sweep (approximately 12 to 15 RPM). When using CENRAP, the target positions are updated approximately every 3-4 sweeps because the ARTCC's antenna rate is slower (approximately 8 RPM). This means that a target will appear not to move for three or four sweeps, and then it will jump to its current position. This change will be more visible on faster moving targets than on slower ones.

CENRAP is used as a back-up system when the terminal radar fails and/or is out-of-service. This function provides a near normal radar environment without requiring use of non-radar procedures. There are no primary radar targets available during CENRAP and only secondary radar targets are displayed. All PIDP functions are available to the controllers except conflict alert (CA), minimum safe altitude warning (MSAW), reflections data if used, and simulation.

EXAMPLES:

Special Function	Mode	Execute	Remarks
SPEC	K	ENTER	CN will be displayed in the OP area.
SPEC	K	DROP	CN will be cleared from the OP area.

Special Requirements:

1. Only the master display can place PIDP in CENRAP mode.

2. There must be a working interface with ARTCC (i.e., no IF in OP area).

3. Requires the installation of a special box (see paragraph 2-25).

4. Simulation cannot be used.

Results:

A “CN” will appear in the OP area.

Errors:

Error Condition	Preview
Command attempted by other than master.	“MST ONLY”
Command to start CENRAP when already in CENRAP.	“INVALID”
Command to stop CENRAP when not in CENRAP.	“INVALID”
Attempt to start CENRAP when simulation is running.	“INVALID”

1-72 Satellite Airport Hold

This feature will place a symbol (an A with a box around it) at the PEM locations identified indicating that the airport is closed due to IFR operations. The display of the symbols can be inhibited.

EXAMPLES:

Identifier	Execute	Remarks
<PEM> HK F	ENTER	Identify and mark an airport as closed
<PEM> HK F	DROP	Delete closed airport symbol
OP A		Inhibit the display of the airport symbols

Special Requirements:

Up to six airports can be identified as closed at one time.

Results:

The area identified by the PEM will be marked with a special symbol indicating the airport is closed.

Errors:

Error Condition	Preview
Six airports already identified	"NO ROOM!"

1-73 MSAW Readout

The MSAW value assigned to an area can be displayed in the preview area of the requesting display.

EXAMPLES:

Special Function	Execute	Remarks
<PEM> OP	M	Display the MSAW value of the area identified by the PEM

Special Requirements: None.

Results:

The MSAW value of the area identified by the PEM will be displayed in the preview area of the requesting display.

Errors: None.

1-74 Position Sign On

The purpose of position sign on is to allow the controller to sign onto a particular position and FLIPS to keep track of the times. It will also keep track of a trainee and trainer's time. The controller will automatically be logged off when someone else signs on the same position. Closing the position will use the same keyboard command as signing on. A Log File has been added to FLIPS showing date, time, event (SIGN IN/OUT), position, and controller's initials listed as "PRI" for proficiency time and "MON" for monitor time. If a controller forgets to sign in on a position, a manual update can be added to their time in FLIPS and an entry will be made in the Log. If no time is input, when signing on a position, current system time is used. The minute value only can be input if the hour is the same as that in the system time. See FLIPS operator's manual for additional information.

The following messages will be displayed in the OP area in place of the master and display messages under the following conditions.

Message	Condition
INVALID CONTROLLER INITIALS or INVALID MONITOR INITIALS	Input controller's initials have not been entered in FLIPS
INVALID CONTROLLER POSITION or INVALID MONITOR POSITION	Position has not been entered for controller
MONITOR NOT PROFICIENT	Controller has not been rated in position
SIGN IN SUCCESSFUL 0900 BHDM SARR or SIGN OUT SUCCESSFUL 1000 BHDM SARR	When all fields are validated in FLIPS

EXAMPLES:

Special Function	Time	Initial	Position	Execute	Remarks
OP P	1132/\	MGWD/\	SARR	ENTER	Entered hour and minutes, sign on trainee/trainer's initials and position.
OP P	25/\	BT/\	2	ENTER	Entered minutes, controller and position.
OP P		WD/\	DEP	ENTER	Entered controller and position.

Special Requirements:

1. FLIPS must be operational.

2. Input time must be valid.

3. Controller's initials must be listed in FLIPS.

4. Positions must be listed in FLIPS.

Results:

Monitor time and live time will be saved in FLIPS. First set of initials will be logged to live time and the second set of initials (if there is any) will be logged to monitor time.

Errors:

Error Condition	Preview
FLIPS is not operational	"INACTIVE"
Time invalid	"BAD TIME"
Three characters input for time	"INVALID"
Three characters input for initials	"INVALID"
FLIPS delay	"INVALID"
Same Trainee/Monitor Initials	"INVALID"

SECTION VIII - KEYBOARD COMMANDS

1-75 Introduction

The listing in paragraph 1-73 provides a quick reference of the valid keyboard sequences used in the PIDP system. Care must be taken when entering the keyboard command sequences because errors may change the meaning of the command entered. DO NOT omit SPACE key where it is specified because it can also change the meaning of the sequence.

1-76 Keyboard Commands

The following is a list of all valid key sequences used in the PIDP system. For an explanation of the abbreviations used, refer to the glossary.

a. Special Notations:

(1) /\ Space Key

(2) Target Definition: (DEF) <PEM> HOOK
<ACID> RD
<Discrete Code> RD
<Track owner ID number> RD

NOTE: When <PEM> HOOK method is used, RD key should never be used.

(3) Category of Targets: (CAT) SEL or NSL or TRK

(4) Element of Format: (ELEM) ID or ALT or CLS or GSP or C or MSG or SP2 or LDR or LDR N or ACID SPACE or SP3

NOTE: For select or non-select controlled tracks at non-controlling positions, C is <ACID>. For untracked select or non-select targets, C is <CODE>. SP2 is type aircraft, ACID SPACE is fix one, and SP3 is fix two.

(5) "N" A numeric character.

(6) "A" An alphanumeric character.

(7) <PEM> Move <PEM> (Symbol ⊕ or ⌖) to desired area or target.

(8) ____ Mandatory keystroke.

(9) (INIT) Two alpha controller initials or four characters if trainee included

(10) (POS) Controller position; 1-4 alphanumeric characters

(11) "KS" Keyboard subset number and ARTS sector number.

b. Display Initialization and Tab Area Control:

Function	Keyboard Sequence
Altitude Limits Set	OP NNN /\ NNN ENTER
Select Code	OP NNNN ENTER or DROP
Select Code Block	OP NN ENTER or DROP
Display Message Add	OP MSG AA...A ENTER
Display Message Drop	OP MSG DROP
OP Area Drop	OP DROP
Inhibit/Display Time	OP T
Inhibit/Display Barometer	OP B
Inhibit/Display Altitude Limits	OP L
Inhibit/Display Select Codes	OP F
Inhibit/Display Display Message	OP MSG ENTER
Inhibit/Display Beginning Next Code Blocks	OP N
Inhibit/Display Target Trail Dots	OP D
Inhibit/Display Track Trail Dots	TRK D
Restore inhibits - OP List, A/D List, D/S List, and Target Elements - (non-select, select, tracked)	OP ENTER
Inhibit/Display A/D List	A ENTER

Inhibit/Display D/S List	D ENTER
Inhibit/Display Cursor	OP C (OD-153/T only)
Inhibit/Display Strobe	OP S (OD-153/T only)
Inhibit/Display Satellite Airport Hold	OP A
MSAW Readout	OP M
Keyboard Dump	OP X
Relocate OP List	MOV <PEM> OP
Relocate A/D List	MOV <PEM> A
Relocate D/S List	MOV <PEM> D
Relocate Preview Area	MOV <PEM> P
Display Load Number in Preview	OP V
Display Indicator Number in Preview	OP I
Display Format Control (All Targets)	
Inhibit/Display Non-select Targets	NSL ENTER
Inhibit/Display Select Targets	SEL ENTER
Inhibit/Display Data Block Elements	(CAT) (ELEM) ENTER
Rotate Leader 45 Degrees Clockwise	(CAT) LDR ENTER
Position Leader	(CAT) LDR (1, 2, 3, 4, 6, 7, 8, or 9) ENTER
Rotate Leader of Tracked Targets 45 Degrees Clockwise	LDR
Position Auto-Acquire Leader	SPEC LDR (1, 2, 3, 4, 6, 7, 8, or 9)
Target Format Control (Specific Target)	
Full Track Readout	(DEF) ENTER

Inhibit/Display Elements	(DEF) (ELEM) ENTER
Rotate Leader 45 Degrees Clockwise	(DEF) LDR ENTER
Position Leader	(DEF) LDR (1, 2, 3, 4, 6, 7, 8, or 9) ENTER

c. Flight Data Control:

NOTE: For Section 3 only, (DEF) also includes <A/D Letter>, but does not include <PEM> HOOK.

Enter Flight Plan	FD or (OPTIONS: 1, 2, or 3) FD
	CD? <ACID> ^ or <ACID> ENTER or <ACID> TRK or <CODE> ^
	ID? <ACID> ^ or <ACID> ENTER or <ACID> TRK
	AD? (A, D, E) ^ or (A, D, E) ENTER or ^ or ENTER or (A, D, E) TRK or TRK
	TP? <A/C TYPE> ^ or <A/C TYPE> ENTER or <A/C TYPE> TRK or ENTER or TRK or ^
	CL? (B, F H, L, T, U, V, W) ^ or (B, F, H, L, T, U, V, W) ENTER or ^ or ENTER (B, F, H, L, T, U, V, W) TRK or TRK
	TM? HH ^ MM ^ or HH ^ MM ENTER or ^ or ENTER or HH ^ MM TRK or TRK
	F1? AAA ^ or AAA ENTER or ^ or ENTER or AAA TRK or TRK
	F2? AAA ^ or AAA ENTER or ^ or ENTER or AAA TRK or TRK
	MS? AAA...A ENTER or ENTER or

	AAA...A TRK or TRK
Flight Plan Read and Retain	(DEF) CLEAR
Flight Plan Drop	(DEF) DROP
Flight Plan Scroll	
Start	RD
Next	^
Terminate	CLEAR
Modify	As follows without (DEF)
Delete	DROP
Flight Plan Modify	
Type	(DEF) (A, D, or E) ENTER
Time	(DEF) HH ^ MM ENTER
Acid	(DEF) <ACID> ENTER
Code	(DEF) <CODE> ENTER or NXT or (OPTIONS: 1, 2, or 3) NXT ENTER
Class	(DEF) CLS (B, F, H, L, T, U, V, W, or ^) ENTER
Message	(DEF) MSG AAA...AA ENTER
Aircraft Type	(DEF) SP2 <A/C TYPE> ENTER
Fix One	(DEF) ACID SPACE AAA ENTER
Fix Two	(DEF) SP3 AAA ENTER
d. Track Control:	
Track Initiate	<PEM> HOOK <ACID> or (A/D Letter) or

NOTE: A/D Letter used only with non-discrete targets, also <ACID> from flight plan may be used with non-discretes.	<CODE> RD <ACID> (ENTER/or
	CLS (B, F, H, L, T, U, V, W, /\) (ENTER/or)
	SP2 (<AIRCRAFT TYPE>, /\) (ENTER/or)
	MSG (AA...A/\ /\) (ENTER/or)
	ACID SPACE (AAA, /\) (ENTER/or)
	SP3 (AAA, /\) ENTER
Track Modify	(DEF)
	New <ACID> or New <CODE> (ENTER/or)
	CLS (B, F, H, L, T, U, V, W, /\) (ENTER/or)
	SP2 (<AIRCRAFT TYPE>, /\) (ENTER/or)
	MSG (AA...A, /\/\) (ENTER/or)
	ACID SPACE (AAA, /\) (ENTER/or)
	SP3 (AAA, /\) ENTER
Track Delete	(DEF) DROP or <D/S List Number> DROP
Track Suspend	(DEF) SUS
Track Reposition (From Suspend or Drop)	<D/S List Number> RPOS <CODE> RD RPOS <ACID> RD RPOS <PEM> HOOK
Track Reposition (non-discrete)	<PEM> HOOK <D/S List Number> RPOS
Mode Select/Drop:	
Hold	(DEF) H (ENTER or DROP)
Assigned Altitude at Present Altitude	(DEF) A (ENTER or DROP)

Assigned Altitude at a Specific Altitude	(DEF) NNN A ENTER
MSAW Exempt by Track	(DEF) X (ENTER or DROP)
Conflict Alert Inhibit by Track	(DEF) Y (ENTER or DROP)
Silence Audible Alarm	
Previously Untracked Emergency	<PEM> HOOK <ACID> ENTER
Controlled Track Emergency, Altitude Monitor Failure, MSAW Failure, or Conflict Alert	(DEF)
Handoff	
Initiate To:	
Another Display	(DEF) <Display ID> HND
ARTCC (Host/Non-Host)	(DEF) HND
Specific ARTCC Sector	(DEF) NN HND
Specific Sector at Non-Host ARTCC	(DEF) NNA HND
ARTS/PIDP (Host/Non-Host)	(DEF) N HND
PIDP/PIDP Direct	(DEF) N HND
ARTS/PIDP via ARSA	(DEF) NA HND
Specific ARTS Sector (Directed) (Host/Non-Host)	(DEF) KSN HND
Specific ARTS Sector via ARSA (Directed) (Host only)	(DEF) KSNA HND
Recall	(DEF)
Accept	(DEF)
Point Out (Japanese Only)	

Initiate To:	
Japanese ACC	(DEF) P HND
Specific Sector	(DEF) NN P HND
Recall	(DEF)
Accept	(DEF)
Clear IF Flag	(DEF)
Clear DM Flag	(DEF)
Clear FP Flag	(DEF)
Take Control of Uncontrolled Track	(DEF)
Acknowledge automatic code change	(DEF) ENTER
Reject automatic code change	(DEF) DROP

e. Display Functions:

Cursor/Sweep Center/Off-Center

Offset Sweep	<PEM> HOOK S
Offset Cursor	<PEM> HOOK C
Sweep To Display Center	S ENTER
Cursor To Display Center	C ENTER
<PEM> To Display Center	P ENTER
Override Altitude Filter	AA
Display Next Code	NXT or (OPTIONS: 1, 2, or 3) NXT
Display Quick-Look	QL <Display ID>

Display Quick-Look Drop	QL DROP
Display Quick-Look Inhibit	QL I <Display ID
Display Quick-Look Inhibit Drop	QL I DROP
Specific Target Quick-Look Enter or Drop	(DEF) QL
Inhibit Targets outside CA area	SPEC AA
Satellite Airport Hold Activate	<PEM> HK F ENTER
Satellite Airport Hold Drop	<PEM> HK F DROP
Display Bearing/Range/Time-to-Fly	
Between two points	<PEM> SP1 <PEM> SP1
Between tracked target and sweep origin	<PEM> SP1 ENTER

f. Special Key Commands:

Clear Adjacent Keyboard Preview Area	SPEC (1 or 2) ENTER
Diagnostic Test Pattern Enter	SPEC T ENTER
Diagnostic Test Pattern Drop	Use Disengage/Engage Switch
Code Block Assignment	SPEC or (OPTIONS: 1, 2, 3) SPEC NNNN ^ NNNN ENTER
Training Display Designation	SPEC G
MSAW Check Target	<PEM>HOOK NNN ENTER
Master Display Functions (Master Unique)	
Barometer Change	SPEC NN ^ NN ENTER
Day/Time Change	SPEC DD ^ HH ^ MM ENTER
Configuration Change	SPEC C M=? (Display ID) ^ or ^

	A=? (Display IDs) /\ or /\ D=? (Display IDs) /\ or /\ E=? (Display IDs) ENTER or ENTER
Delete NAS Flight Plans	SPEC P ENTER
Reassignment of Tracks and Special Local Flight Plans to Master	SPEC TRK (Inactive Display ID) ENTER
Reassignment of Tracks and Special Local Flight Plans to another Display	SPEC TRK (Inactive Display ID) (Active Display ID)
Change NAS/PIDP IDs	SPEC N (NAS ID) /\ (PIDP ID) ENTER
Change A/D Entry Time	SPEC A (N or NN) ENTER
Enable CENRAP	SPEC K ENTER
Disable CENRAP	SPEC K DROP
Activate Simulation Mode	SPEC S ENTER
Delete Simulation Mode	SPEC S DROP
Initialize Barometer	NN /\ NN ENTER
Initialize Time	YY /\ MM /\ DD /\ HH /\ MM ENTER
Set up MSAW Exempt Code	SPEC M NNNN ENTER
Set up MSAW Exempt Code Block	SPEC M NNNN /\ NNNN ENTER
Delete MSAW Exemption	SPEC M DROP
Set up Conflict Alert Exempt:	
Code	SP3 C NNNN ENTER
Code Block	SP3 B NNNN NNNN ENTER
Delete Conflict Alert Exempt:	
Code	SP3 C DROP

Code Block	SP3 B DROP
Activate Auto Track	SPEC Z ENTER
Deactivate Auto Track	SPEC Z DROP
Set Auto Track Cd Blk/ID/display ID	SPEC ID (1 or 2 or 3 or 4 or 5 or 6 or 7 or 8) NNNN /\ NNNN /\ AAAAA (ENTER or /\) (ARR DISP ID, DEP DISP ID ENTER) or (ARR DISP ID, /\ ENTER) or (/\, DEP DISP ID ENTER) or (ARR/DEP DISP ID ENTER)
Delete Auto Track Code/ID	SPEC ID (1 or 2 or 3 or 4 or 5 or 6 or 7 or 8) DROP
Place any other display in Diagnostic Test	SPEC T (Display ID) ENTER
Inhibit Emergency Track Starts Outside	
CA Area	SPEC E
Master Message Add	SPEC MSG (AA...A) ENTER
Master Message Drop	SPEC MSG DROP
Disable Automatic Code Change Feature	SPEC X DROP
Enable Automatic Code Change Feature	SPEC X ENTER
Set Conflict Alert Limits for:	
Range	SP3 R NN ENTER
Altitude	SP3 A NN ENTER
Sweeps	SP3 S NN ENTER
Reset Conflict Alert Limits	
Range	SP3 R DROP
Altitude	SP3 A DROP

Sweeps	SP3 S DROP

Special FLIPS Messages:

Restore Data Base (Master Only)	SPEC R
Flight Plan Request	F OP (DEF) ENTER
Strip Request	S OP (DEF) ENTER
Emergency Runway Data Request	<PEM> E OP
Runway Data Request by Length	<PEM> N OP
Airport Data Request	I OP (Airport ID/Fix) ENTER
Clear Airport Runway Data	C OP
Position Sign On OPTIONS:	OP P (INIT)*(POS) ENTER (2 Numbers /\ representing minutes or 4 Numbers /\ representing hours and minutes input after the "P")

SECTION IX - PIDP ENHANCEMENT

1-77 Enhancement Proposal

Anyone may recommend enhancements to the PIDP. The originator should forward a letter containing the recommendation to ESC OL-D/E, 3580 D Ave., TINKER AFB, OK 73145-9155. The change proposal can also be telephoned to Air Traffic Systems at DSN 884-7004.

CHAPTER 2 - SPECIAL OPERATING PROCEDURES

2-1 Introduction

1. Chapter 2 contains special operating procedures for the following system conditions:

    a. System overloads contained in Section I.

    b. Indicator overloads contained in Section II.

    c. Equipment failures contained in Section III.

2. All procedures described are suggested actions.

SECTION I - PIDP SYSTEM LIMITS

2-2 Introduction

Three system constraints are placed on the PIDP system. These are:

a. Number of targets in the system.

b. Number of targets that are tracked in the system.

c. Number of flight plans that are stored in the system.

2-3 Overload of Targets

The PIDP can process up to 450 targets per antenna scan. When this occurs, an "IB" is placed in the system alarm line of the OP List. The system will then begin to drop targets, and the controller will see a wedge where targets are absent. Solution to a target overload: reduce the number of targets. This can be accomplished by selecting a lower RANGE SELECT on the TPX-42's B-Box until the "IB" alarm disappears.

2-4 Overload of Tracked Targets

1. When 200 targets are tracked, the "TT" alarm will appear on the system alarm line of the OP List indicating a track overload. If a controller attempts to track any additional targets, the "NO ROOM!" warning will appear in the preview area. Also, no new auto-acquires will be allowed to take place. Solution: Delete all dropped tracks (those tracks that coasted into the D/S List).

2. The PIDP can track only 15 non-discrete codes of the same code block. When this occurs and a controller attempts to track an additional target with the same non-discrete code, an "INVALID!" message will appear in the preview area.

2-5 Flight Plan Overload

The PIDP computer can store a maximum of 75 flight plans in the system. When an overload is reached, an "FP" is placed on the system alarm line of the OP List. Should a controller attempt to enter any additional flight plans, a "NO ROOM!" warning will appear in the preview area. Should NAS or FLIPS attempt to send any additional flight plans, a data reject will be sent by the PIDP indicating no room.

SECTION II - PIDP INDICATOR LIMITS

2-6 Introduction

The PIDP displays have limits imposed on them that affect the air traffic controller. These are:

a. The number of characters permitted on a display (data blanking).

b. The number of flight plans displayed in the A/D List.

c. The number of dropped or suspended targets displayed in the D/S List.

d. The number of characters in the preview area.

e. The number of characters in the master/display message area of the OP List.

f. The number of select codes or code blocks in the OP List.

g. The number of next code blocks in the OP List.

2-7 Data Blanking

1. When the maximum number of characters is reached on a display (approximately 1500), an "OB" appears on the indicator alarm line of the OP List, indicating a display overload. This condition causes the system to eliminate certain blocks of data in a predetermined sequence (trail dots, non- select codes, select codes, non-select altitudes, and select altitudes). Solution: To eliminate data blanking, the controller needs to reduce the number of characters on the display by any one of the following methods:

a. Inhibit untracked targets outside CA area.

b. If the display is on a range that is greater than 60 NM, and if operational requirements permit, change the range select switch on the display to 60 NM or less.

c. Use the altitude filter to eliminate all unnecessary traffic, or consider limiting the range on the B-box.

d. Limit the TPX-42 interrogator range to no greater range than needed to sustain operations.

2. When the overload ceases, reverse data blanking occurs. Restoration of data will occur; however, it will take six antenna scans per format element blanked out. Trail dots will not automatically be restored by reverse data blanking. Keyboard action must be taken.

2-8 Arrival/Departure List Overload

The ten most current flight plans are displayed in the A/D List. As flight plans are deleted from the list by means of auto-acquisition, automatic timeout, or manual deletion, flight plans are added to the List based on activation time.

2-9 Drop/Suspend List Overload

The D/S List is full when ten targets are suspended and/or dropped, and any additional dropped targets will not be displayed in the list until room is made. Should the controller attempt to suspend additional targets, "NO ROOM!" will appear in the preview area.

2-10 Preview Area Limit

The preview area of a display can hold up to 38 characters for editing entries. Care should be taken not to overwrite the preview area. This will lead to an "INVALID!" entry condition, and data will have to be entered again. If a FP initiate is being done, 45 character can be held; however, when the message is being input, the rest of the new flight plan is not displayed. You cannot backspace past the message field.

2-11 Message Area

The OP List can display two messages, the master (system) and display message with 20 characters each. If 20 characters exist and an attempt is made to add to a message, a "NO ROOM!" error will be displayed in the preview area. Satellite airport data requested from FLIPS will overwrite the two message lines. If a new master or display message is entered while satellite airport data is being displayed, it will not be displayed until the airport data is cleared.

2-12 Select Codes

Five select codes or code blocks may be used. If an additional code block selection is attempted after the limit is reached, the controller will get a "NO ROOM!" indication in the preview area.

2-13 Next Codes

The first code of up to four next code blocks may be displayed. This line will be overwritten with the bearing and range of up to three uncontrolled, unacknowledged emergency tracks. The next codes will be redisplayed when the emergency is cleared or acknowledged.

SECTION III - FAILURES

2-14 Introduction

This section provides special instructions for the air traffic controller in the event of a partial failure in the PIDP system. The following failures are discussed in this section:

a. Power failure.

b. Indicator failure.

c. Keyboard failure.

d. <PEM> failure.

e. NAS/JACC interface failure.

f. Hard disk/floppy disk failure

g. VDT failure.

h. VSP failure.

i. System failure.

j. FLIPS interface failure.

2-15 Power Failure

The computer will detect a power failure and provide up to two minutes of operation from a battery power source. If power is not restored in two minutes (commercial or back-up), the computer will halt; and the program must be loaded when power is restored. (Also see paragraph 3-7.)

2-16 Indicator Failure

In the event of an indicator failure, set the 1C-2C-3C switch on the indicator control box for the faulty indicator to one of the modes already in use. This permits the other indicator control boxes to select any modes without being inhibited by the inoperative indicator. Also, set the COMPUTER ENGAGE/DISENGAGE switch on the indicator control box to DISENGAGE to electrically disconnect the indicator from the computer. All tracked targets controlled by the failed display can be reassigned to another display by the master (see para 1-66). If the failed display was designated as the master position, all master functions will be automatically reassigned to the first active display.

2-17 Keyboard Failure

1. If a keyboard fails and there are two keyboards at that position, have maintenance remove the defective keyboard. If data from the defective keyboard remains in the preview area, perform the key sequence:

SPEC <Defective Keyboard Number (1 or 2)> ENTER

2. This should clear the data from the preview area. If only one keyboard is installed in the display position and it fails, the indicator can be used to control traffic in a limited capacity. No other entries can be made and the display will remain frozen as to the selected codes and formats being suppressed. Putting the display into diagnostic test mode may clear the keyboard.

2-18 <PEM> Failure

If the position entry module <PEM> fails, maintenance personnel should be notified to arrange for its replacement. The indicator can continue to operate in a reduced capacity with only keyboard acquisition of targets possible, by use of a <CODE> RD sequence. It will not be possible to start a track on a target with a non-discrete beacon code.

2-19 NAS/JACC Interface Failure

1. The indication of a NAS/JACC failure is the flashing characters “IF” (interface failure) on the system alarm line of the OP List. If this happens, maintenance should be performed to correct the problem.

2. If the failure was sufficiently long, as judged by the chief controller, the NAS flight plans should be purged per procedures in paragraph 1-64.

2-20 Hard Disk/Floppy Disk Drive Failure

If a hard disk/floppy disk drive fails, maintenance personnel should be notified immediately.

2-21 Video Display Terminal Failure

If the VDT fails, notify maintenance immediately.

2-22 Video Signal Processor (VSP) Failure

If the flashing characters “PC” appear on the system alarm line of the OP List, it indicates a failure in the system, VSP, or in the T-4 simulator. All indicator control boxes should be placed in DISENGAGED and maintenance personnel should be notified.

2-23 System Failure

Loss of a system means loss of all PIDP capabilities. The displays should be placed in disengaged mode to erase old alphanumerics. Bracket video can be displayed, along with primary radar, to aid in identifying aircraft even with the display disengaged.

NOTE: After the hard disk drive has been initialized with the current program load, a dump disk should be inserted in the floppy disk drive. Some program failures will result in a dump being written to the disk automatically. A PIDP FAULT LOG should be accomplished. If the system did not do the dump and time permits, a dump should be accomplished. Instructions for the manual dump and filling out the FAULT LOG are on the FAULT LOG itself. The completed FAULT LOG and dump disk should be mailed to ESC OL-D/E 3580 D Ave., TINKER AFB OK 73145-9155. A copy of the PIDP FAULT LOG can be obtained from ESC OL-D/E, and the facility should make additional copies.

2-24 FLIPS Failure

The indication of a FLIPS failure is the flashing characters “FF” (FLIPS failure) on the system alarm line of the OP List. If this happens, the FLIPS system should be rebooted.

2-25 ASR Failure

When the ASR fails, the PIDP program is still able to function in CENRAP mode (see paragraph 1-71). However, CENRAP requires the installation of a special box that generates the necessary Azimuth Reference Pulse (ARP) and Azimuth Change Pulse (ACP). These pulses are used to generate the sweep on the indicators. Once installed and CENRAP is enabled, PIDP receives target information from ARTCC via modem and displays these targets. Special requirements (i.e., increased separation) will probably be in effect when using CENRAP. (See paragraph 1-71 for further explanation.)

CHAPTER 3 - PROGRAM LOAD AND SYSTEM INITIALIZATION

3-1 Introduction

This chapter deals with the loading and initializing of the PIDP operational program. These steps must be completed before the system can be used. The PIDP is designed for continuous operation. Once the system is loaded and initialized as described in this chapter, it should not be reloaded or restarted unless normal operation is interrupted. For example, a program load must be accomplished after a system failure or computer maintenance.

SECTION I - PROGRAM LOADING

3-2 Introduction

The PIDP operational program is contained on a floppy diskette and is used to update the hard disk with any program changes via a floppy disk drive. The procedure to update the hard disk should only be done when a new program revision is received. After updating the hard disk from the new floppy diskette, the program is loaded via the hard disk (see paragraph 3-4). After the hard drive is updated, remove the program floppy from the disk drive and insert a dump disk in the floppy disk drive. Initialization is done from the master keyboard (see paragraph 3-5).

3-3 System Turn-On Procedure

Turn-on procedures are provided in Tables 3-1 through 3-2. These procedures allow the operator to turn the system on from a completely de-energized status.

3-4 Program Loading Procedure

The following sequence provides instructions to update the hard drive with a new operational program using the floppy disk drive.

a. Turn on the system console. The floppy disk drive should be on. Place the PIDP program disk in the floppy disk drive.

b. Depress the system reset switch (RST). If nothing happens, the lock switch on the computer from panel may be on and needs to be switched to off. (The switch should always be “OFF”.)

c. On the system console, type B (SPACE) 24 and press ENTER. The operating system load menu will appear. When this happens you have approximately 45 seconds to enter 2 ENTER.

d. The technical maintenance menu will appear. When this happens, enter 6 ENTER.

e. When the pathname is asked, answer update.sys and press ENTER.

f. When the “override default specs” appears, press ENTER.

g. When the next question is asked, always press Y ENTER.

h. Type RES and press ENTER.

i. Then enter B (SPACE) 24 and press ENTER. From this the program will automatically load. To avoid the 45 second delay, press ENTER when the operating system load menu appears.

j. Remove the load disk from the floppy disk drive and insert a dump disk in the drive.

2. The following instructions should be followed to load the PIDP program when power is on.

a. Remove the dump disk from the floppy disk drive.

b. Turn on the system console and the floppy disk drive. Depress system reset (RST) switch on CPU front panel.

c. Type B (SPACE) 24 and press ENTER. The operating system load menu will appear, and the program will load automatically. To avoid waiting 45 seconds for the program to load, press ENTER when the operating system load menu appears.

d. Insert a dump disk in the floppy disk drive.

3. To load the PIDP program when power is off, TURN POWER ON and floppy disk drive on. Remove the dump disk from the floppy disk drive. The program will automatically load. To avoid waiting 45 seconds at each of the prompts, press ENTER when they appear. Insert a dump disk in the floppy disk drive.

SECTION II - INITIALIZATION

3-5 Program Initialization

1. This paragraph provides instructions to initialize the operational program. Initialization consists of entering the barometer, followed by the date and time from the master display. Initialization must be accomplished after the operational program has been loaded into the system (paragraph 3-4), or after doing a program restart (paragraph 3-6).

2. When the program is loaded or restarted, the first active display will be designated as the master display. The OP List will appear on all engaged displays in the following format:

T 00 00:00:00 B 29.92 A 000-999
C 000.0 S 000.0 (OD-153/T only)
LOAD 62P0VPS1 (Current load # and Base ID)
AR DE EN
M=A (assuming display A is engaged)

3. The displayed time will now begin to update and the master display must now enter the barometer setting followed by the year/month/day/hour/minute command (paragraph 1-23-8). An entry from any other display or an entry other than to initialize barometer or time from the master will cause an error condition.

4. Once the master has entered the barometer followed by the date and time, all engaged displays will then be operational. The system is now ready for use with the following preset parameters:

a. Mode of Operation - Live (paragraph 1-68).

b. MSAW Exemption - None (paragraph 1-41-1).

c. A/D Entry Time - 5 minutes (paragraph 1-25-7).

d. Auto-Acquire Leader Direction - South (paragraph 1-54).

e. NAS/PIDP Identifiers - As submitted by the facility (paragraph 1-65).

f. System Configuration - All active displays are designated as arrival, departure, and en route. Additionally, the first active display is also the master.

5. The master display can change any of the parameters by keyboard action without stopping the program. However, if the year or month must be changed, a restart and initialization are required.

Table 3-1 Data Processing Group Switch Settings

UNIT	SWITCH	POSITION
Floppy Disk Drive	POWER	Pushed for power ON
VDT	ONLINE	SCP-CLI prompt
Modem (Penril)	ST-NORMAL-DL	NORMAL (Centered Position)
	AL-NORMAL-RO	NORMAL (Centered Position)
COMPUTER	POWER	ON
	SYSTEM BOOT-RST	CENTER
	CONSOLE RST	CENTER
	LOCK	OFF
MODEM (Paradyne)	CONFIGURATION	2
	DTE	A
	ALL BUTTONS	OUT

Table 3-2 Indicator Group Switch Settings

UNIT	SWITCH	POSITION
Indicator Group	AC POWER ON-OFF	ON
OD-152A/T and OD-153/T	PRETRIG (BEACON/RADAR)	RADAR
	RADAR VIDEO (OD-153/T Only)	NORMAL/MTI
	RADAR VIDEO SELECT (OD-152A/T Only)	4
	MTI INTERVAL	Include MTI targets within clutter region
	MTI VIDEO	For desired MTI intensity
	NORMAL VIDEO	For desired normal intensity
	MAP VIDEO	For desired MAP intensity
	BACKGROUND VIDEO	For desired background intensity
	CURSOR DECENTERED/ CENTERED	DECENTERED
	SWEEP INTENSITY	Until sweep is barely visible
	RANGE MARKS	For desired range mark intensity
	CURSOR INTENSITY	For desired cursor intensity
	RANGE STROBE	Until range strobe is visible on cursor
	FOCUS	Sweep and range marks clearly defined
	SWEEP CENTER/ DECENTER	DECENTER

UNIT	SWITCH	POSITION
	CHAR SIZE	Desired size of alphanumeric characters
	RANGE (NM)	Desired Range
	PANEL LIGHTS	Desired illumination of front panel
	COMPASS ROSE (OD-153/T only)	Desired compass rose illumination
CONTROL, INDICATOR C-10501/T	COMPUTER ENGAGE/ DISENGAGE	ENGAGE
	MODE SELECT 1C-2C-3C	3C
	FORMAT VIDEO BRIGHTNESS	Adjust for desired alphabetic character intensity
	BRACKET VIDEO ON-OFF	ON (UP)
	BRACKET VIDEO BRIGHTNESS	Adjust for desired bracket intensity

3-6 Power Fail Recovery

The PIDP computer will detect a power failure and provide up to two minutes of operation from a battery power source. If power is not restored in two minutes (commercial or back-up), the computer will halt; and the program must be loaded when power is restored.

CHAPTER 4 - PIDP FACILITY RESPONSIBILITIES

4-1 Introduction

The program design criteria for the new Programmable Indicator Data Processor (PIDP) shall provide air traffic controllers the capability to furnish a safe terminal advisory and control service to aircraft arrivals, departures and overflights in a military air traffic control environment. The following sections outline local responsibilities for implementing and testing new program versions.

SECTION I - PROGRAM IMPLEMENTATION

4-2 Introduction

1. PIDP operational program releases are made using FLOPPY DISKS. We refer to these as load disks. Interim releases and changes to site unique data are made as required. Prior to release of load disks for other than site unique data changes, the program is thoroughly tested at ESC OL-D/E and at two designated field test sites. There are three reasons for releasing new load disks:

a. To fix known problems (deficiencies).

b. To improve the operational program (enhancements).

c. To provide requested site unique data changes.

2. A release may contain any combination of these changes. A new release will consist of:

a. Two current load disks.

b. A Version Description Document (VDD).

c. Cover letter.

3. Site unique data changes will be accompanied by a cover letter without a VDD. The VDD and cover letter contain instructions on actions to be performed before, during, and after implementation as well as a description of changes and identification of the new load disks.

4-3 Program Load Identification

Each floppy load disk is labeled for identification purposes. The label contains three numbers:

a. The Computer Software Distribution Identifier (CSDI) is an ESC OL-D/E assigned number that is made up of an equipment identifier, system name, and date of assembly. This number is for ESC OL-D/E use only.

b. The Load Number (Load) is the only number that really concerns you since it is the number referred to by ESC OL-D/E in correspondence with you. The first two digits of this number identify the load. If the load contains temporary corrections, a "P" will follow the load identifier along with a number indicating how many corrections are included. Next is the three-letter site identifier for your facility, and following that is a number indicating how many site unique data changes have been implemented for your facility. A "1" indicates the original release. A "2" would indicate the first site unique data change after

the original release, a "3" would indicate the second change, and so on. This number will be reset to "1" each time the three-digit load identifier or one-digit "P" number is changed.

c. The Computer Program Identification Number (CPIN) is a number assigned to programs of embedded computer systems as required by AFR 800- series regulations. The last three digits identify which revision is on the load disk and are the only numbers that change. This number is also for ESC OL-D/E use only.

4-4 Facility Requirements

1. Each PIDP facility should always have on hand:

   a. Two floppy disks of the latest program version as the operational load.

   b. The latest VDD describing the difference between the operational load and the backup load.

   c. A copy of the most recent Performance Evaluation Test (PET) document.

   d. Floppy disks for dump purposes.

2. Dump disks can be any 3 ½-inch floppy that has been high density formatted.

4-5 Replacement Software

All disks, including backup disks, should be loaded and initialized upon receipt for verification of disk quality. If for any reason a disk does not load, it should be returned to ESC OL-D/E immediately for replacement. It is important that all superseded load disks be returned to ESC OL-D/E for use and to assure that uniformity of software is maintained at all PIDP facilities. The VDD/cover letter tells you which disk is the current load and which disk is the backup load. All other load disks must be returned. In addition, it is important that you advise ESC OL-D/E by telephone or message when you receive any new load disk or PET document, and the date you implement the new load.

4-6 Performance Evaluation Test Requirements

Validation testing using the PET document must be accomplished before each new version (indicated by a change to the load identifier) is implemented. If a change is minor (only the "P" number changes) or if it is a site unique data change only, validation testing may not be required. The VDD/cover letter will tell you if a PET is required.

SECTION II - TEST FACILITY PROCEDURES

4-7 Introduction

Before any new version of the PIDP operational program is released for operational use at all facilities, it must be thoroughly tested to ensure it operates correctly. This testing is accomplished in two phases:

a. Phase 1 is a test conducted at ESC OL-D/E utilizing a PIDP mock-up system. This test simply assures that the program responds correctly to input data.

b. The second phase of the testing process is the operational verification. This test is used to insure that an ATC facility can operate with the new program version. Many times this test will reveal problems within the program which were not apparent at ESC OL-D/E simply because of the added workload an actual operation can put on the system.

4-8 Test Sites

Due to the need to exercise the program under a full load and to insure that all portions of the program are exercised, this operational verification test will be conducted at designated facilities having high density air traffic. Direct coordination is authorized between ESC OL-D/E and the designated test facility. All designated test sites must be aware of the requirements for operational verification in case they are tasked to be the testing facility. The current list of test sites includes Sheppard, Tyndall, and Eglin AFBs. Two facilities are used to field test each new version of the PIDP operational program. Field tests necessary for deficiency corrections are conducted at one facility on an as required basis.

4-9 Field Test Procedures

The following procedures must be followed prior to implementing a new test version of the PIDP program:

a. Prior to the inclusion of any enhancement in the PIDP program, the Computer Configuration Sub Board will determine that the change is acceptable for use in the program. Deficiency corrections are approved by ESC OL-D/E.

b. ESC OL-D/E will then include the change(s) in a test version of the new program and will prepare and distribute to the designated test facilities a cover letter, two (2) new version program disks, and Field Test Instructions.

c. Within five days of the receipt of the new version disks, the designated test sites will put the new version into use in accordance with the instructions.

d. The test sites will continue use of the new version for the time period specified. During this period, it is imperative that the test facilities:

(1) Document all discrepancies found. Be as specific and complete as possible.

(2) If a program failure occurs during the testing period, the testing facility must complete the PIDP Fault Log. This information and the program dump disk will then be provided to ESC OL-D/E as soon as possible after the failure.

(3) If failures or discrepancies are so numerous that the continued use of the test program may cause a flying safety hazard, the new version will be replaced by the currently approved version. ESC OL-D/E will immediately be notified so they can begin investigation of the problem.

e. At the completion of the test period specified, each testing facility will provide the results to ESC OL-D/E (DSN 884-7004) by telephone. This notification must be followed within 24 hours with a written test report. The test report will include program discrepancies found during testing and a list of the times and duration of all system outages occurring during the test period. This written report will be sent to ESC OL-D/E. A copy of this test report may also be sent to the respective division, if required. Upon telephone notification of the successful completion of program testing, ESC OL-D/E may allow the test facilities to continue using the program version which was successfully tested.

f. If the tested version includes any enhancements, HQ USAF will decide if the new version is to be released to all other PIDP facilities. If the tested version contains only deficiency corrections, ESC OL-D/E may approve release of the new version to all sites.

g. Upon release approval, ESC OL-D/E will distribute the new program version disks and Version Description Documents (VDDs) to all PIDP facilities.

NOTE: Prior to operational use of a new version, each site will ensure that they complete the verification testing using the Performance Evaluation Test (PET) document.