UNITED STATES POSTAL SERVICE®

AFCS/ISS Operating System Guidelines

Handbook PO-424

August 1999
Transmittal Letter

A. Purpose. This handbook provides operating guidelines and performance criteria for the Advanced Facer Canceler System/Input Subsystem (AFCS/ISS) that is in use nationwide. It is for use only on Postal Service premises during regular workhours.

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US POSTAL SERVICE
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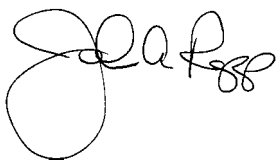

John A. Rapp
Vice President
Field Operations Support

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1 Introduction to the AFCS/ISS

1-1 Introduction

This section provides the theory and principles of operation of the Advanced Facer Canceler System/Input Subsystem (AFCS/ISS).

1-2 General Description

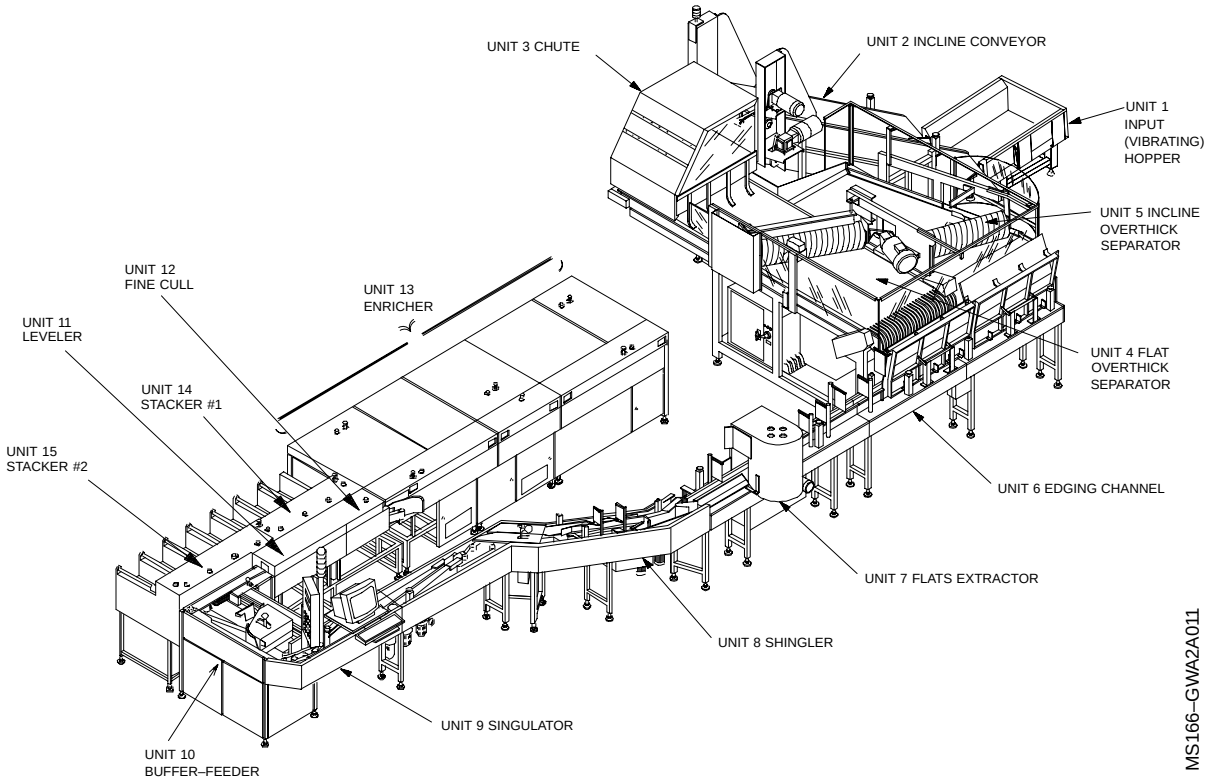
The AFCS/ISS is an electro-mechanical mail-handling system that uses the latest Optical Character Recognition (OCR) technology to rapidly cull, position (face), cancel, print ID Tags on certain types of mailpieces, verify printed ID Tags, scan the mailpiece address, store and transfer mailpiece images from the Image Management System (IMS) portion of the AFCS/ISS to the Image Processing Subsystem (IPSS), and sort standard-size mailpieces.

The AFCS/ISS consists of 15 major equipment units. They are numbered in sequence according to the mailflow, beginning with the Input Hopper (Unit 1), and concluding with Stacker #2 (Unit 15). The unit number is the reference designator number to be used when locating parts and components in the schematics in Maintenance Series Handbook MS-166, *AFCS-ISS, Maintenance Information,* Volumes BP1, BP2, and BP3 (October 1996). It is important to remember the unit numbering scheme because it will facilitate troubleshooting and determining which section of the AFCS/ISS is not working.

Microprocessor technology is used in the AFCS/ISS. The machine is modular in concept and can be thought of as two separate machines: a Culler and a Facer/Canceler. The AFCS/ISS can also upload status information through the Data Collection Computer (DCC). Additional features include ink jet printers, which print ID Tags on certain types of mailpieces; electronic verifiers, which verify the printed ID Tags are correct and readable; scanners, which capture an image of the mailpiece; and Indicia Detectors, which can recognize all types of indicia including seven types of Facing Identification Marks (FIM). Additionally, the Image Management System (IMS) provides the capability to send images to the IPSS. Because the AFCS/ISS improves on many field-proven concepts used in other systems, there may be similarities between the AFCS/ISS and other systems used in the field, such as multiline OCRs (MLOCR/ISS).

The AFCS/ISS can be looked at as two separate machines in one, as shown in **Figure 1-1.** The first section of the AFCS/ISS is the Culler Section, which operates to rough-cull mailpieces and prepare them for the Facer/Canceler section. The Culler Section also removes from the system flats and mailpieces that are too thick so that they can be manually processed.

Figure 1-1
AFCS/ISS Major Units



The Culler Section consists of the following units:

a. Unit 1, Input Hopper
b. Unit 2, Incline Conveyor
c. Unit 3, Chute
d. Unit 4, Overthick Separator Flat
e. Unit 5, Overthick Separator Incline
f. Unit 6, Edging Channel
g. Unit 7, Flats Extractor
h. Unit 8, Shingler
i. Unit 9, Singulator
j. Unit 10, Buffer/Feeder

The second section of the AFCS/ISS is the Facer/Canceler Section, which is designed to identify indicia, face, cancel, print ID Tags, verify ID tags, scan and transfer images of mailpieces, and sort mailpieces to the proper bin. The Facer/Canceler Section consists of the following units:

a. Unit 11, Leveler

b. Unit 12, Fine Cull

c. Unit 13, Enricher

d. Unit 14, Stacker #1

e. Unit 15, Stacker #2

The Facer/Canceler Section of the AFCS/ISS machine is used to properly face (position) mailpieces, identify the type of indicia on mailpieces, and cancel mailpieces. In addition, an ID Tag is printed on certain types of mailpieces, the ID Tag is verified, images are taken of the mailpices, the type of mailpieces (imprint, script, or no line) are determined, mailpiece images are temporarily stored and then sent to the IPSS upon request, and the mailpieces are sorted.

After leaving Unit 10 (Buffer/Feeder), mailpieces pass through the Leveler (Unit 11) so that they can be properly oriented before entering a Fine Cull module (Unit 12), which checks mailpiece gap (80 mm minimum), mailpiece skew, and mailpiece size. Additionally, mailpieces that are too stiff and mailpieces that do not conform to heighth or length standards are ejected out of the mail stream at this point for manual processing. Mailpieces then move to the Enricher (Unit 13), where they are examined by two sets of indicia detectors, cancelled, and positioned for ID Tag Printers. After being examined by the first set of indicia detectors, the mailpiece is then properly positioned (indicia down) for the second set of indicia detectors. Mail then passes through the canceler, where the indicia is canceled. Next an inverter turns all mailpieces upright (indicia up) for the ID Tag Printers. An ID Tag is printed on the back lower side of certain types of mailpieces and is electronically verified to ensure that it is correct and readable. Mailpieces are also sorted in Unit 13 for distribution to Units 14 and 15.

In the last process of Unit 13, each mailpiece is scanned and an image of the mailpiece is temporarily stored. The stored mailpiece images are then transferred to the IPSS for further processing.

Based on the sort criteria and mode of operation selected on the Operator Control Panel, mailpieces are distributed to the Stackers (Units 14 and 15). Mailpieces sorted to Bins 1–6 are sent on for further automated processing. Mailpieces that are rejected to Bin 7 are sent on for manual processing.

The AFCS/ISS is designed to be operated by only one operator. No more than one operator should be assigned per machine at any time.

2 Equipment Description: AFCS/ISS Major Units

2-1 Unit Descriptions

There are 15 major units of the AFCS/ISS. This section provides an overview of each of these units.

2-1.1 Unit 1 (Vibrating Hopper)

The AFCS/ISS operator or an automatic feed system deposits rough-culled mail to the AFCS/ISS at the Vibrating Hopper (see **Figure 2-1.1**), which slopes down toward the Incline Conveyor.

The Vibrating Hopper contains two sensors that let the operator know the amount of mail available. When more mail is required, the hopper alerts the operator by a yellow light. A red light means that the hopper is out of mail.

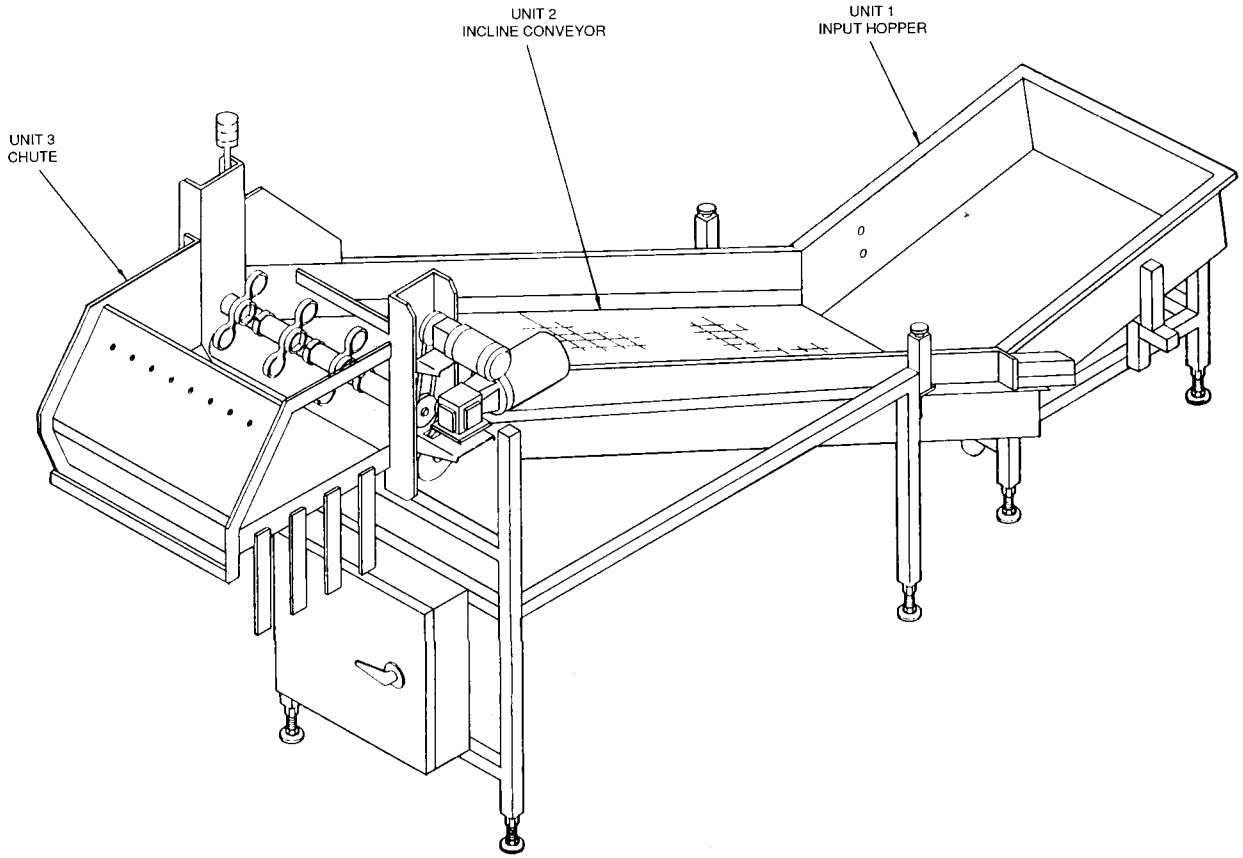
The hopper is activated by a pneumatically driven vibrator. The vibrator serves to move mailpieces onto the Incline Conveyor belt. The amount of mail in the hopper determines the amount of vibration, which determines how rapidly mail enters the Incline Conveyor.

2-1.2 Unit 2 (Incline Conveyor)

The Incline Conveyor (see Figure 2-1.1) moves the mailpieces from the Vibrating Hopper to the Chute, which is located at the top of the conveyor. The conveyor serves to raise the mailpieces to the Overthick Separator area, while further breaking up mail bundles and spreading out mailpieces.

Photoelectric (PE) cells installed at the top of the conveyor monitor the mailflow, and a computer adjusts the speed of the conveyor belt, compensating for varying volumes of mail on the conveyor. The Incline Conveyor consists of Emergency Stop Buttons, the Incline Power Distribution box, conveyor belt, DC drive motor, DC control board (AR-1) located in the Incline Power Distribution box, Beaters, and an AC drive motor.

Figure 2-1.1
Unit 1 Vibrating Hopper, Unit 2 Incline Conveyor, Unit 3 Chute



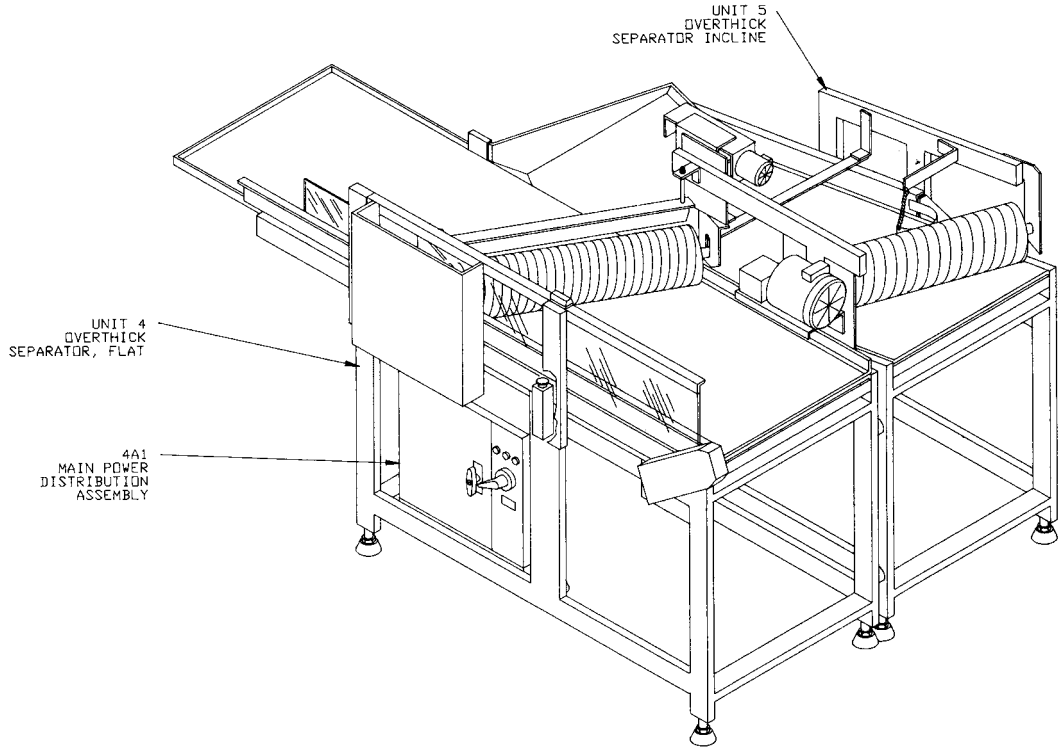
2-1.3 Unit 3 (Chute)

The Chute (see Figure 2-1.1) is a hooded unit that deflects the mailpieces as they reach the top of the conveyor and fall to the flat surface of the Overthick Separator. A system of PE cells on the incline monitors the mailpieces as they pass over the edge of the conveyor. The Chute contains the reflectors for the PE cells. If a pile up occurs, the operator will slow or stop the system. The free-falling mailpieces are further separated by the beater or stripper belts and prepared for the first rough-cull function.

2-1.4 Unit 4 (Flat Overthick Separator)

The Flat Overthick Separator (see **Figure 2-1.4**) blocks mailpieces with a thickness greater than .25 inch from entering Unit 6 of the AFCS/ISS. The Flat Overthick Separator has a counter-rotating Culler drum that pushes overthick mailpieces toward the Incline Overthick Separator. The Incline Overthick Separator functions to further break up any bundling/clumping that has occurred and to reject mailpieces that are too thick.

Figure 2-1.4
Unit 4 Flat Overthick Separator and Unit 5 Incline Overthick Separator



The Flat Overthick Separator consists of a wide horizontal belt, a drive motor, the counter-rotating Culler drum and drive motor, Emergency Stop buttons, and the Main Power Distribution box. Mailpieces that are able to pass under the counter-rotating Culler drum are dropped into the Edging Channel.

2-1.5 Unit 5 (Incline Overthick Separator)

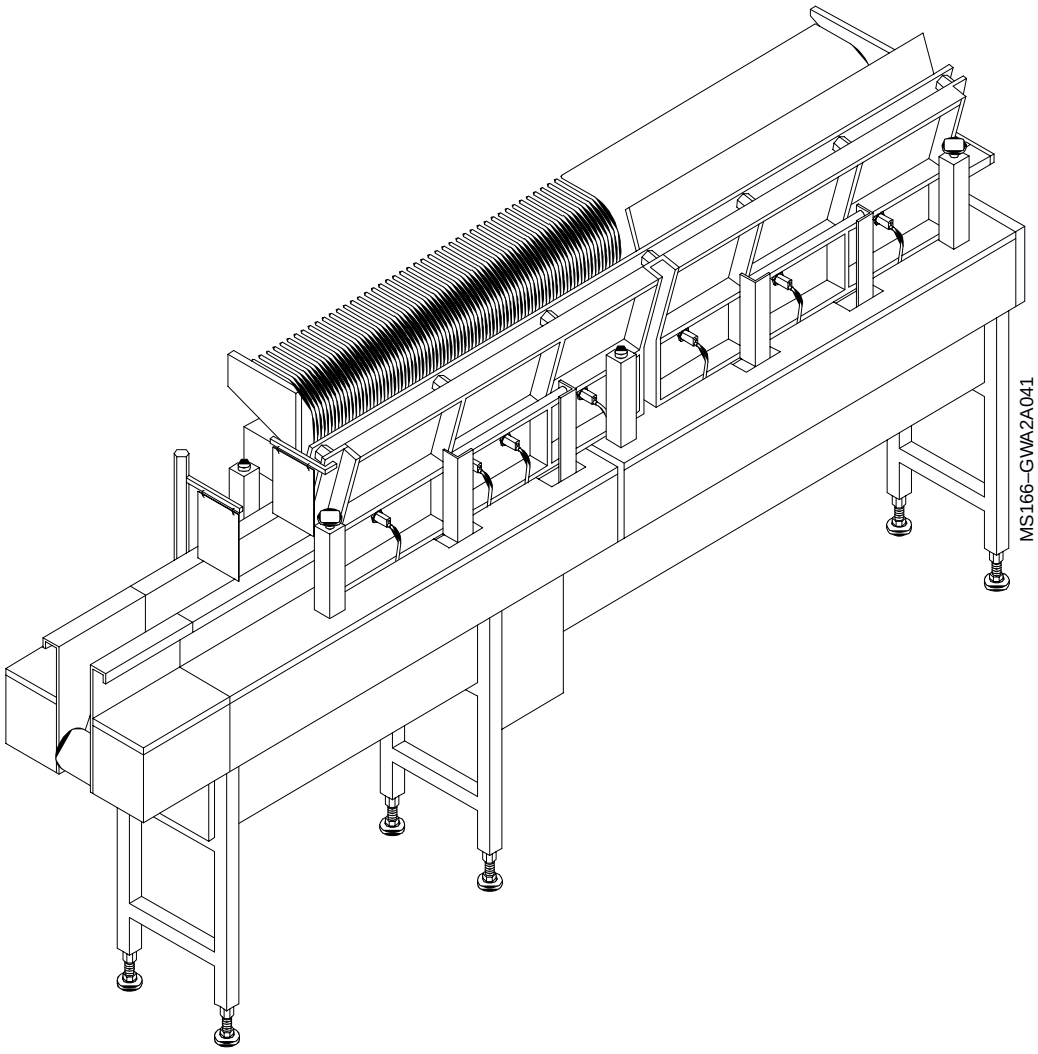
Mailpieces that may be within the limits set by the first culling process but were rejected due to bundling are given a second chance in the Incline Overthick Separator (see Figure 2-1.4). This reduces the number of rejects. The Incline Overthick Separator has an incline belt that moves the mailpieces toward the drum; mailpieces failing to pass under the drum are ejected from the AFCS/ISS. Mailpieces that are within limits (less than .25 inch thick) are passed on to the Edging Channel.

The unit consists of an incline bed with a wide horizontal belt, a counter-rotating Culler drum, and a drive motor.

2-1.6 Unit 6 (Edging Channel)

The Edging Channel (see **Figure 2-1.6**) properly orients mailpieces and prevents non-mail items from entering the AFCS/ISS. An open grill area, also called the Waterfall, allows non-mail items such as paper clips and rubber bands to fall into a collecting bin. Mailpieces slide over the Waterfall and into the Edging Channel. A system of eccentric rollers and knock-down barriers align the mailpieces along their horizontal lengths. Each mailpiece then moves downstream toward the Flats Extractor. A single photoelectric cell is used to detect jams and other conditions that may impede mailflow.

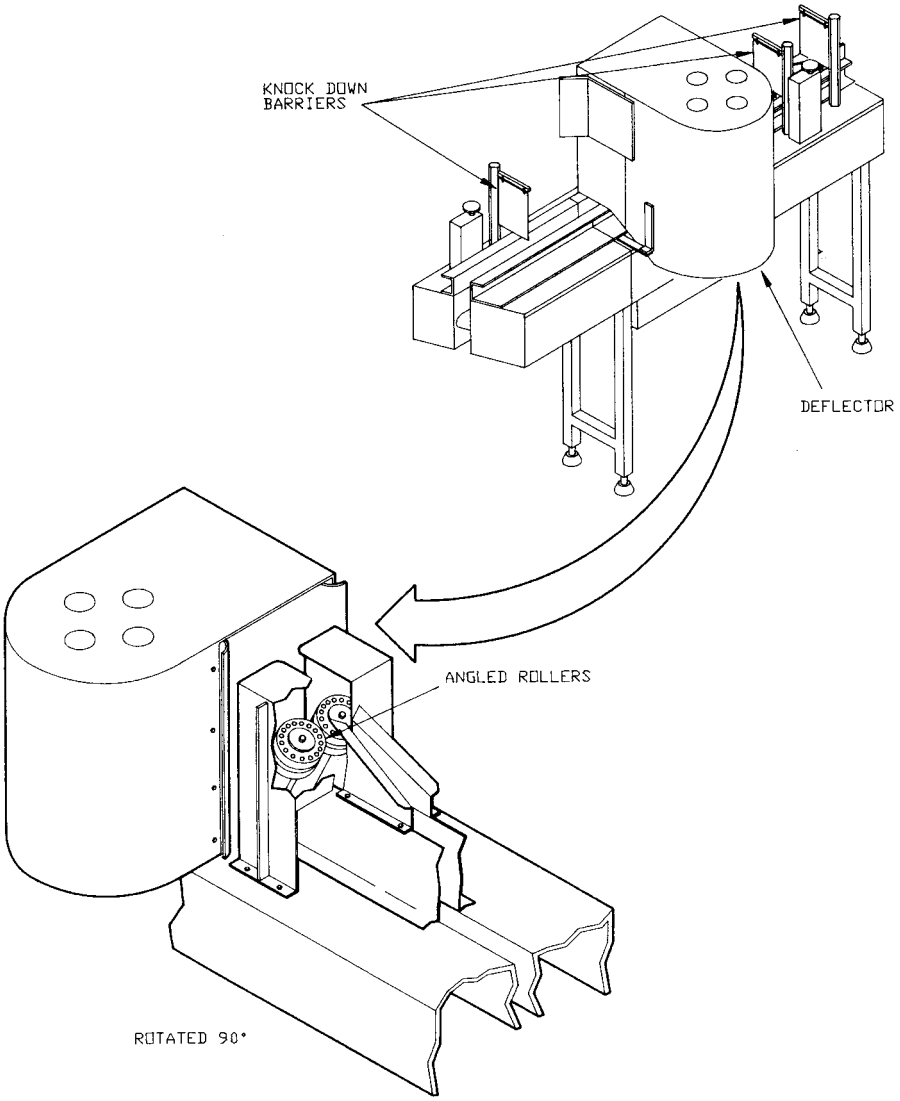
Figure 2-1.6
Edging Channel Assembly



2-1.7 Unit 7 (Flats Extractor)

The Flats Extractor (see **Figure 2-1.7**) uses a pair of angled rollers to eject items that are higher than 8.25 inches, as determined by the knock-down barriers discussed in Section 2-1.6. The Flats Extractor consists of a pair of angled rollers, knock down barriers, and an ejection chute. The chute can be installed for either right-side or left-side ejection.

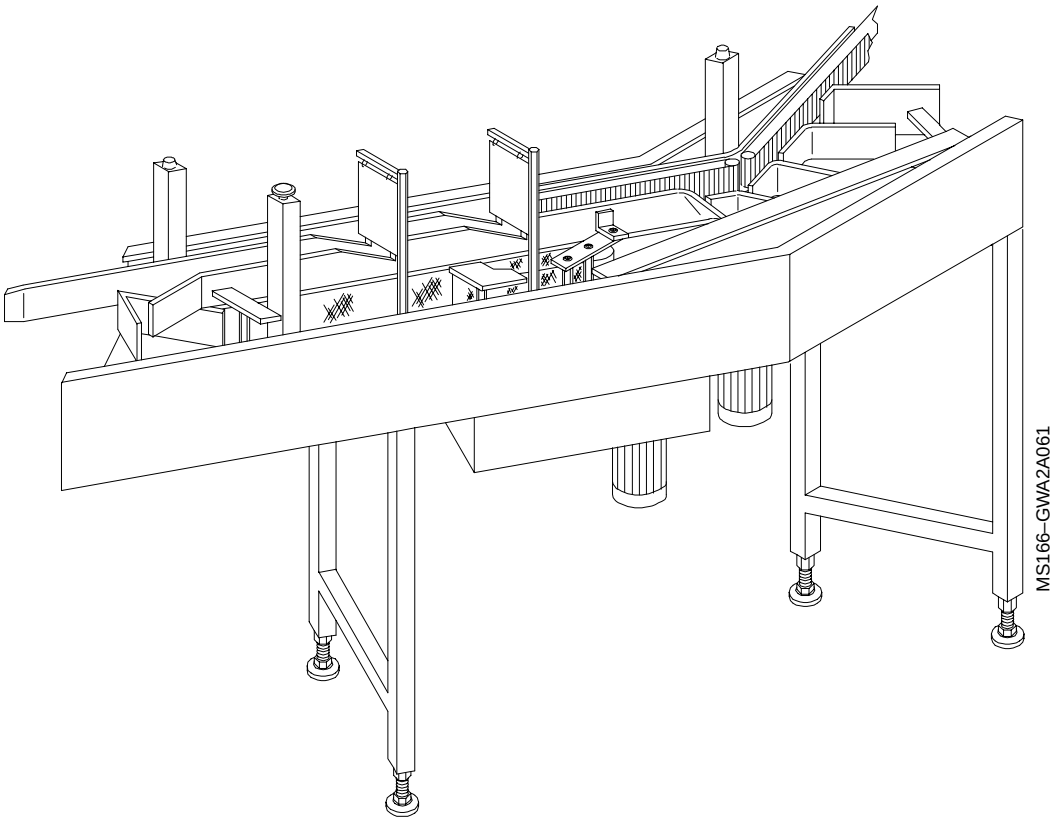
Figure 2-1.7
Unit 7 Flats Extractor



2-1.8 Unit 8 (Shingler)

The Shingler (see **Figure 2-1.8**) forms an overlapping mailstream for easier processing of mailpieces downstream. Mailpieces are restricted as they move away from the Flats Extractor and toward the Singulator. A system of tractor belts on one side of the mail channel moves the mailpieces while spring-loaded rollers and pressure fences on the other side of the mail channel apply friction. This forces the mailpieces into an overlapping position, similar to roof shingles. This unit contains proximity switches and light barriers linked to motors that control the flow rate of mailpieces.

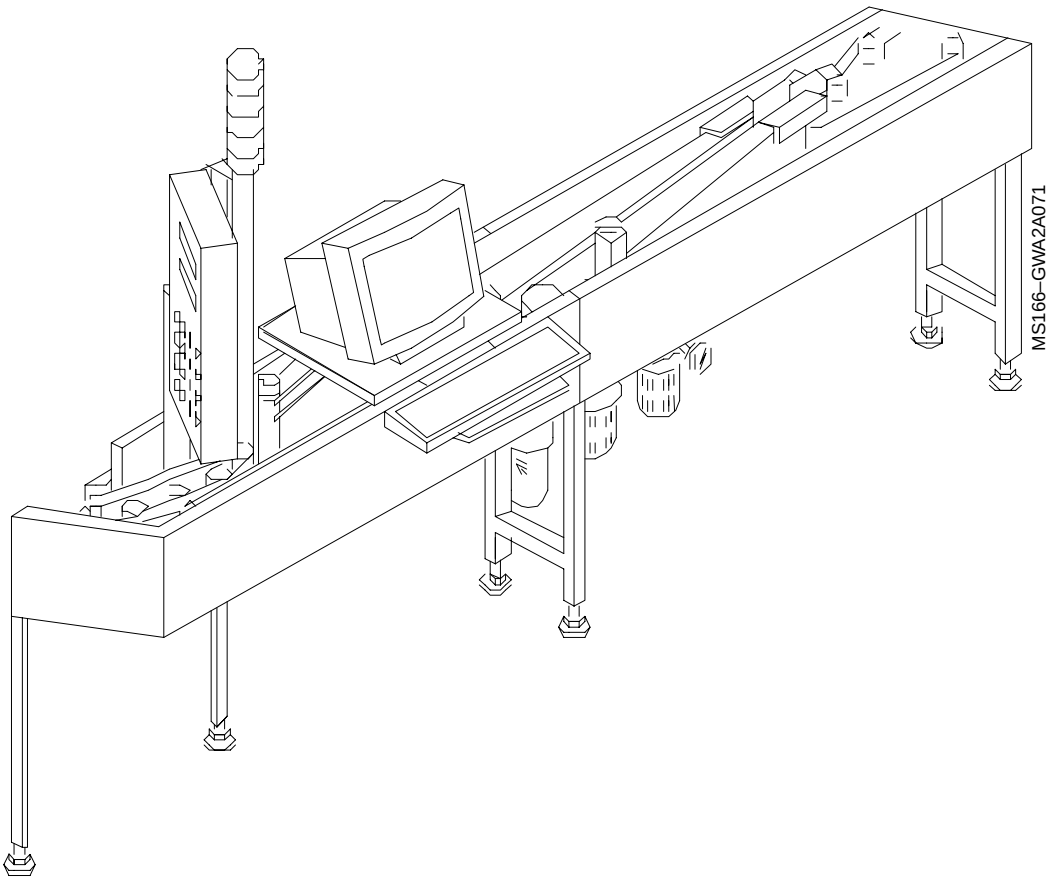
Figure 2-1.8
Shingler Assembly



2-1.9 Unit 9 (Singulator)

The Singulator (see **Figure 2-1.9**) separates the overlapping mailpieces into a stream of single pieces, while creating a constant distance gap between each mailpiece. The Singulator has a feed mechanism, mailpiece leveler system, emergency stop button, and a pneumatic air regulator and filter. Air is blown across a series of light sensors to retard paper dust buildup.

Figure 2-1.9
Singulator Assembly



The Operator Control Panel, ISS Status Indicator, and Image Management System (IMS) Terminal are mounted at the left end of Unit 9.

The IMS Terminal is used for inputting commands and operating parameters and for displaying the status of the Storage, Transfer, and Communication Processor (STCP) and messages from the Image Capturing Unit/Image Processing Subsystem (ICU/IPSS). Maintenance personnel use the IMS Terminal to enter test modes via the computer keyboard.

The Operator Control Panel allows operators and maintenance personnel to control sections of the machine selectively. The panel consists of controls, displays, and sort selection switches. A four-position rotary switch is located at the lower right-hand corner of the panel. Four operational modes can be selected using this switch. Operating modes are discussed in Section 5.3. Maintenance personnel use the panel to enter test modes via the Test Select Thumbwheels. The ISS Status Indicator provides information to the users on the communication connection status between the ISS and the IPSS.

2-1.10 Unit 10 (Buffer/Feeder)

The Buffer/Feeder (see **Figure 2-1.10**) is the terminal point of the Culler Section of the AFCS/ISS. Mailpieces enter the buffer area and are held there until the Facer/Canceler Section of the AFCS/ISS is ready for them. After receiving the proper signals from System Control, mailpieces exit this unit through the feeder section.

The Buffer/Feeder is the main control point for the Culler Section of the AFCS/ISS. All motor power and DC power to Units 1 through 10 are controlled by the Buffer/Feeder.

Contained in the unit is a carriage monitored by seven proximity switches and a drive motor, a feeder and DC drive motor, a horizontal belt, drive motor, logic card cage, power distribution box, servo amplifiers for both the Buffer/Feeder and Singulator, and emergency stop button.

2-1.11 Unit 11 (Leveler)

The Leveler (see **Figure 2-1.11**) is used to level mailpieces exiting from the Buffer/Feeder. This unit consists of a flat horizontal belt moving between two vertical belts spaced sufficiently far apart to allow the mailpiece to free fall to the horizontal belt. This settling time is necessary to compensate for possible skew induced by the feeder and to properly orient mailpieces entering the fine cull section.

Figure 2-1.10
Buffer/Feeder Assembly

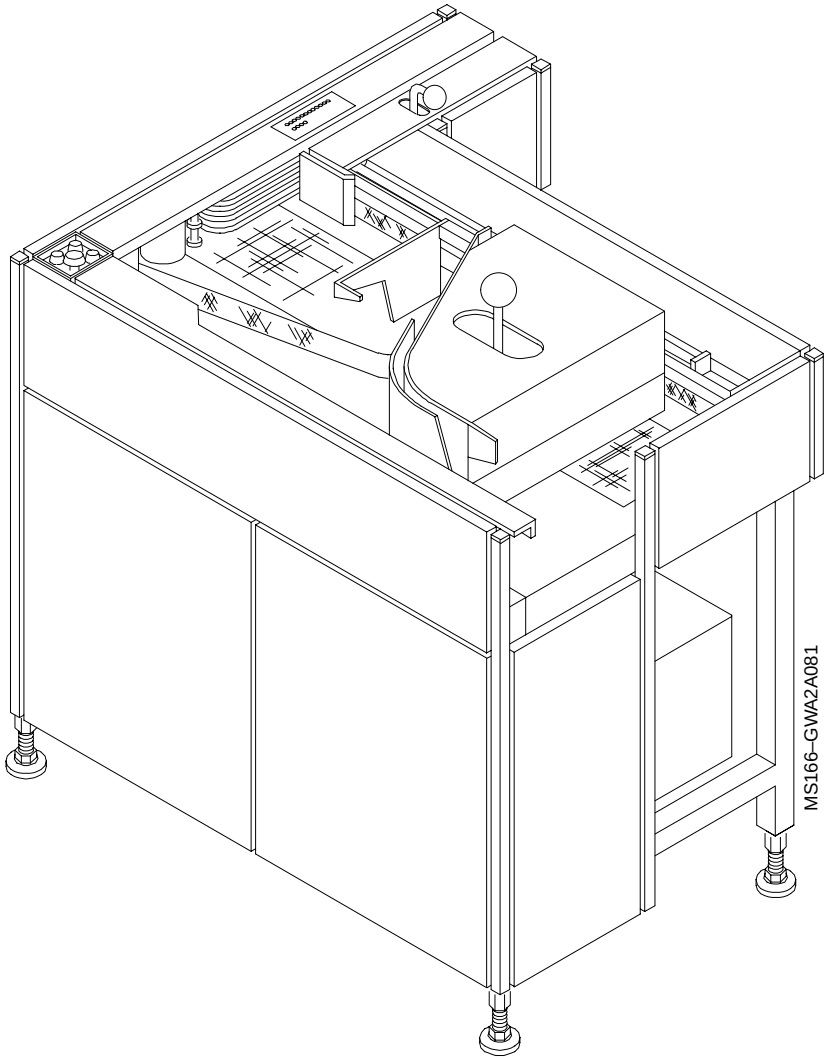
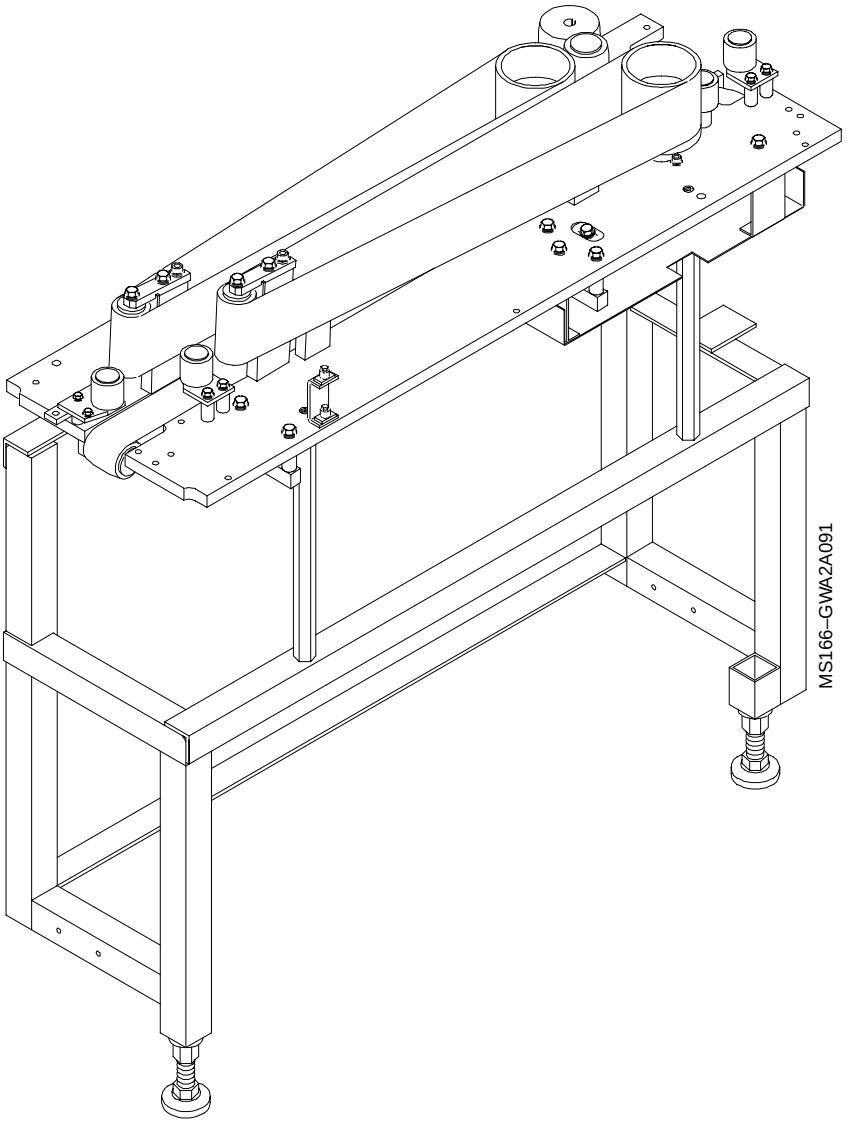


Figure 2-1.11
Leveler Assembly



2-1.12 Unit 12 (Fine Cull)

The Fine Cull unit (see **Figure 2-1.12**) is important to the proper operation of the AFCS/ISS. Mailpieces entering this unit are checked for proper characteristics. Mailpieces that have the following improper characteristics are ejected from the machine:

a. Too stiff

b. Too much height — more than 6.125 inches

c. Too little height — less than 3.5 inches

d. Too much length — more than 11.5 inches

e. Too little length — less than 5 inches

f. Skewed

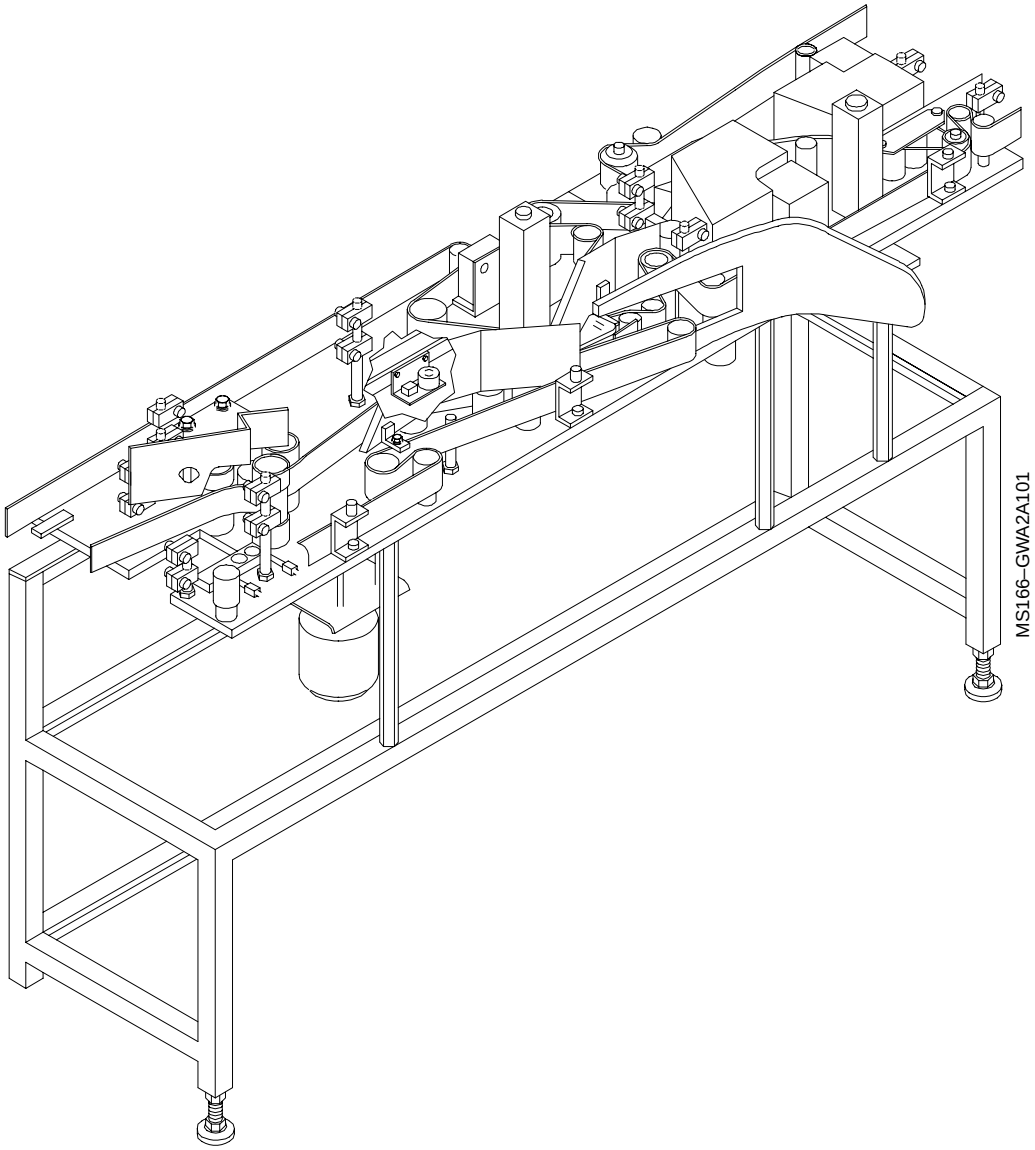
g. Too little gap between mailpieces (less than 70 mm)

When two consecutive mailpieces are not properly gapped (i.e., when there is not enough distance between the mailpieces), both items are ejected. A high rate of ejected mailpieces may indicate Buffer/Feeder pickoff problems or incorrect gap detector adjustment.

Fine culling is essential to proper operation of the canceler. Mailpieces that may have avoided detection up to this point are screened to prevent damaging the canceler and to ensure that the image scan capability will not be degraded.

Unit 12 also includes the Group A Indicia Detect, which is the first of two indicia detection units in the Facer/Canceler section (the second is in Unit 13). The indicia detect scans each mailpiece to determine whether indicia is located along the bottom edge of the mailpiece.

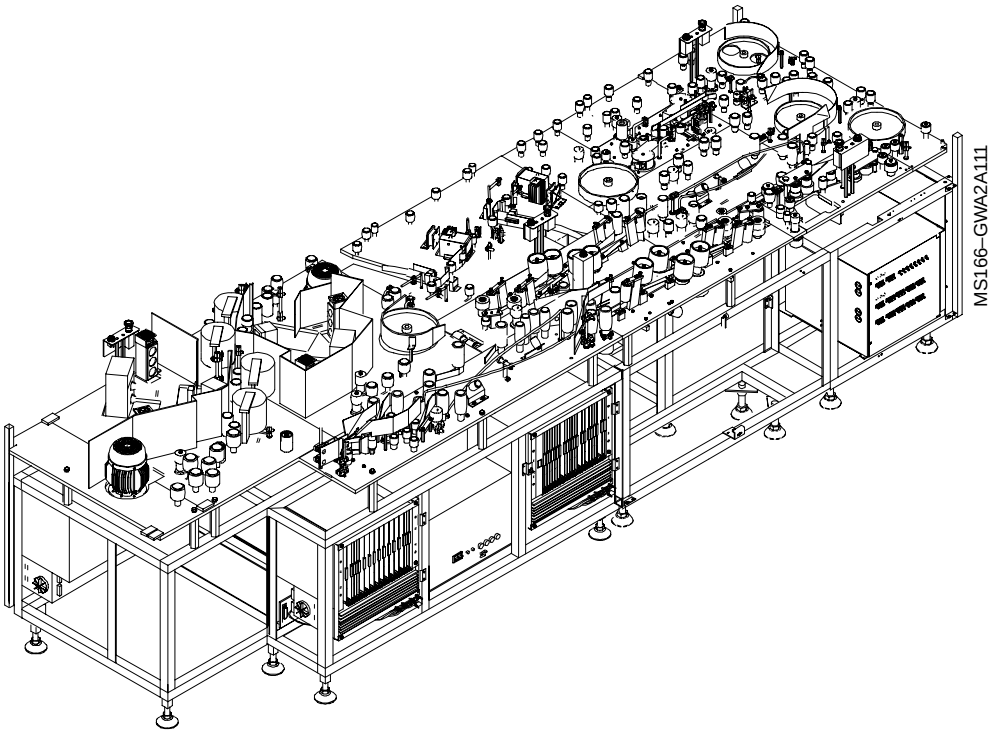
Figure 2-1.12
Fine Cull Assembly



2-1.13 Unit 13 (Enricher)

The Enricher (see **Figure 2-1.13**) contains the majority of the electronic processing areas of the AFCS/ISS. These areas include indicia detection, cancellation, ID tag printing and verifying, image scanning, address interpretation, sortation, and image management.

Figure 2-1.13
Enricher Assembly



If indicia was detected in the Group A Indicia Detect in Unit 12, the mailpiece is sent past the gate and will not be inverted by the first inverter. If indicia was not detected there, then the first inverter gate opens and the mailpiece passes through a twisting belt, which inverts the mailpiece 180 degrees along the longitudinal axis. Unit 13 includes the Group B Indicia Detect (the second set of indicia detectors in the Facer/Canceler section — the first is in Unit 12). This indicia detection unit provides the final determination of which canceler die will be activated. If the indicia is on the trailing edge of the mailpiece, then the first die will be activated. If the indicia is on the leading edge of the mailpiece, then the second die in the mailflow stream will be activated.

Upon leaving the indicia detectors, the mail passes through the canceler section. Based on the indicia found, only one cancellation die is operated to place cancellation marks on the letter. At the second inverter, the mail is again inverted to place all stamps in the top orientation. Next, an orange ID tag is printed and verified on specific mailpieces, depending again on indicia results. ID tags are sprayed on the bottom edge of the non-indicia side of the mailpiece. There are two PC-80 Ink Jet Printers used to spray ID Tags on mailpieces. Next, two gray-scale scanners capture the image of each side of

the mailpiece. Indicia information determines which image, if any, is sent to Line Find and IMS. Line Find processes the address information and determines whether it is imprint, script, or no line.

The IMS is the last of the processes in the Enricher. The IMS processes images from the scanner and temporarily stores them on a hard disk until they are transferred to IPSS.

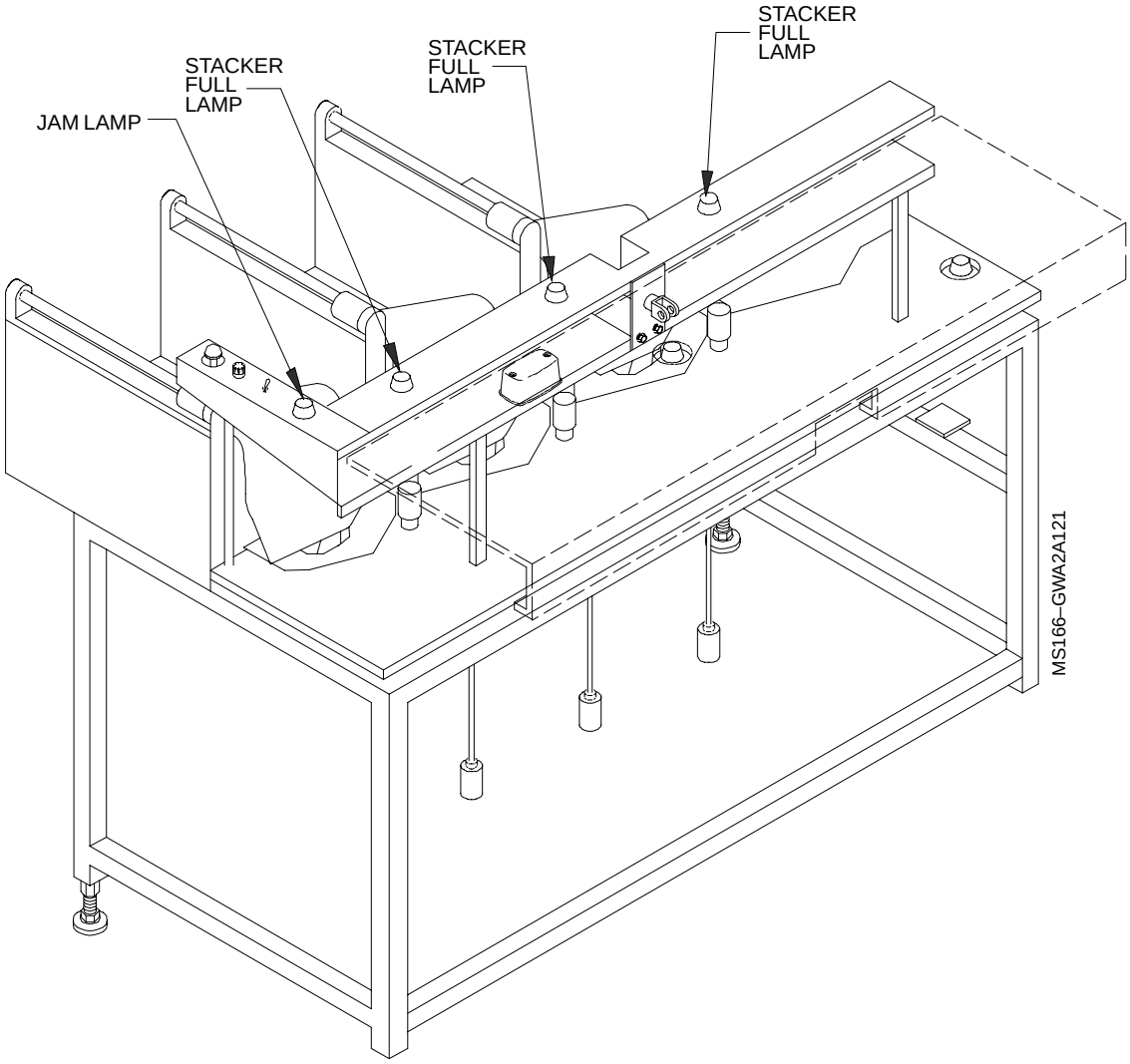
Unit 13 includes the following equipment:

a. Inverter 1
b. Leveler 1
c. Group B Indicia Detect
d. AM1 Card Cage
e. AM Power Distribution Box (Include the AM1 and AM2 Power Supplies)
f. AM2 Card Cage
g. EN AC Power Distribution Box
h. Scanner 1
i. Scanner Motor 1
j. Scanner 2
k. Scanner Motor 2
l. Printer 1
m. Verifier 1
n. Printer 2
o. Verifier 2
p. Leveler 2
q. Inverter 2
r. Indicia/Canceler Motors 1 through 4
s. Canceler
t. STCP Card Cage and Power Supply
u. Scanner Lamp Power Supplies
v. AAT Card Cage and Power Supply

2-1.14 Unit 14 (Stacker 1)

Unit 14 (see **Figure 2-1.14**) is a three-bin Stacker. Major components of Unit 14 include diverter gates, P-WA50 circuit cards, vertical belts, a horizontal transport belt, a belt drive motor, and an emergency stop button.

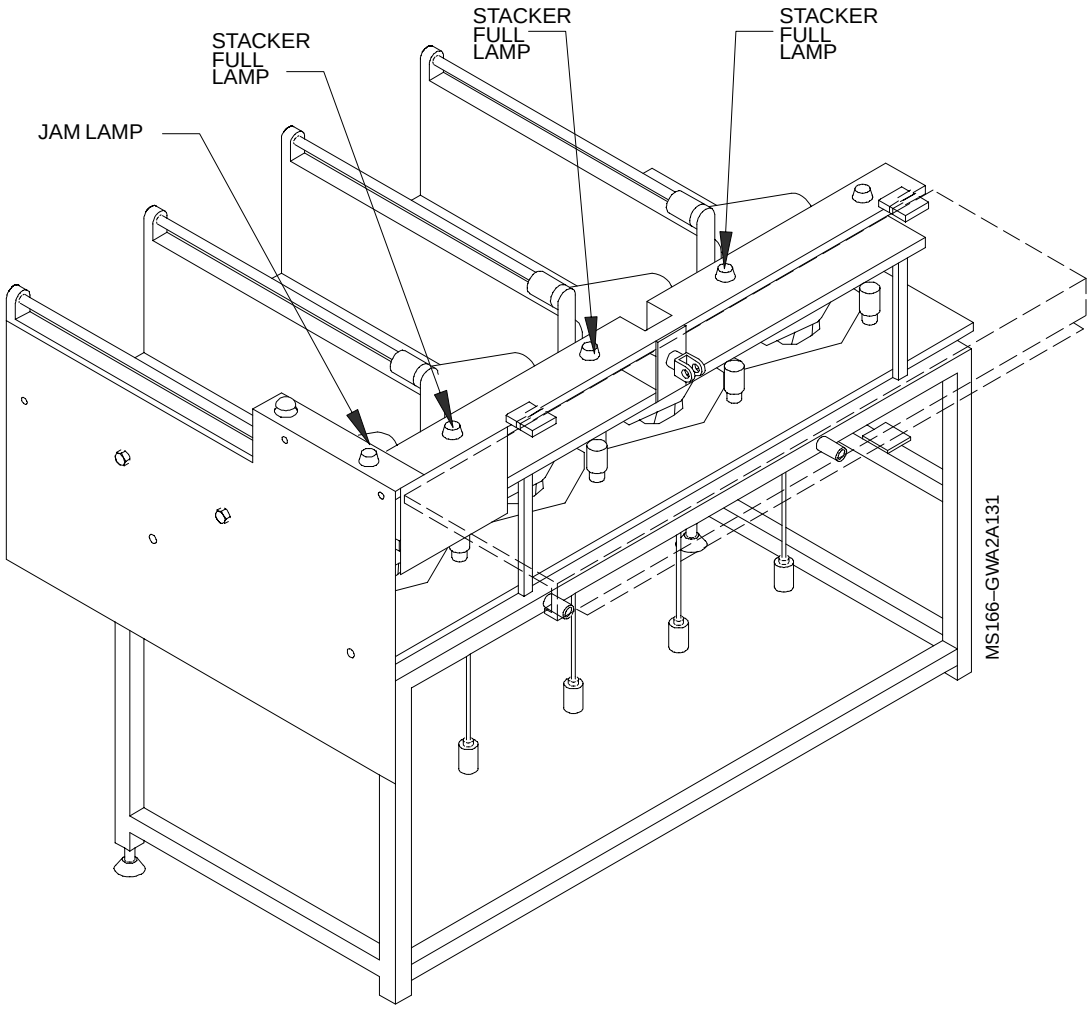
Figure 2-1.14
Stacker #1 Assembly



2-1.15 Unit 15 (Stacker 2)

Unit 15 (see **Figure 2-1.15**) is a four-bin Stacker. Major components of Unit 15 include diverter gates, P-WA50 circuit cards, vertical belts, a horizontal transport belt, a belt drive motor, and an emergency stop button.

Figure 2-1.15
Stacker #2 Assembly



2-2 Data Collection Computer and Service Monitor Computer Descriptions

2-2.1 Data Collection Computer (DCC)

The Data Collection Computer (DCC) is an integral part of the AFCS/ISS operation. The DCC is an on-site personal computer that periodically polls each connected AFCS/ISS for statistical run data. The data is retrieved from the AFCS/ISS and then stored on disk in the DCC. Using the statistical run data, the DCC may produce five different reports for the AFCS/ISS. However, the current configuration of the DCC software and the AFCS/ISS firmware provides report data only for the baseline AFCS operations. No report data is available for the ISS functionality.

At least one DCC is installed at every AFCS site. The DCC may be connected to as many as eight AFCS/ISS machines, so in larger facilities there may be two DCCs. The DCC is viewed by the AFCS/ISS master processor as an RS-485 communications port.

2-2.2 Service Monitor Computer (SMC)

The Service Monitor Computer (SMC) is a diagnostic tool for the AFCS/ISS. It consists of a personal computer that has specialized imaging cards and diagnostics firmware. A large blue roll-around cart is provided to allow the SMC to be transported to each AFCS/ISS. The major uses for the SMC are image viewing, diagnostics interfacing with the AFCS/ISS master and slave processors, diagnostic interfacing with the ID tag reader processors, and loading IMS menus and parameters onto a new image storage disk drive.

2-3 Functional Description

Whereas the AFCS/ISS is separated into hardware units, the overall functional operation of the system is divided into logical tasks. These tasks help define key operations within the AFCS/ISS. Knowing these tasks, or functions, will help to better understand the flow of each mailpiece as it passes through the various units of the system.

The AFCS/ISS has been divided into 14 major functional areas for ease of documentation and systematic troubleshooting. The following sections provide brief descriptions of each function.

2-3.1 Power Distribution

Power distribution covers all primary and secondary power to the AFCS/ISS. This includes AC and DC power to motors and other heavy-duty components and DC power to all electronic modules, photoelectric cells, and light barriers.

2-3.2 Pneumatics

The primary purpose of the pneumatics system is to provide compressed air for the following purposes:

a. To operate the hopper vibrator and the ID tag printers.

b. To cool indicia detectors lamps.

c. To prevent dust from accumulating on various light sensors and the scanners.

Pneumatics include the air assemblies located in the Incline Conveyor (Input Hopper), Singulator, and Enricher. These assemblies include four air pressure regulators and filters and three air valve solenoids and associated air distribution lines.

2-3.3 System Control

The system control function includes those operations necessary to operate the AFCS/ISS in the normal mail sorting and maintenance modes. System control is essentially a firmware-based controller function provided by the P-MPU86 master and P-MPU86 slave. The P-MPU86 master controls the Culler section and the first part of the Facer Canceler section (Units 1–13), while the P-MPU86 slave controls the majority of Units 13–15.

System control monitors and controls all major operations of the AFCS/ISS. It starts and stops motors in response to inputs from the Operator Control Panel, emergency stops, interlock switches, and light barriers. The system control function monitors and controls equipment that applies and checks ID Tag information on selected mailpieces. System control oversees image scan and the transfer of images to the IMS. Finally, system control reports status, faults, and malfunctions in the AFCS/ISS.

2-3.4 Motor Control

Motor control covers normal and emergency operation of all motors, belts, and rollers throughout the AFCS/ISS. Motors are started and stopped by operation of push buttons and a system of interlocks and emergency stop buttons and switches. Also included in motor control is the single mailpiece pickoff operation of the Singulator and Feeder servomotors.

2-3.5 Jam and Tracking

Jam and Tracking is made up of three separate subfunctions: jam detection, mail tracking, and image tracking. The purpose of jam detection is to stop the AFCS/ISS before mail is damaged. Mailpiece tracking provides a method of tracking each mailpiece through the various functions of the Facer/Canceler section. Image Tracking ensures that the image of a mailpiece is matched to the correct header in the Image Management System (IMS).

2-3.6 Fine Cull

Fine Cull uses light barriers and a proximity switch to check for proper mailpiece dimensions, spacing, and flexibility, and it removes undesirable mailpieces. The Fine Cull independently performs non-standard mail ejection and reports status to system control.

2-3.7 Indicia Detect

The indicia detect function covers the two indicia detect groups, Group A and Group B, each of which has two indicia detectors. They may also be referred to as Indicia Detectors 1, 2, 3, and 4. The detectors identify the presence of indicia on those mailpieces with indicia down close to the base plate. Located on either side of the mailpath, the detectors detect either “Trail” or “Lead” mailpieces.

Proper orientation of indicia (stamp or pre-printed marking) on mailpieces is essential to proper canceling, ID Tag printing, image scanning, and sorting. The indicia must be located before any of these functions can be activated.

If the Group A Indicia Detectors do not detect indicia on the mailpiece, the diverter gate just before Inverter 1 does not open. This causes the mailpiece to enter the twisting belt of Inverter 1, where the mailpiece is inverted and sent to Leveler 1. This leveler realigns any mailpieces inverted to the base plate. If Group A Indicia Detectors detect indicia on the mailpiece, the diverter gate just before Inverter 1 will open and the mailpiece is directed through vertical (bypass) belts to Leveler 1.

The mailpiece is next sent through the Group B Indicia Detectors, where the indicia detect process is repeated. System control uses the indicia information from the Group B detectors to determine decisions for the correct operation of the canceler, ID tag printers, ID tag verifiers, scanners, IMS, and sort.

2-3.8 Cancel

The cancel function places a cancellation mark on mailpieces with correct indicia. As the leading edge of the mailpiece passes the first light barrier, the canceler is enabled. Trail or Lead light barriers locate the indicia on the mailpiece and trigger one of two canceler dies.

2-3.9 ID Tag Print

The ID Tag Printer Function ensures that an ID Tag is sprayed on the back of certain types of mailpieces. In order to prepare mailpieces for the ID Tag Printers, an inverter and leveler (Inverter 2 and Leveler 2) ensures that mailpieces are in the upright position (indicia up), since the ID-Tag is printed on the back side of the mailpiece. The ID Tag Printers, one on each side of the mailpath, are located in Unit 13.

If the ISS Mode Control Switch on the Operator Panel is set to any ISS mode, and if the mailpiece is not FIM A or FIM C and will not be sorted to the Reject bin, the mailpiece receives an ID Tag on its non-indicia side. If the ISS Mode Control Switch is set to ISS OFF or ENR OFF, no ID Tag will be printed on any mailpiece.

2-3.10 ID Tag Verify

ID tag verification ensures the ID tag printed contains the correct bar/no bar information. The ID Tag is used to identify the physical mailpiece as it passes through the Remote Bar Coding System (RBCS). Therefore, it is important that the ID Tag is printed accurately on the mailpiece. There is one ID Tag Verifier downstream of each ID Tag Printer in Unit 13. The mailpiece has the ID Tag sprayed on it and then travels past an ID Tag verifier. If the detected ID Tag does not match the data sent to the printer, an ID Tag verify failure flag is set in the mailpiece header, the mailpiece image will not be stored in the STCP memory, and the mailpiece will be sorted to its proper bin. When a user-defined number of mailpieces fails to be verified, system control stops the AFCS/ISS and the Operator Control Panel displays the malfunction message **MAL ISS TAG EXCEED**.

If the ISS Mode Control Switch on the Operator Panel is set to any ISS mode, and if the mailpiece is not FIM A or FIM C and will not be sorted to the Reject bin, the mailpiece receives an ID Tag on its non-indicia side. The ID tag verifiers operate in conjunction with the ID tag printers, so if the ISS Mode Control Switch is set to ISS OFF or ENR OFF, no ID Tag will be printed on any mailpiece.

2-3.11 Image Scan

Image scan, located in Unit 13, takes an electronic picture of both sides of each mailpiece and processes these images prior to sending one of the two images to the Line Find and IMS functions.

When the mailpiece breaks the appropriate light barriers, the scanners scan each side of the mailpiece. System control provides the scanner electronics in the AAT card cage with the indicia information, which allows the non-indicia image side of the mailpiece to be discarded and the address side image to be sent to Line Find and IMS. Image scan manages the transfer of image data to Line Find and the IMS. The P-MPU86 slave monitors this transfer.

2-3.12 Line Find

Line Find is concerned with locating and detecting address information on a mailpiece image. The image, received from image scan, is processed and the most likely address block is located. The address lines within the selected block is analyzed for three possible types: script, imprint, or no lines. Line Find results are sent to system control for use with IMS and sortation decisions.

2-3.13 Image Management System (IMS)

The IMS represents a division between the part of the machine that processes physical mailpieces and the part that processes mailpiece images. IMS is essentially an input hub to the Image Processing Subsystem (IPSS). The IMS uses a separate processor to manipulate the mailpiece image and send it to the automated equipment in the RBCS. The IMS function is divided into two subfunctions: Image Data Compression (IDC) and Storage Transfer and Communications Processor (STCP). IDC compresses the mailpiece image for faster processing, and STCP determines whether the image is to be discarded or stored on the disk for later transfer to the IPSS.

2-3.14 Sort

The sort function determines the final destination of the mailpieces based on the sort plan selected, the indicia results, and Line Find address interpretation results. Monitoring the Stackers allows for quick reaction to sortation problems.

2-4 RBCS Description

2-4.1 Introduction

As a part of the U.S. Postal Service's automation of mail processing, the Advanced Facer Canceler System (AFCS) has been modified to include the Input Subsystem (ISS) portion of the Remote Bar Coding System (RBCS).

2-4.2 Remote Bar Coding System (RBCS)

The RBCS merges electronic image capture and storage with state-of-the-art software programs that are designed to read machine and script mailpiece addresses and determine the appropriate POSTNET Code (barcode) for each specific address. The RBCS was designed to further automate the mail handling process, reduce the length of time it takes to process mail, and make effective use of existing equipment.

The RBCS consists of three subsystems:

a. Input Subsystem (ISS).

b. Image Processing Subsystem (IPSS), which is divided into two parts:

   (1) The IPSS at the Processing & Distribution Center (IPSS/P&DC).

   (2) The IPSS at the Remote Encoding Center (IPSS/REC).

c. Output Subsystem (OSS).

Each of these subsystems is composed of individual machines — some new, some existing, and some modified to accomplish specific tasks. In the past, mailpieces were scanned by the AFCS to determine which ones could be processed by one of the following machines:

a. Optical Character Readers (OCRs).

b. Bar Code Sorters (BCSs).

c. Letter Sorting Machines (LSMs).

Mailpieces that were machine readable (imprint) and not FIM A or FIM C were sorted to bins for processing by OCRs. Mailpieces determined to be FIM A or FIM C were sorted to bins for processing by BCSs. Mailpieces that were determined to be script (handwritten) were sorted to bins for processing by LSMs.

With the addition of the ISS to the AFCS, the mailpieces that normally would have gone from an AFCS to an OCR (imprint/not FIM A or FIM C) no longer have to make this intermediate processing stop. Mailpieces that normally would have gone from an AFCS to an LSM (script/handwritten) and then processed by hand no longer have to be hand-processed. The AFCS/ISS now takes the images of these types of mailpieces and makes those images available to the IPSS just like the OCR/ISS does. These mailpieces will now go to staging at the OSS.

2-4.3 Input Subsystem (ISS)

The ISS consists of modified AFCSs and multiline OCRs (MLOCRs). These machines have been upgraded with devices to print and verify ID Tags, in the form of a barcode, on the backside of mailpieces. These ID Tags are used to track individual mailpieces and images as they are processed throughout the RBCS. Also, the machines used as ISSs have been equipped to capture images of mailpieces and to store and transfer those images electronically to the IPSS/P&DC.

2-4.4 Image Processing Subsystem (IPSS)

The IPSS at the Processing and Distribution Center (IPSS/P&DC) requests and receives either images with headers or headers only (depending on the selected mode) in blocks from one of the machines within the ISS. The IPSS/P&DC stores the images and ID Tags, makes electronic copies of everything, and passes these electronic copies to the Remote Computer Reader (RCR).

The RCR located in the P&DC receives partially resolved and unresolved mailpiece images from the Image Control Unit (ICU) through Ethernet communications lines. The ICU sends an Image Record Descriptor (IRD) to the RCR with each image. An IRD contains the ID Tag of the mailpiece image being sent and additional image processing descriptor data.

The RCR sends the mailpiece image to its Intelligent Character Recognition (ICR) processor for resolution. The RCR uses six to ten independent single-board processors to resolve the printed or handwritten text found in

the image data. When a processor has a probable address and ZIP Code, it will compare the resolved data with the National Directory Subsystem (NDSS) stored on each of six to ten disk drives. If the RCR determines a match, the RCR will discard the electronic copy of the image and return the POSTNET Code with matching IRD for the image back to the ICU in the IPSS/P&DC. The ICU checks its electronic copy of the mailpiece to ensure that the data received pertains to the image. If the information returned from the RCR is for the correct image, the electronic copy of the image in the ICU is discarded and the results are forwarded to the Decision Storage Unit (DSU) for temporary storage.

The RCR provides one last means to automatically process hand-printed mailpieces, poor or distorted machine-printed mailpieces, and some handwritten mailpieces before the mailpieces have to be manually processed at the Remote Encoding Center (REC). The RCR can process mailpiece images at a rate of more than 110,000 images per hour. The average processing time per image is 250 milliseconds.

Images that cannot be resolved by the RCR are sent back to the ICU, where they are forwarded to the IPSS/REC via high speed T-1 telecommunication lines. The IPSS/REC displays the images on video display terminals (VDTs). Operators view the images and manually encode the address data appropriate to their station. The IPSS/REC then uses this data to determine the appropriate POSTNET Code for the mailpiece.

Once the mailpiece image has been resolved and POSTNET Code determined by the REC, the electronic copy of the image is discarded, and the IRD and POSTNET Code are sent back to the IPSS/P&DC, which checks its electronic copy of the mailpiece image and IRD to ensure that the information received pertain to the correct image. The IPSS/P&DC then dumps its electronic copy of the image and passes the IRD and POSTNET Code to the DSU for temporary storage of the data until the Output Subsystem (OSS) is ready for it.

2-4.5 Output Subsystem (OSS)

The OSS is located on specially modified Bar Code Sorters (BCS/OSSs) and Delivery Bar Code Sorters (DBCS/OSSs) that have been upgraded with ID Tag readers and POSTNET Bar Code Printers. When a mailpiece reaches the end of its staging time, it is brought to an OSS. Once the mailpiece is run on the OSS, the ID Tag reader scans the ID Tag from the mailpiece and uses it to determine the IPSS processing results. Through serial communications with the DSU, the ID Tag that was read from the mailpiece is compared to a list of ID Tags that are stored in the IPSS/P&DC.

If a match is made with the mailpiece's ID Tag, the DSU will send the result, which was determined by the RCR or REC, to the OSS. After the OSS receives the result, it will spray the decision onto the mailpiece in the form of a POSTNET Code (bar code). This bar code is then double checked by the Wide Area Bar Code Reader (WABCR), and if the WABCR determines that the bar code was sprayed correctly, this mailpiece has been successfully processed by the RBCS.

3 Safety

3-1 Personal Safety

Safety is the responsibility of every employee in the U.S. Postal Service. Consequently, employees must be trained to use and operate the AFCS/ISS in a manner that ensures personal safety. A current job safety analysis (JSA) should be available and reviewed by all employees.

3-2 Accident Prevention

The acquisition, operation, and maintenance of modern equipment often involves a team effort. The AFCS/ISS embodies many safety features that are constantly being improved through engineering changes and modifications. Improving safeguards for the system is an ongoing program.

3-3 Responsibilities

All employees associated with operating and maintaining AFCS/ISSs have specific safety responsibilities, as outlined below.

3-3.1 Supervisors

Supervisors have overall responsibility for the following:

a. Ensuring the safety of personnel involved in the operation or maintenance of the AFCS/ISS.

b. Enforcing safety rules and regulations and insisting that personnel follow safe operating practices and procedures.

c. Correcting unsafe conditions promptly.

d. Ensuring that the AFCS/ISS is in safe operational condition at all times.

3-3.2 Maintenance Personnel

Maintenance personnel have the following responsibilities:

a. Ensuring that maintenance is performed in a manner that does not endanger themselves or others.

b. Using all designated safety devices.

c. Following all safety precautions.

d. Supporting efforts to properly maintain safeguards and protective devices on the equipment.

3-3.3 Machine Operators

Machine operators have the following responsibilities:

a. Adhering to all safety rules and regulations.

b. Practicing good housekeeping.

c. Reporting all unsafe or hazardous conditions their supervisor immediately.

3-4 Electrical Fires

In the event of an electrical fire, use a Type C, BC, or ABC extinguisher only. Do not use water, soda-acid, or any other liquid stream extinguisher, because they present a shock hazard to the user and will cause considerable damage to the electrical equipment.

3-5 Operation Safety Tips

Below is a summary of operation safety tips:

a. Do not wear loose-fitting clothing, jewelry, ties, or other articles that could become caught in the machine.

b. Keep hair away from the equipment to avoid having it become entangled in the machine.

c. Keep fingers, hands, and arms clear of feed belts, screws, chains, gears, and pulleys.

d. Never place your hand on any moving part while the equipment is in operation.

e. Stop equipment before opening any door or panel on the machine.

f. Do not place food or drink on any part of the equipment, even if it is not in operation.

g. Keep mentally and physically alert.

h. Do not engage in horseplay.

i. Follow all safety rules and regulations.

4 AFCS/ISS Controls and Indicators

4-1 General

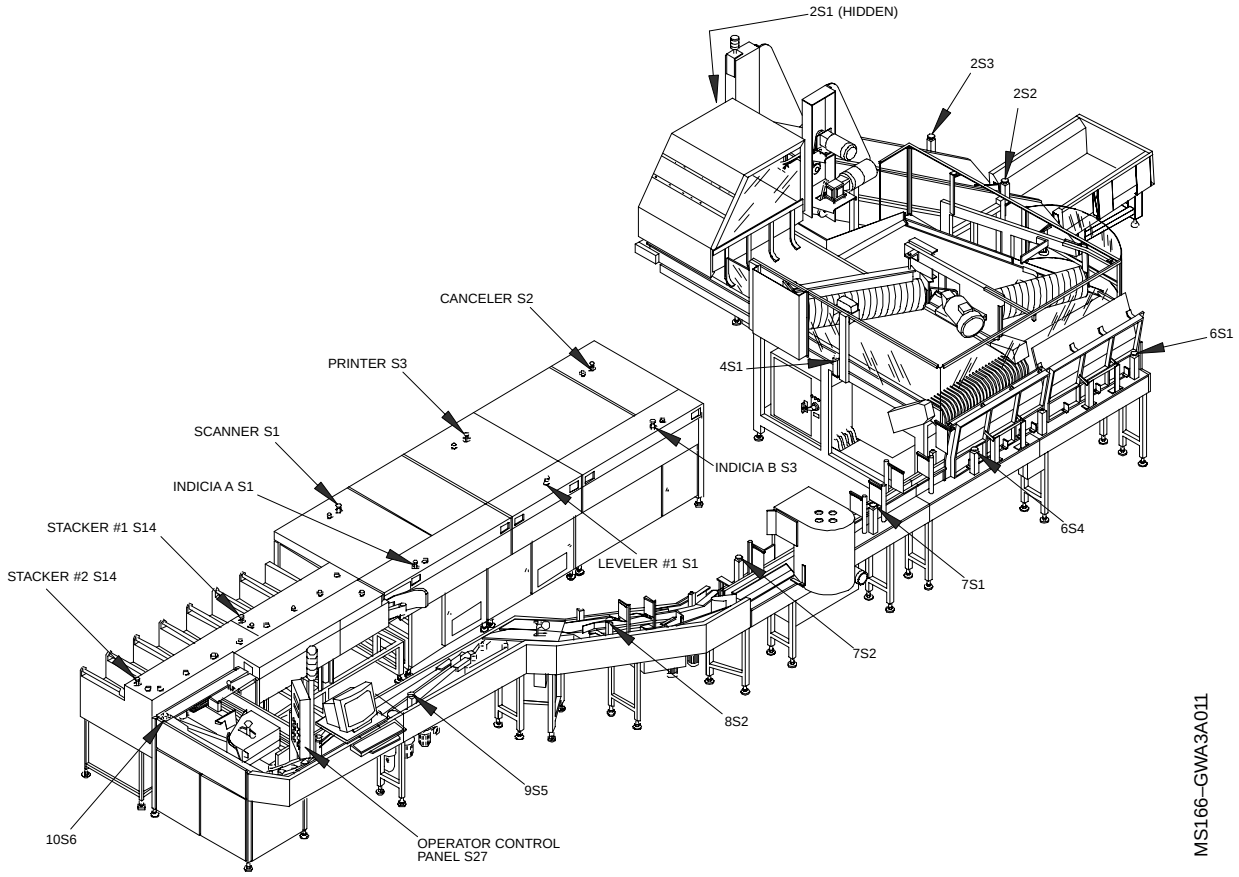
Controls and indicators on the AFCS/ISS can be divided into two sections: system-level and unit-specific. System-level controls and indicators include emergency stop switches, interlock switches and their associated jam/interlock lamps, and startup warning assemblies. Unit-specific controls and indicators relate specifically to an individual AFCS/ISS unit.

4-2 Emergency Stop Switches

There are 20 Emergency Stop (E-Stop) switches on the AFCS/ISS. They are strategically placed around the machine so that a person is always within at least 4 feet of a switch (see **Figure 4-2**). Each E-Stop switch is located so that a person can activate it without reaching over an unguarded moving part.

To activate an E-Stop switch, press down on the red button on top of the switch. While activated, a light in the red button flashes. When any E-Stop is activated, the E-Stop pushbutton on the Operator Control Panel flashes, and the AFCS/ISS will stop and will not restart until the switch has been reset. To reset an E-Stop switch, twist the knob in the direction of the arrows or pull up on the knob.

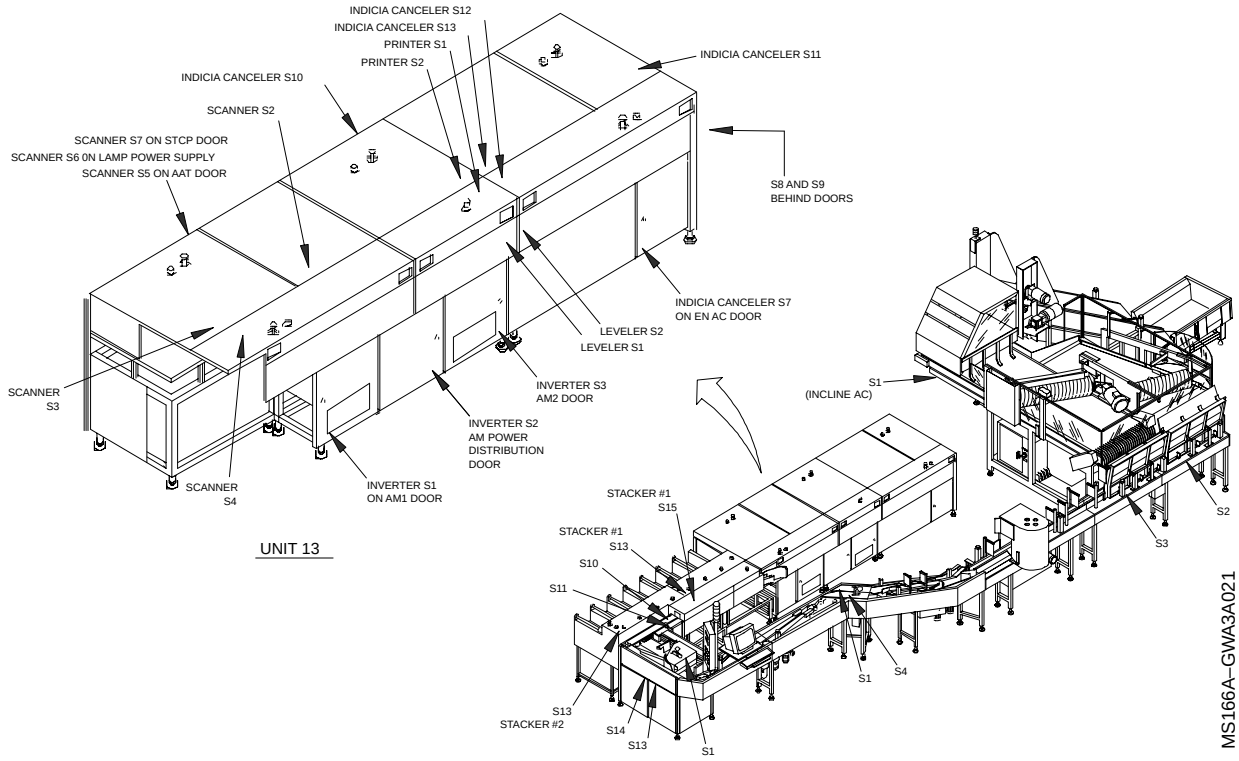
Figure 4-2
AFCS/ISS Emergency Stop Switches



4-3 Interlock Switches

Interlock switches are also located at various points around the machine (see **Figure 4-3**). When there is an open cover/door interlock, the machine will shut down, and a red light near the open cover/door interlock will flash to indicate its location.

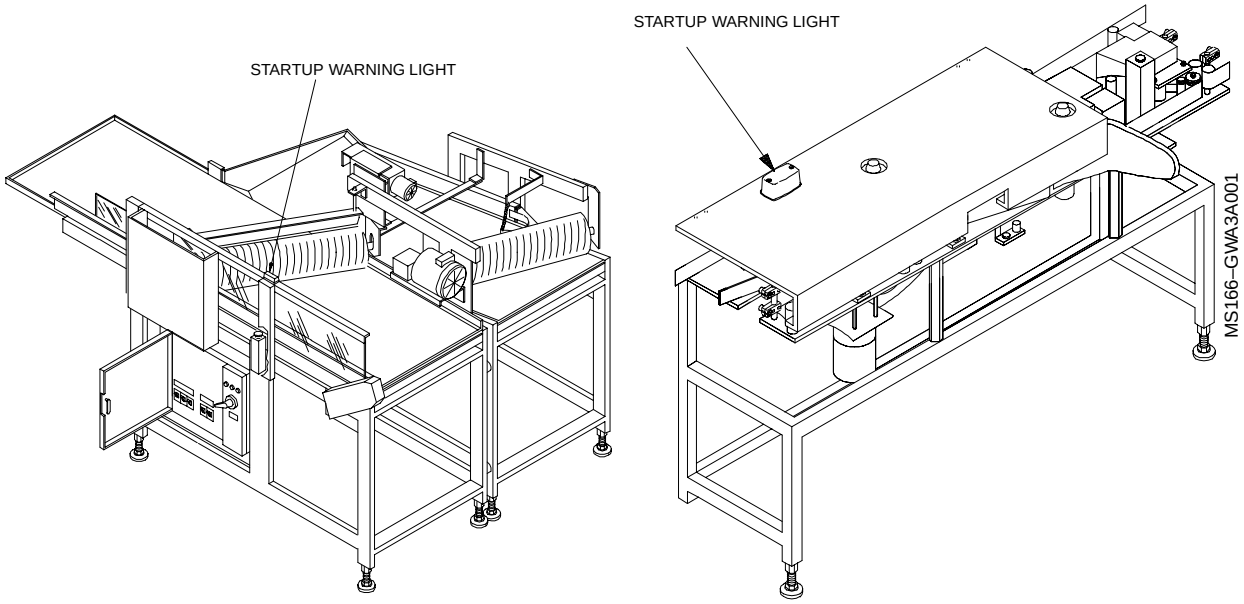
Figure 4-3
AFCS/ISS Interlock Switches



4-4 Startup Warning Lights and Horns

Startup warning assemblies consisting of lights and horns are located on the Flat Overthick Separator and the Fine Cull units. When either the START CULLER or START FACER/CAN switch on the Operator Control Panel is pressed, the startup warning lights (see **Figure 4-4**) flash for approximately 10 seconds, and the warning horns sound for approximately 5 seconds.

Figure 4-4
Startup Warning Lights

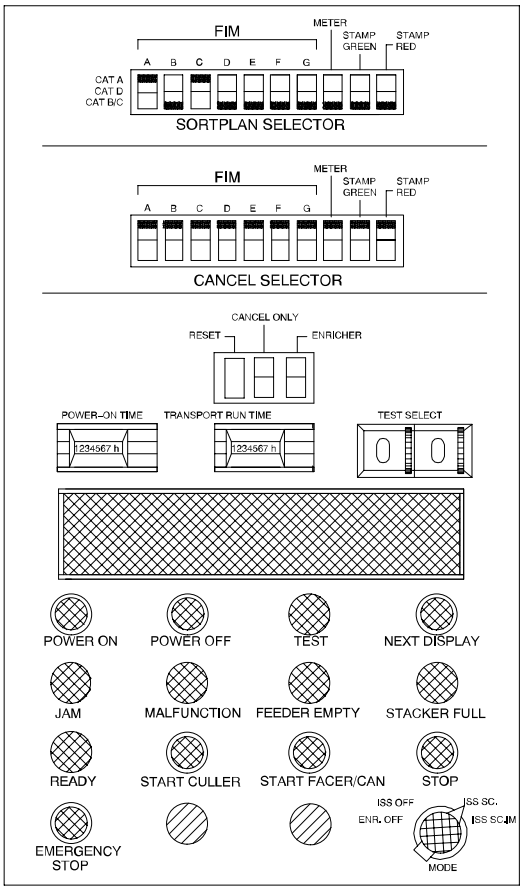


4-5 Operator Control Panel

4-5.1 General

The Operator Control Panel (see **Figure 4-5.1**) provides the means to select the sortplan, the cancel criteria, and AFCS/ISS mode of operation. It also provides run time meters and a display for system messages.

Figure 4-5.1
Operator Control Panel



4-5.2 SORTPLAN SELECTOR Switches and Indicators

The sortplan selector, located in the top row of the Operator Control Panel, has three-position rocker switches, one for each indicia type. When set to CAT A, the indicia type sorts to Stacker bins 1 and 2. When set to CAT D, the indicia type sorts to Stacker bin 7. When set to CAT B/C, the indicia type sorts based on the Enricher (Line Finding) results. If the Enricher is turned on (ISS OFF./ISS SC./ISS SC.IM), handwritten mail sorts to CAT B (Stacker bins 3 and 4), and machine-printed mail sorts to CAT C (Stacker bins 5 and 6). If the Enricher is turned off (ENR OFF), all CAT B/C mail sorts to Stacker bins 3 and 4. When a switch is placed in the CAT A or CAT B/C position, a lamp in the switch lights accordingly.

4-5.3 CANCEL SELECTOR Switches and Indicators

The cancel selector has two-position rocker switches, one for each indicia type. When set to ON, the indicia type is canceled. A red light in the switch indicates that the switch is ON.

4-5.4 RESET Switch

The RESET switch is a pushbutton switch. It provides two separate functions:

a. Start/Stop Stopwatch Timer. Pressing the RESET switch during AFCS/ISS normal operation mode will start and stop the stopwatch timer in the alphanumeric display.

b. Reset Statistical Counters. The counters should be cleared once a day prior to the operating tour. **Note: Do not clear the counters during a mail run because the run report data will be lost.**

Test mode 70 is required to prevent an unintentional reset of the counters during normal operation. To enter test mode 70, set the TEST SELECT switches to 70.

When the RESET switch is pressed for about 2 seconds while the AFCS/ISS is in test mode 70, all operational statistical counters are set to 0.

When the counters have been reset, the message “Counters Cleared” will appear in the alphanumeric display.

4-5.5 CANCEL ONLY Switch/Indicator

The CANCEL ONLY switch is a two-position rocker switch. The normal setting of the cancel only switch is OFF, which enables normal AFCS/ISS operation. When set to ON, the Indicia, Enricher, and ISS functions are ignored and the inverter is disabled, causing all mail to be bypassed. All mailpieces are canceled “Lead” and sorted into the first available (unfull) Stacker bin in sequence from bin 1 to 6 (i.e., when bin 1 is full, mail is sent to bin 2, and when bin 2 is full, mail is sent to bin 3.) A red light in the switch indicates that the switch is ON.

4-5.6 ENRICHER Switch/Indicator

The enricher switch is a two-position rocker switch that allows the operator to change the operating mode. It is not monitored by the AFCS/ISS firmware.

4-5.7 POWER-ON TIME Counter

This is an eight-digit, nonresettable counter that displays the total AFCS/ISS power-on time in hours to one decimal place.

4-5.8 TRANSPORT RUN TIME Counter

This is an eight-digit, nonresettable counter that displays the total facer canceler transport motor run time in hours to one decimal place.

4-5.9 TEST SELECT Switches

These are two thumbwheel switches that have 100 possible positions (00 through 99). Positions 01 through 99 select various maintenance tests. The switches must be set to 00 for normal operation.

4-5.10 ALPHANUMERIC Display

This is a single-line, 20-character message display. During normal operation, the display provides 15 operational statistical counters. The display also provides error condition and failure messages when a problem exists in the machine. When the AFCS/ISS is in a test mode, specific messages related to that test are displayed.

4-5.11 POWER ON Switch/Indicator

The POWER ON switch is a pushbutton switch that, when pressed, applies power to the AFCS/ISS. A white light in the switch indicatess that the AFCS/ISS has been turned on.

4-5.12 POWER OFF Switch

This pushbutton switch, when pressed, removes power from the AFCS/ISS.

4-5.13 TEST Lamp

A yellow light in the switch indicates that a maintenance test is being performed (i.e., that the TEST SELECT switches are set to a number other than 00). This lamp also lights up when various maintenance switches on the AFCS/ISS are activated.

4-5.14 NEXT DISPLAY Switch

This pushbutton switch, when pressed, brings new information to the alphanumeric display and allows message viewing. Multiple error messages may be queued.

4-5.15 JAM Lamp

This lamp flashes red when a mailflow jam occurs or an open interlock occurs in the facer canceler. The alphanumeric display shows the jam location. A jam lamp at the jam/interlock location will also flash red.

4-5.16 MALFUNCTION Lamp

This lamp flashes red to indicate a machine malfunction. The AFCS/ISS stops, and the alphanumeric display shows the malfunction source.

4-5.17 FEEDER EMPTY Lamp

A yellow light indicates that the Buffer Feeder pickoff has run out of mail. This occurs when the carriage is at the leftmost position in the normal feed mode or when the paddle is at the leftmost position in the manual feed mode.

4-5.18 STACKER FULL Lamp

This lamp flashes red when a Stacker bin fills to capacity (100%). The Feeder pickoff belts stop while this light is on.

4-5.19 READY Lamp

The white READY lamp lights up when the AFCS/ISS is ready to operate.

4-5.20 START CULLER Switch/Indicator

After the white READY lamp lights up, pressing this lighted pushbutton switch activates the startup warnings and starts the motors in the Culler Section (Units 1 through 10).

4-5.21 START FACER/CAN Switch/Indicator

After the white READY lamp lights up, pressing this lighted pushbutton switch activates the startup warnings and starts the motors in the Facer/Canceler Section (Units 11 through 15).

4-5.22 STOP Switch/Indicator

Pressing this lighted white pushbutton switch immediately shuts down the Culler Section pickoff and transport motors (Units 1 through 10). Shutdown of the Facer/Canceler Section transport motors (Units 11 through 15) is delayed for approximately 4 seconds so that all mailpieces in transport are processed.

4-5.23 EMERGENCY STOP Switch/Indicator

Pressing this switch immediately stops all moving parts of the AFCS/ISS. This switch also flashes red when any AFCS/ISS emergency stop switch is pressed (activated).

4-5.24 ISS MODE Switch

This is a four-position rotary switch that displays the current operational mode of the AFCS/ISS.

a. ENR OFF: The AFCS/ISS directs both CAT B and CAT C mail to the CAT B Stacker bins (no address analysis).

b. ISS OFF: The same as ENR ON, it enables the electronics that determine whether an address is handwritten (CAT B mail) or machine-printed (CAT C mail).

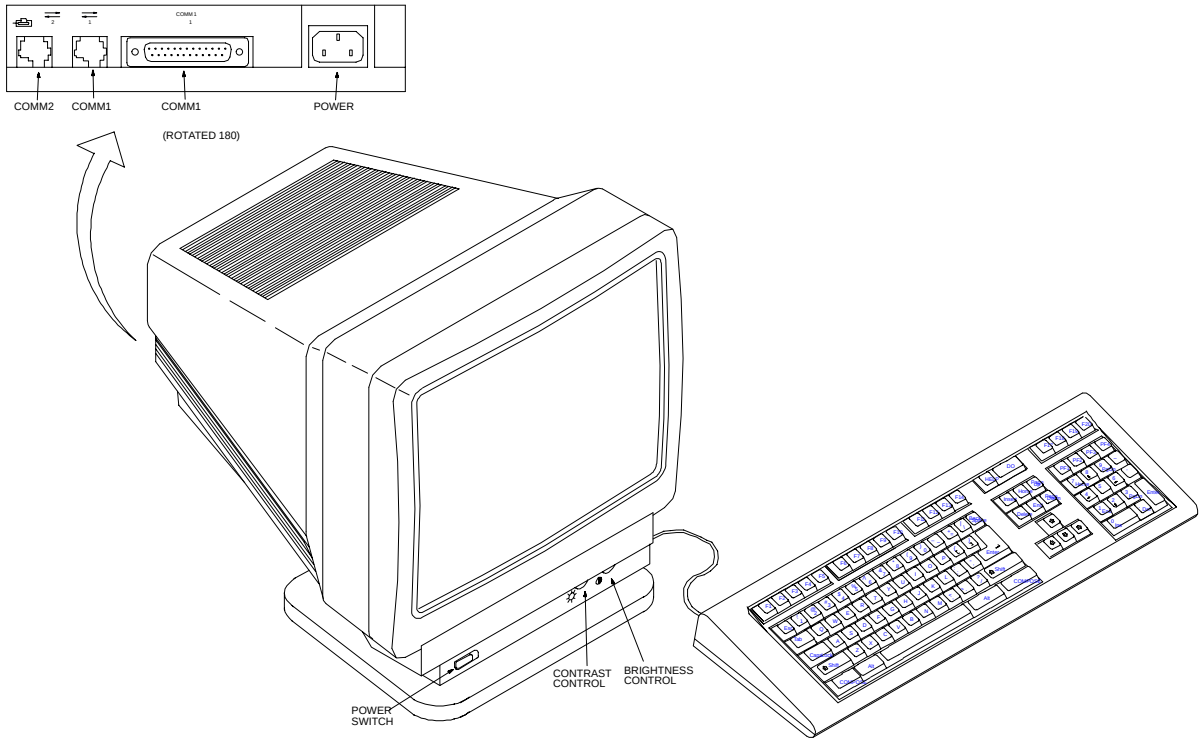
c. ISS SC: This enables the electronics that determine whether an address is handwritten (CAT B mail) or machine-printed (CAT C mail) and stores/sends script-addressed letter images to the IPSS in the RBCS.

d. ISS SC+IM: This enables the electronics that determine whether an address is handwritten (CAT B mail) or machine-printed (CAT C mail) and stores/sends script and imprinted letter images to the IPSS in the RBCS.

4-6 IMS Terminal Indicators

The IMS terminal (see **Figure 4-6**) uses a window-based menu system that enables the user to control the operation of the STCP by starting functions or displaying system states and statistics.

Figure 4-6
IMS Terminal



Menus or actions of a menu can be guarded by assigning them a security level that requires the user to have authorization and to enter a password before the menu action will be executed.

WARNING: ***The AFCS/ISS cannot be running or connected to the IPSS when the menu window is being used. Failure to comply may cause the AFCS/ISS STCP or IPSS NIP board to lock up.***

The IMS terminal can display three windows:

a. Status/Error Messages window.

b. Statistics window.

c. Maintenance Menus window.

The Menu System provides the following functions:

a. Entering sub-menus or invoking several functions by moving a highlighter bar with the UP and DOWN arrows and pressing the RETURN key.

b. Leaving a window by selecting the exit item or pressing the F11 (ESCAPE) key.

c. Entering alphanumeric data if required.

d. Canceling an input sequence by entering the F11 (ESCAPE) key.

e. Displaying statistical data and report messages (error messages, test results, completion messages, etc.).

f. Moving windows.

g. Selecting 24x80 or 48x132 character screen mode.

For quick input, there are some predefined “hot keys” (i.e., function keys) on the top row of the keyboard. These hot keys are applicable for all menus. If the user is prompted to input system data, parameter, or password, the Menu System will not be sensitive for the hot keys (except for F11 and F20). Futhermore, any input requests have to be terminated with the RETURN/ENTER key.

The following list describes the hot keys and what they do:

a. F1–F2: Not used.

b. F3: Enters setup menu function.

c. F4: Switches between IMS terminal sessions (sessions 1/sessions 2).

d. F5–F10: Not used.

e. F11: Cancel input sequence, exit menu item, or leave window.

f. F12–F14: Not used.

g. F15 (HELP): Switches screen modes (24x80 or 48x132).

h. F16 (DO): Initializes terminal and refreshes screen display.

i. F17: Switches between statistics display window and menu window.

j. F18: Invokes/leaves dump window (from menu window).

k. F19: Starts/stops currently selected window movement (selected window border blinks).

l. F20: Quits priority message.

4-7 ISS Status Indicator

The ISS Status Indicator (see **Figure 4-7**) uses four different colored lights to show communcation connectivity status between the ISS and IPSS. When the AFCS/ISS is electronically and logically connected to the IPSS, the bottom three indicators light up. When the IMS is providing image and header data to the IPSS, the top indicator (green) lights up, and it goes off when the IMS stops sending data to the IPSS. Listed below are the lights and what they indicate:

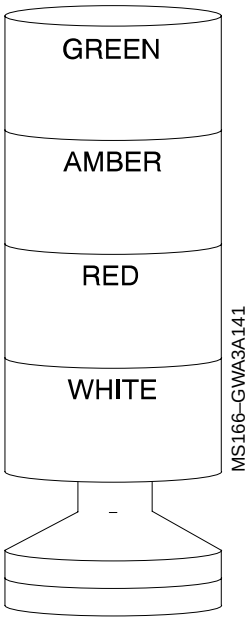
a. Green: Transmission (top light). Data is being transferred from the AFCS/ISS to the IPSS.

b. Amber: Application Connection. Data is ready for transmission.

c. Red: ISO-Connection. ISS is being connected to the IPSS via Ethernet.

d. White: ISS Mode. AFCS/ISS is in ISS mode.

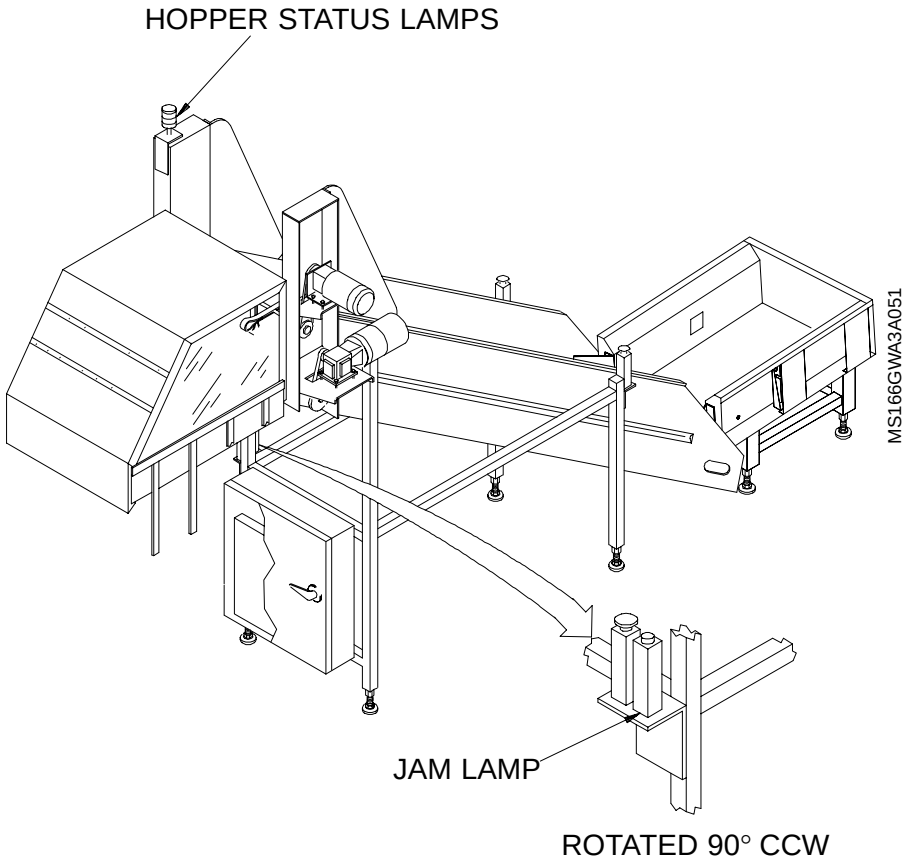
Figure 4-7
ISS Status Indicator



4-8 Incline Conveyor

There are two sets of lights to indicate the status on the Incline Conveyor (see **Figure 4-8**).

Figure 4-8
Incline Surveyor Indicators



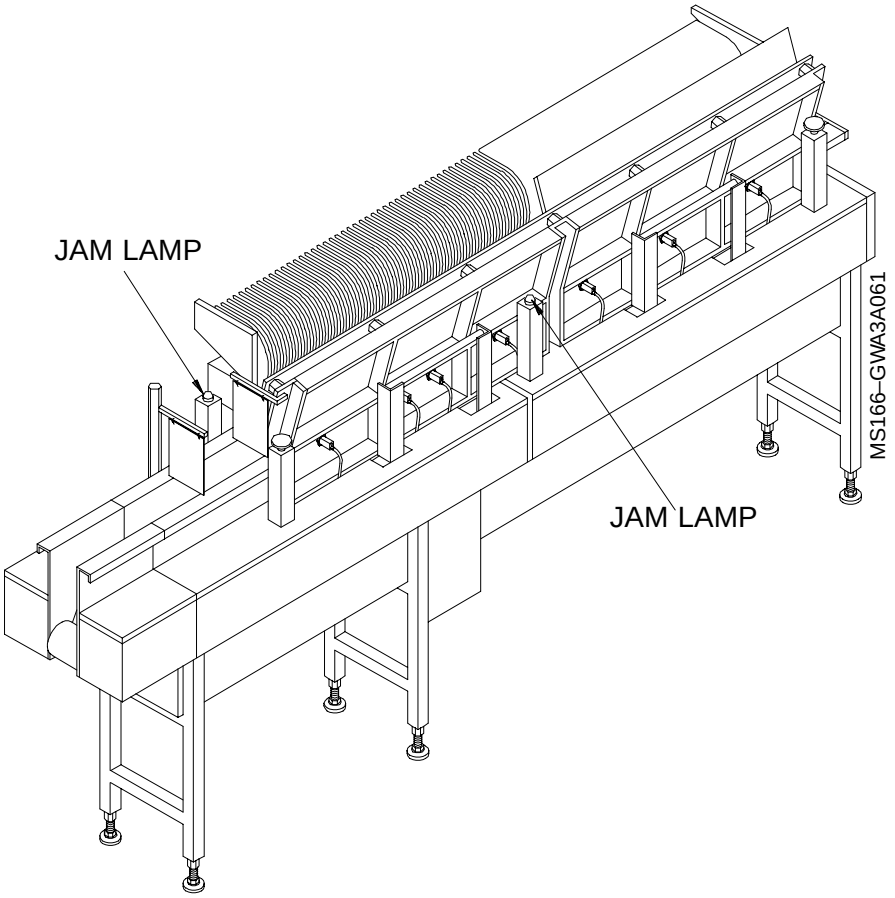
There are two lights to indicate the hopper status. The yellow light indicates that the input hopper mail volume is low and prompts the system for more mail. The red light indicates that the input hopper is almost empty and alerts the operator or supervisor that the system needs more mail.

There is also a jam lamp. A red light flashes to indicate that photosensors have detected a mailflow jam in the Incline Conveyor or that the interlock switch on the Incline power box door is open. Either condition causes the entire machine to stop.

4-9 Edging Channel (JAM Lamps)

There are two jam lamps for the Edging Channel. These red lights flash to indicate that photosensors have detected a mailflow jam or that the interlock switch on the waterfall covers is open (see **Figure 4-9**). Either condition causes the entire machine to stop.

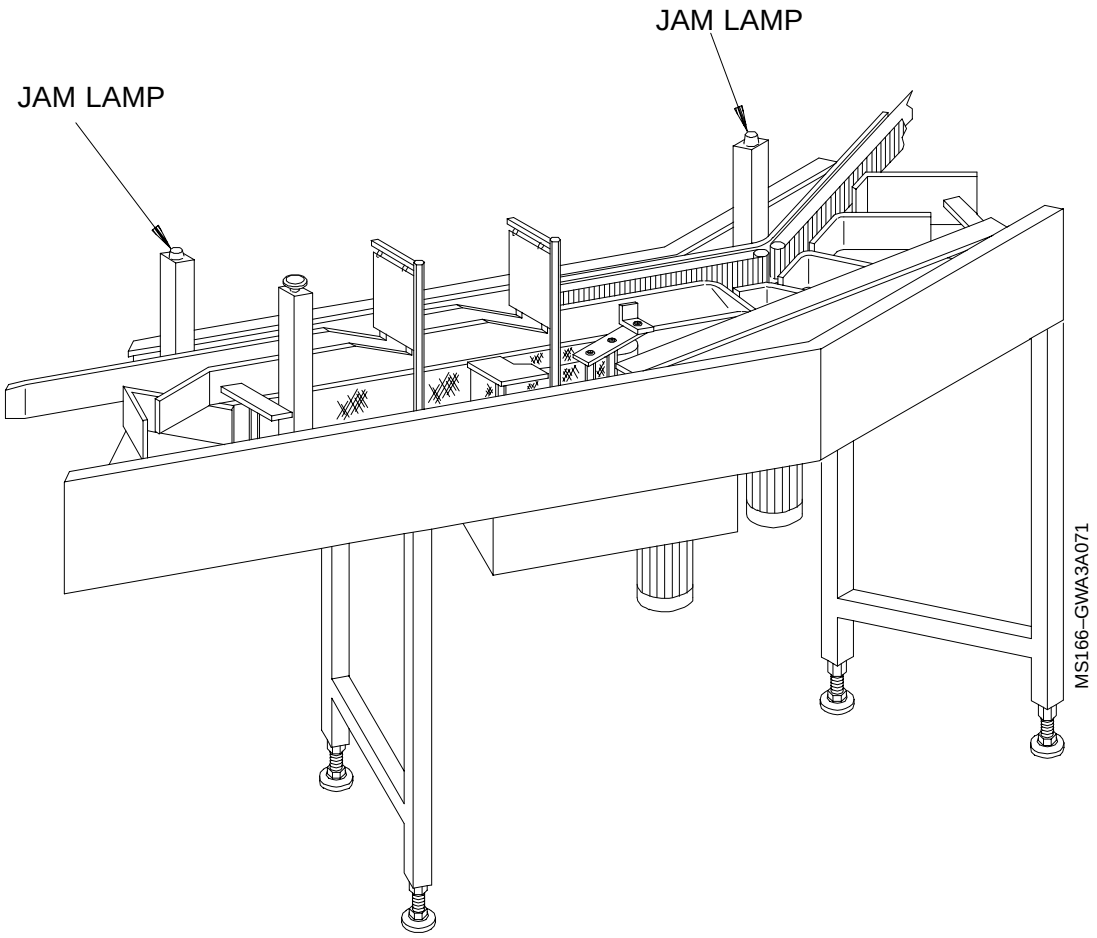
Figure 4-9
Edging Channel Indicators



4-10 Shingler (JAM Lamps)

There are two jam lamps for the Shingler. These red lights flash to indicate that there is a jam at any of five proximity switches in the Shingler Module (see **Figure 4-10**). A jam causes the entire machine to stop.

Figure 4-10
Shingler Indicators



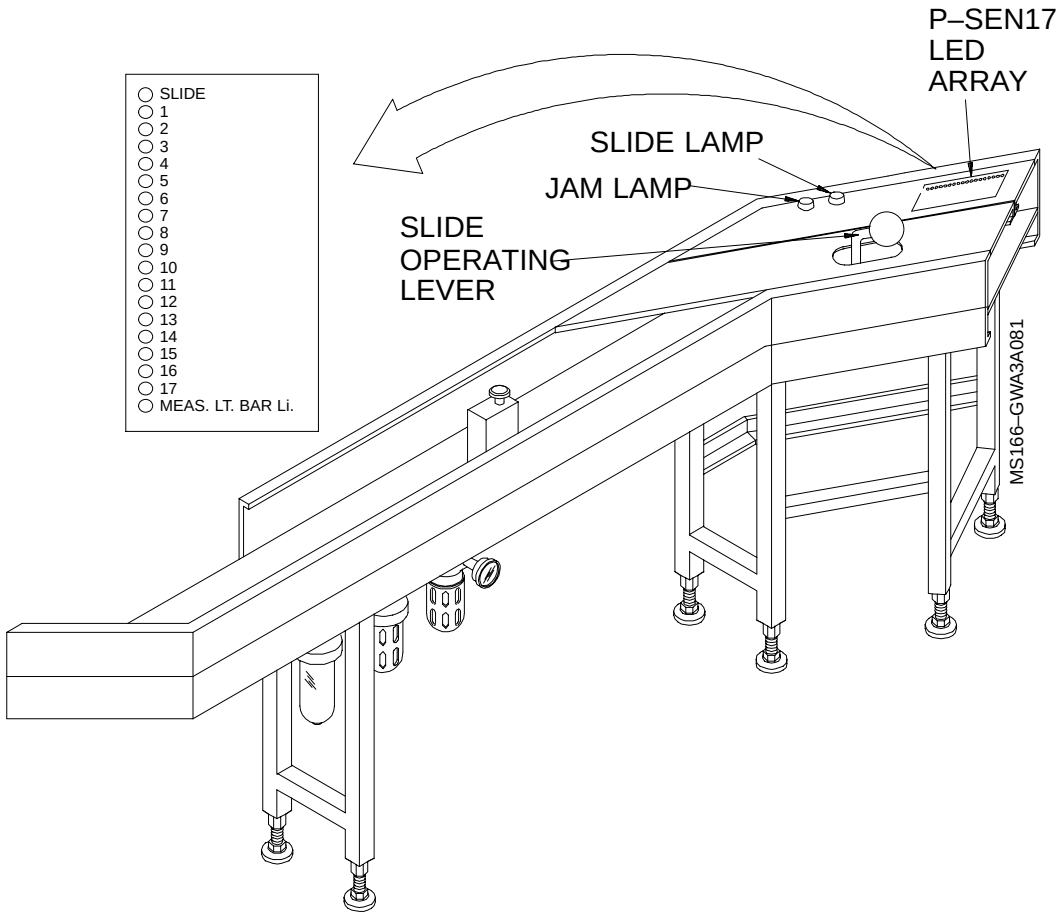
4-11 Singulator

There are several indicators and controls for the Singulator (see **Figure 4-11**).

4-11.1 JAM Lamp

A red light flashes to indicate that there is a jam or that a cover interlock is open. Either condition causes the entire machine to stop.

Figure 4-11
Singulator Controls and Indicators



4-11.2 SLIDE Operating Lever

This lever opens the Singulator pickoff mechanism to allow jams to be cleared. Opening the slide lever will stop the Culler Section.

4-11.3 SLIDE Lamp

A yellow light flashes when the slide is open.

4-11.4 P-SEN 17 LED Array

The P-SEN 17 LED array has a series of lights to indicate status, as described below:

a. SLIDE Indicator: The Slide indicator is lit green when mail is being processed by the Singulator. It goes out when the slide is open.

b. Indicators 1 through 17: These indicators are lit green when mail is being processed by the Singulator. Individual lights go out to show that mailpieces are blocking the corresponding light barrier.

c. MEAS LT BAR Li1: This indicator is lit green when mail is being processed by the Singulator. It goes out when a mailpiece blocks the measuring light barrier.

4-12 Buffer/Feeder

There are several indicators and controls for the Buffer/Feeder (see **Figure 4-12**).

4-12.1 JAM Lamp

This lamp flashes red when a mailflow jam occurs or when there is an open interlock in the Buffer/Feeder. Either condition causes the entire machine to stop.

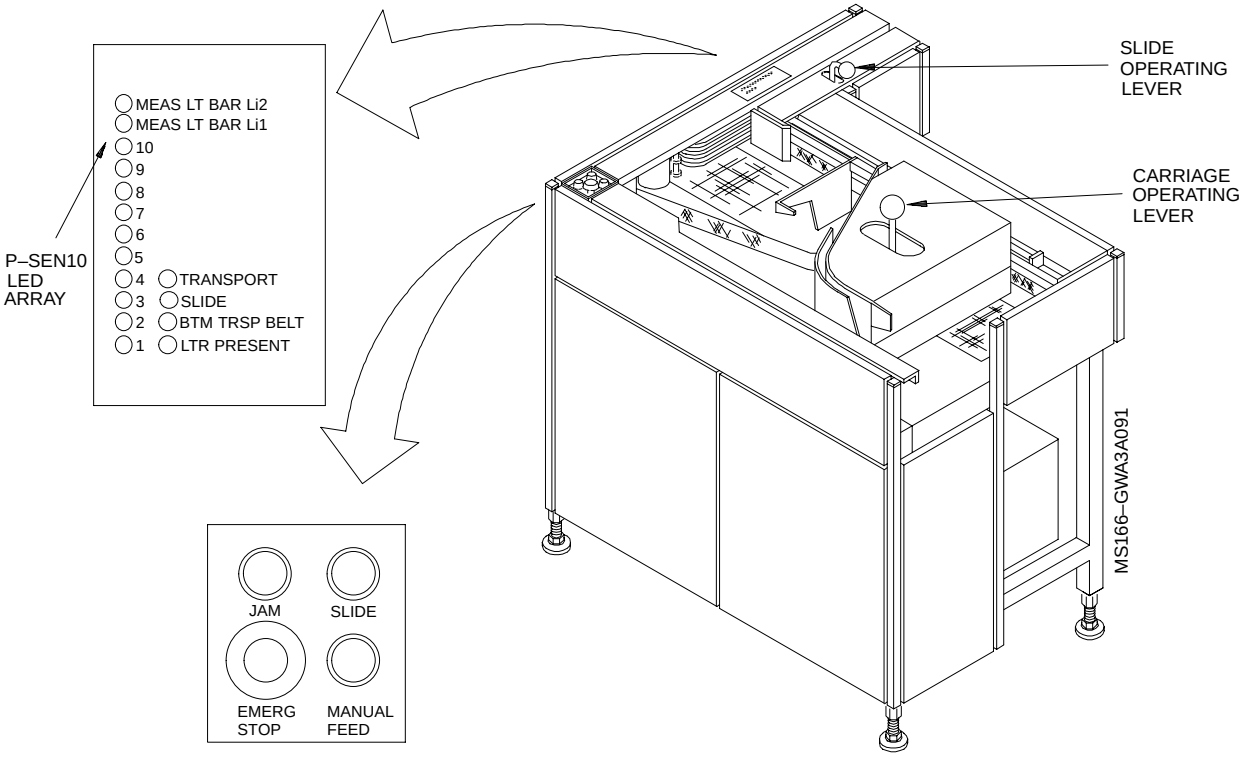
4-12.2 SLIDE Operating Lever

This lever opens the Buffer/Feeder pickoff mechanism to allow jams to be cleared. Opening the slide lever will stop the Culler Section.

4-12.3 SLIDE Lamp

A yellow light flashes when the slide is open. When the slide is open, only the Buffer/Feeder pickoff belts will stop.

Figure 4-12
Buffer/Feeder Controls and Indicators



4-12.4 MANUAL FEED Switch and Indicator

This is a combination switch and indicator light. When the switch is pressed while the AFCS/ISS is running, the indicator light will start blinking and any Culler section motors will be stopped. For safety, this switch shuts off the Buffer/Feeder motor to stop the auger and the carriage when manually feeding mail. If the switch is pressed while the indicator is blinking, all Culler section motors will immediately restart.

Note: If the AFCS/ISS running and the manual feed switch is blinking, pressing the manual feed switch will cause the Culler motors to restart WITHOUT any startup warnings.

4-12.5 P-SEN 10 LED Array

All of the indicators on the P-SEN 10 LED array has a series of lights to indicate status. The lights are green when mail is being processed by the Buffer/Feeder, but they go out when specific conditions, as described below for each indicator, are present.

a. MEAS LT BAR Li1: This light goes out when the associated measuring light barrier is blocked. It is used to determine the gap between mailpieces and also to monitor mailflow jams.

b. MEAS LT BAR Li2: This has the same conditions as MEAS LT BAR Li1.

c. Indicators 1 through 10: Individual lights go out to show that mailpieces are blocking the corresponding light barrier. They are used to determine the gap between mailpieces and also to monitor mailflow jams.

d. TRANSPORT Indicator: This light goes out when there is no mail between the paddle and the pickoff belts in the manual feed mode. The paddle is at the left-most position of travel.

e. SLIDE Indicator: This light goes out when the slide is open.

f. BTM TRSP BELT Indicator: This light goes out when the feeder pickoff swing arm proximity switch senses mail at the pickoff belts. This causes the bottom (horizontal) transport belt to stop.

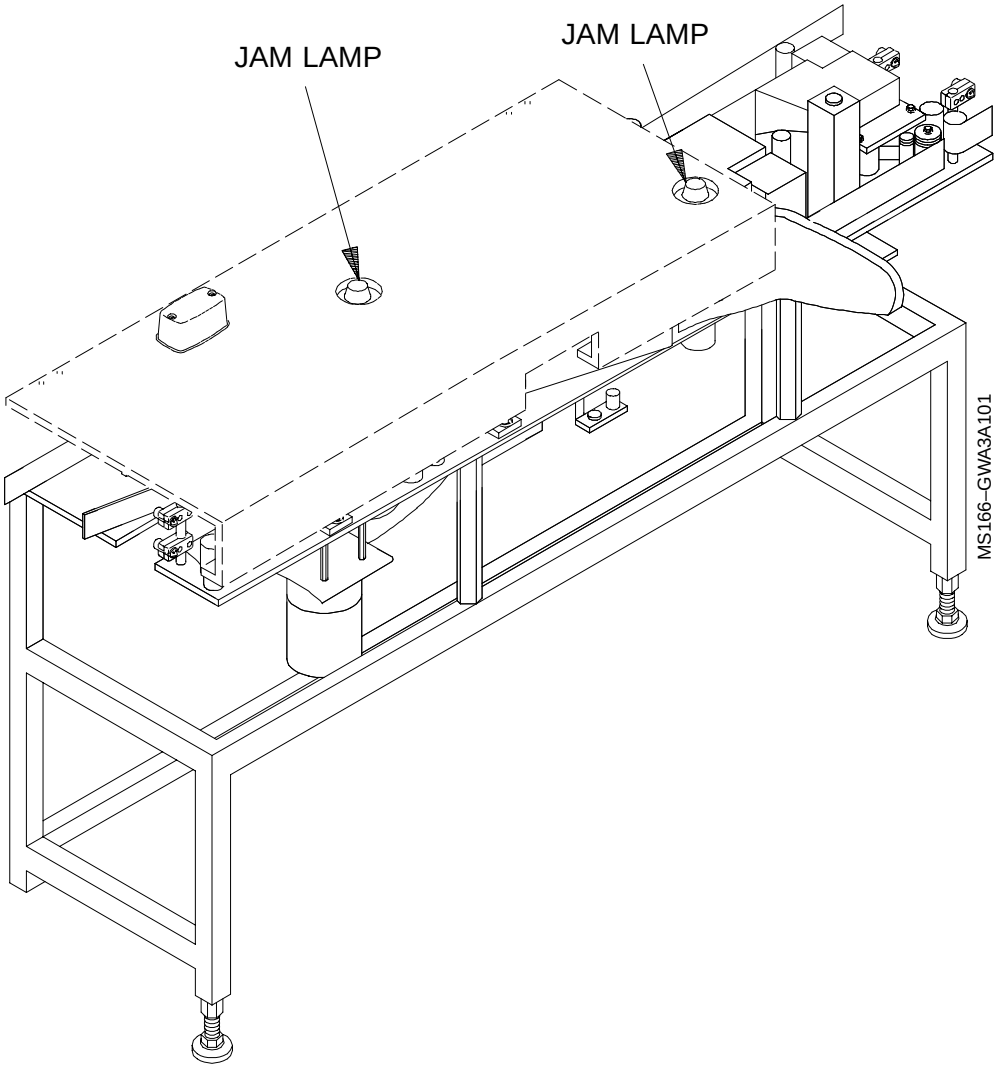
g. LTR PRESENT Indicator: This light goes out when the paddle or the carriage is at the left-most position (indicating that the Buffer/Feeder is out of mail).

h. CARRIAGE Operating Lever: The Carriage Operating Lever disengages the carriage drive motor from the bottom belt drive chain for ease of manual movement.

4-13 Fine Cull (JAM Lamps)

The Fine Cull jam lamps (see **Figure 4-13**) flash red if a light barrier detects a jam or the cover interlock is open. Either condition causes the Facer/Canceler Section to stop.

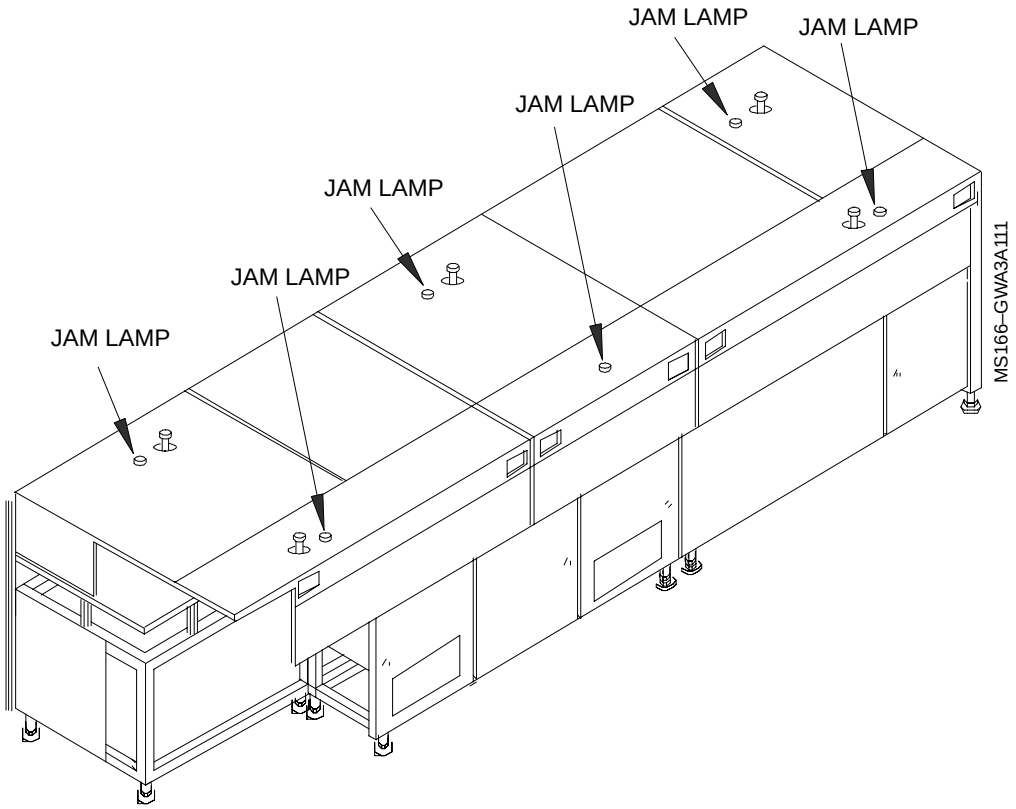
Figure 4-13
Fine Cull Jam Lamp Indicator



4-14 Enricher (JAM Lamps)

The Enricher jam lamps (see **Figure 4-14**) flash red to indicate the location of a mailflow jam or that a cover interlock is open. Either condition causes the Facer/Canceler Section to stop.

Figure 4-14
Enricher Jam Lamp Indicators



4-15 Stacker 1

There are several indicators for Stacker 1 (see **Figure 4-15**).

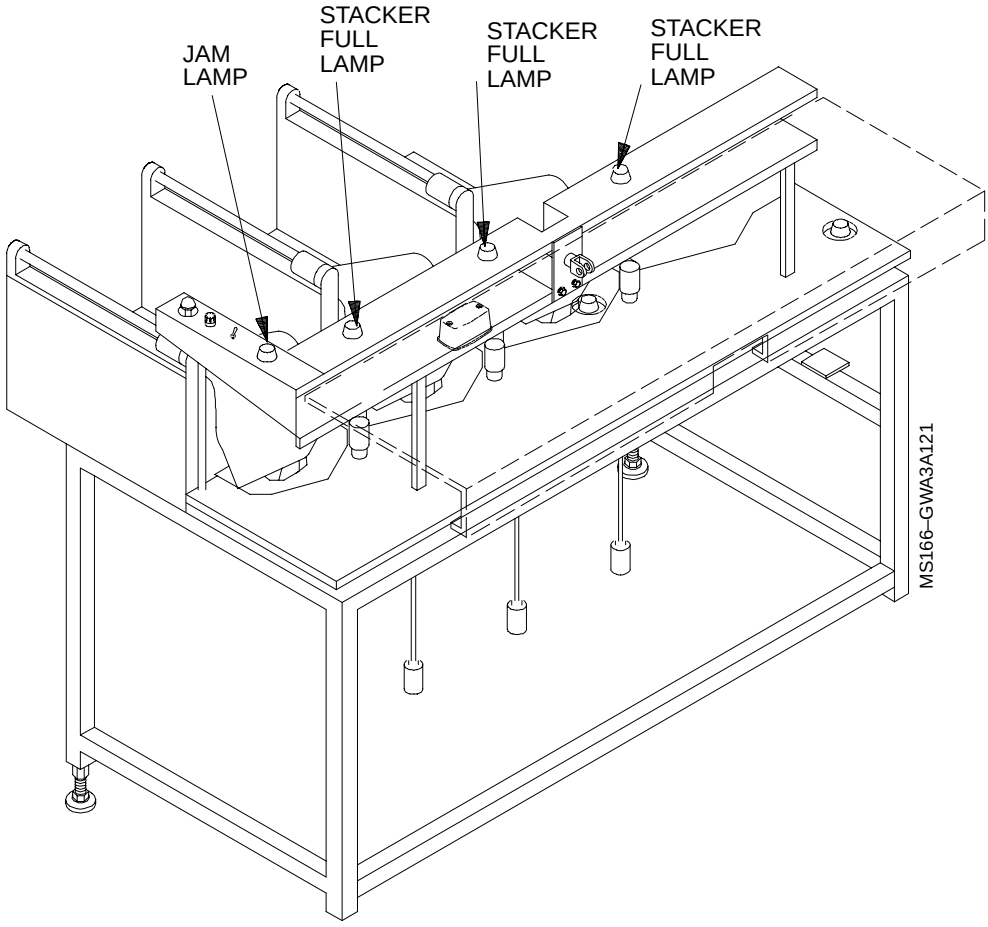
4-15.1 Stacker JAM Lamp

This lamp flashes red if either Stacker 1, 2, 3, or 4 light barrier detects a jam or if there is an open interlock at the cover. A jam or an open interlock here causes the Facer/Canceler Section (Units 11 through 15) to stop. The Culler Section (Units 1 through 10) will continue to run until the Buffer/Feeder becomes full. If the Buffer/Feeder becomes full, the Culler Section will stop.

4-15.2 STACKER FULL Lamps

Each Stacker has a lamp that flashes red to indicate that the Stacker is 75% full. When a Stacker becomes 100% full, the light continues to flash and the feeder pickoff stops.

Figure 4-15
Stacker 1 Indicators



4-16 Stacker 2

There are several indicators for Stacker 2 (see **Figure 4-16**).

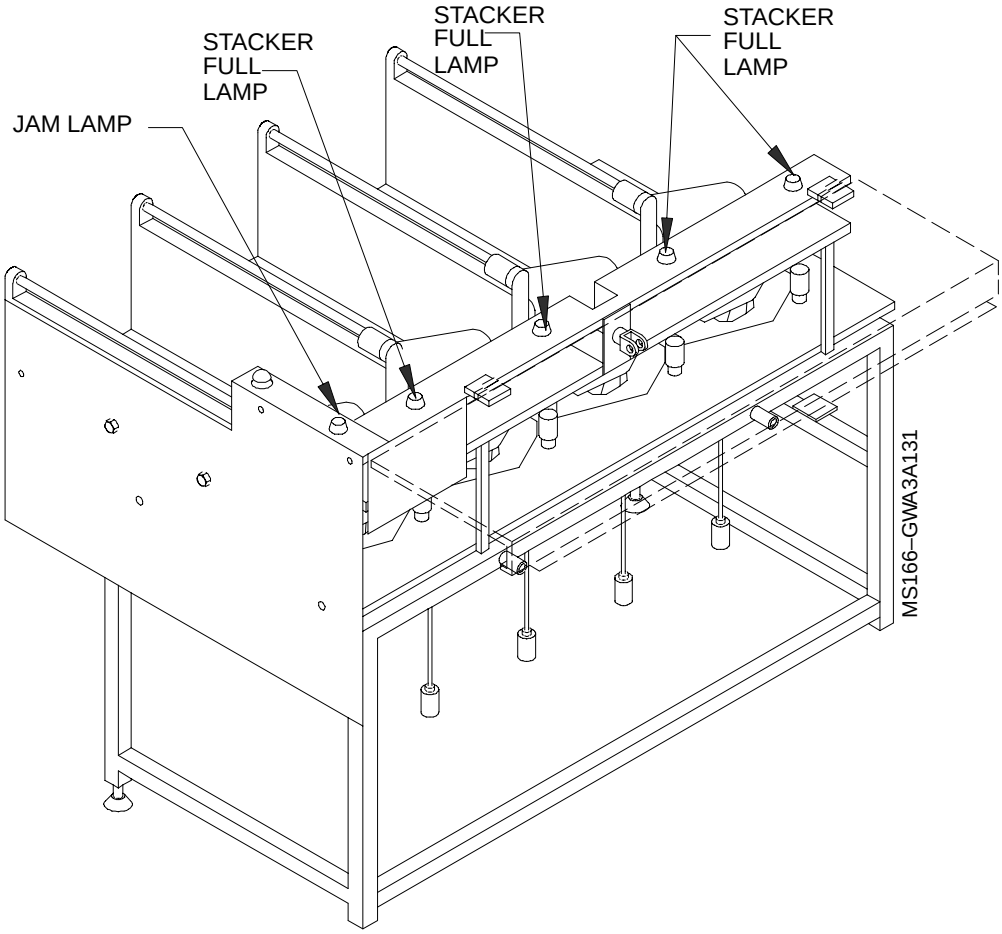
4-16.1 Stacker JAM Lamp

This lamp flashes red if either Stacker 5, 6, or 7 light barrier detects a jam or if there is an open interlock at the cover. A jam or an open interlock here causes the Facer/Canceler Section (Units 11 through 15) to stop. The Culler Section (Units 1 through 10) will continue to run until the Buffer/Feeder becomes full. If the Buffer/Feeder becomes full, the Culler Section will stop.

4-16.2 STACKER FULL Lamps

Each Stacker has a lamp that flashes red to indicate that the Stacker is 75% full. When a Stacker becomes 100% full, the light continues to flash and the feeder pickoff stops.

Figure 4-16
Stacker 2 Indicators



5 Operating Procedures

5-1 Normal Operating Procedures

5-1.1 Operational Safety

It is the responsibility of all personnel, from the supervisor to the operator, to observe all of the safety precautions described in Section 3-5, “Operation Safety Tips,” and in Handbook EL-803, *Maintenance Employee’s Guide to Safety.*

The following warnings apply to all procedures in this section. Failure to follow these rules may result in loss of life or personal injury.

1. While operating the AFCS/ISS, do not wear neckties, scarves, etc.; rings or loose jewelry; or loose, long-sleeved clothing.
2. Do not put fingers or foreign objects into the equipment while it is in operation.
3. The AFCS/ISS has voltages and currents that can cause personal injury or death from electrical shock. These voltages are still present after the STOP switch on the Operator Control Panel is pressed.
4. Observe all safety practices described in Section 3-5, “Operation Safety Tips.”

5-1.2 AFCS/ISS Power-On Procedures

The following are the power-on procedures for the AFCS/ISS:

1. Check the mailpath of both the Culler and Facer/Canceler sections of the AFCS/ISS to ensure that no mailpieces, tools, or other equipment have been left in the machine.
2. Ensure that all covers and doors are closed and secured.
3. Verify that no lockouts or tagouts have been applied to the AFCS/ISS main power panel.
4. Press the POWER ON button on the Operator Control Panel.
5. Observe that the POWER ON button lights up when the button is pressed.
6. Apply power to the IMS Terminal by moving the POWER ON/OFF switch on the IMS Terminal to the right.

7. Check to see that the POWER ON switch on the ID Tag Printer Uninterruptable Power Supply is in the ON position and the ON LINE green light is lit.
8. Verify that air pressure to the ID Tag Printers is between 70 psi and 100 psi. The air pressure regulator is located at the end of Unit 13 after Scanner 2 and before Stacker 1.
9. Press the POWER ON switch on the left-side ID Tag Printer (both left-side and right-side ID Tag Printers are located in Unit 13). Verify that the ON indicator in the upper right-hand corner of the panel is lit. Perform the same steps for the right-side ID Tag Printer.
10. Once the user has completed steps 1–9, the READY light in the lower left-hand corner of the Operator Control Panel should be lit and the IMS Terminal should display the Statistics Screen.
11. Refer to Section 5-1.3 for IMS Terminal Operation.

5-1.3 IMS Terminal Operation

Once power is applied to the AFCS/ISS and to the IMS Terminal, the IMS will commence its start-up procedure. Start-up will occur automatically with either AFCS/ISS power on or a reset of the AFCS/ISS. System start-up occurs in the following order:

1. Start of the Storage and Transfer Processor (STCP) and Communication Processor (CP) applications.
2. Synchronization between STCP and CP modules.
3. Loading of menu data from the STCP hard disk into the CP module. During this loading, which takes approximately 25 seconds, all windows will be prepared in the background, and the following message will appear on the IMS Terminal:

   AFCS - ISS

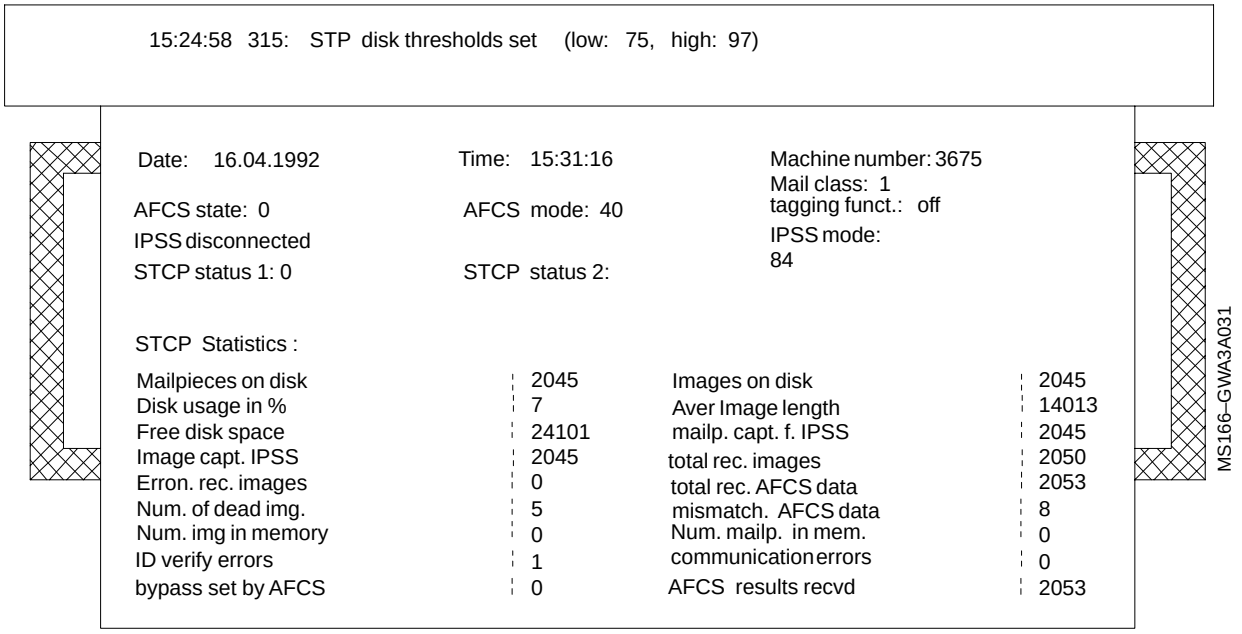
   Startup

   In case of missing or corrupted menu data, this phase will not be completed. In this case, before the IMS can be used, the menu data must be downloaded to the STCP hard disk using the AFCS/ISS Service Monitor or a personal computer (PC).
4. Self-test of the external units.
5. Image Data Compression (IDC) Unit test.
6. LAN communication test.
7. SCSI disk test.
8. AFCS connection test.

After completion of the last test, the test results window stays on the IMS Terminal screen for approximately 10 seconds, and then it is replaced by the Statistics window (see **Figure 5-1.3**). The system is now ready for user input.

Note: Failure of any test may affect the proper operation of the IMS.

Figure 5-1.3
Statistic Window



5-1.4 AFCS/ISS Normal Start Procedures

The normal start procedures for the AFCS/ISS are listed below.

1. Select the desired ISS Mode using the four-position rotary MODE switch in the lower right-hand corner of the Operator Control Panel. The meaning of each mode is listed in **Table 5-1.4a.**
2. On the Cancel Only Switch, choose the desired setting.
3. Select Thumbwheels settings. Refer to Test Modes Table.
4. Select Sortplan Selector and Cancel Selector switch settings.
5. Start Culler Section of the AFCS/ISS by pressing the START CULLER button on the Operator Control Panel.
6. After the Culler Section is running for about 45 seconds, start the Facer/Canceler Section by pressing the START FACER/CAN button on the Operator Control Panel.
7. There a number of alphanumeric display messages that may appear on the Operator Control Panel during the start up and running of the AFCS/ISS. These messages and their meaning are located in **Table 5-1.4b.**

Note: The Operator Control Panel switches are scanned by the master P-MPU86 ONLY at start up. AFCS/ISS must be stopped and then restarted to change operational modes.

Table 5-1.4a
ISS Modes

Mode	Meaning
ENR OFF	Enricher OFF. The mailpieces are faced and canceled. The AFCS/ISS directs both CAT B and CAT C mail to the CAT B Stacker.
ISS OFF	ISS OFF, Enricher ON. The system electronics determine whether an address is handwritten (script) (CAT B mail) or machine printed (imprint) (CAT C mail).
ISS SC	ISS Script Capture ON. Enricher ON. The IMS stores and transfers to the IPSS the image of mailpieces with handwritten (script) addresses.
ISS SC + IM	ISS Script and Imprint Capture ON. Enricher ON. The IMS stores and transfers to the IPSS the images of handwritten (script) and machine-printed (imprint) mailpieces.

Table 5-1.4b
Operator Panel Runtime Messages

Display	Explanation	Other Information
PCS FED nnnnnn	Actual pieces fed since the last time the statistical counters on the P-MPU86 master and slave were cleared.	To view the 15 runtime displays: press the NEXT DISPLAY button.
OP-TIME HH:MM:SS	Operational time since statistical counters were last cleared.	All runtime displays are reset to zero when the statistical counters on the P-MPU86 master are manually cleared.
FED-TIME HH:MM:SS	Feeder pick-off run time since statistical counters were last cleared.	
STOPWATCH HH:MM:SS	Stopwatch timer starts and stops when RESET button is pressed with TEST SELECT switches in 00. Stopwatch resets only when statistical counters are reset.	To clear the statistical counters: 1) Set TEST switches to 70. 2) Press the RESET button on the Operator Control Panel for 2 seconds. 3) Display will show message: **COUNTERS CLEAR**
PCS/hr MEAN nnnnn	Calculated wall-clock hourly throughput based on current feed rate. Continually updated.	NOTE: Indicia results will not be cleared with this function.
PCS/hr ACT nnnnn	Calculated hourly throughput based on pieces fed during previous 5 seconds.	
REJECT % nn	Percentage of mailpieces sorted to Reject bin. (Only calculated when reject count is greater than 100 pieces.)	
NON MAC nnnnnn	Number of mailpieces rejected at Fine Cull as non-machinable.	
CAT A nnnnnn	Number of mailpieces sorted to CAT A lead and trail Stackers.	
CAT B nnnnnn	Number of mailpieces sorted to CAT B lead and trail Stackers.	
CAT C nnnnnn	Number of mailpieces sorted to CAT C lead and trail Stackers.	
REJECTS nnnnnn	Number of mailpieces sorted to Reject bin (count determined by Reject bin light barrier).	
REJ MECH nnnnnn	Number of mailpieces sent to Reject bin for mechanical problems.	
REJ IND nnnnnn	Number of mailpieces sent to Reject bin for invalid or no indicia.	
....*....*....*.... (1) (2) (3) (4)	Indicia Results Display. Each set of four dots represents one indicia detector's results. As indicia is detected, the dot is replaced with a letter. ....* = ARGM * = FIMA/Red Stamp/Green Stamp/Meter	(1) * Group A trail results. (2) * Group A lead results. (3) * Group B trail results. (4) * Group B lead results.

5-1.5 AFCS/ISS Cancel Only Start Procedures

The Cancel Only start procedures for the AFCS/ISS are listed below.

1. At the Operator Control Panel, press the Cancel Only switch to program the system for Cancel Only operation.
2. Latch the carriage back and load the mailpieces on the Buffer/Feeder transport.
3. Load the mailpieces with the indicia leading and down if the indicia must be canceled.
4. Press the Start Facer/Can pushbutton switch to start the operation.
5. When the Facer/Canceler has started, press the Manual Feed pushbutton switch at the Buffer/Feeder control panel. This will stop the Buffer/Feeder vertical transport belt and auger to facilitate safer operation.
6. The mailpieces will be sorted in sequence from bin 1 through 6.

5-1.6 System Stop Conditions

The AFCS/ISS may stop because of five conditions:

a. Normal stop.

b. Mailflow jam stop.

c. Malfunction stop.

d. Emergency stop.

e. Interlock stop.

All or some of the AFCS/ISS motors will stop depending on which of the five stop conditions caused the problem, and depending on where the problem occurs in the AFCS/ISS. Refer to **Table 5-1.6** at the end of this section.

5-1.6.1 Normal Stop

To perform a normal stop after a mail processing run, proceed as follows:

1. Verify that the AFCS/ISS is empty of mail.
2. At the Operator Control Panel, press the STOP pushbutton. The following actions will occur.
    a. The Start Culler and the Start Facer/Can lamps will go out as soon as the Stop switch is pressed. The red Stop switch lamp will light up and remain lighted until all motors have stopped.
    b. The Singulator and Feeder pickoff belts will stop immediately.
    c. All Culler transport motors will stop immediately. The beaters, drums, and levelers motors will continue to run.
    d. Five seconds after the Stop button is pressed, the Facer/Canceler motors plus the beaters, drums, and leveler belt motors in the Culler will stop.

3. To restart the system after a normal stop, press the Start Culler and/or the Start Facer/Can pushbutton switches. A normal start will be performed.

5-1.6.2 Mailflow Jam Stop

Mailflow jams occur when something is obstructing the mail path. When a mailflow jam occurs in the Culler section of the AFCS/ISS, the entire machine will stop immediately. If the jam occurs in the Facer/Canceler section, the Culler will continue to run until the buffer feeder is full; then it stops in a stand-by condition.

5-1.6.2.1 Mailflow Jam Indication

The location of the jam is indicated by a flashing red light. The red jam light on the Operator Control Panel will also flash. The Operator Control Panel will also display a “JAM (Location)” message.

5-1.6.2.2 Clearing a Mailflow Jam

To clear the jam, proceed as follows:

1. Press an Emergency Stop switch (preferably nearest the jam) to prevent an inadvertent restart of the system while the technician’s hands are in the machine.
2. Open the covers as necessary and carefully clear the jam. Start with the last mailpiece. Pull the jammed mailpieces out in the direction opposite the mailflow.
3. If the jam is at one of the pickoff assemblies, open the slide to make it easier to clear the jam.
4. After the jam has been cleared, observe the transport belts, gates, etc., to make sure that they are properly aligned.
5. Close any covers or slides you open and reset the Emergency Stop switch.
6. Restart the machine using normal start procedures.

5-1.6.3 Malfunction Stop

Electrical and mechanical failures will stop the machine. The red malfunction light on the Operator Control Panel will flash, and a “MAL (description)” message will be displayed. A red lamp at the location of the malfunction may also blink.

Most malfunctions will require an AFCS/ISS-trained maintenance person to correct the problem, except for circuit breakers that have tripped.

5-1.6.4 Emergency Stop

If it becomes necessary to stop the machine in an emergency, simply press any Emergency Stop switch. This will stop all AFCS/ISS moving parts immediately.

5-1.6.4.1 Emergency Stop Indications

The red light in the switch that was pressed will flash. The Emergency Stop switch on the Operator Control Panel will also flash, and the Operator Control Panel will display an “EMERG location” message.

5-1.6.4.2 Resetting an Emergency Stop

When the condition that caused the emergency has been cleared, reset the Emergency Stop switch by pulling up on it or twisting it in the direction of the arrow.

5-1.6.5 Interlock Stop

An interlock stop results when an interlock door or cover is opened or removed. There are some distinct differences between a Culler interlock stop and a Facer/Canceler interlock stop, both in indications as well as in the manner in which they affect machine operation.

5-1.6.5.1 Culler Interlock Indications

If an interlock stop occurs in the Culler section, a red lamp nearest the location will flash and the entire machine will stop. The Emergency Stop switch on the Operator Control Panel will also flash, and the Operator Control Panel will display an “EMERG location” message.

If the display indicates “EMERG CULLER,” press the Start Culler pushbutton switch and then press the Next Display pushbutton switch. The display will then indicate either “INCLINE COVER OPEN” if the incline power distribution panel is open or “WATERFALL OPEN” if either of the edging channel panels are open.

5-1.6.5.2 Facer/Canceler Interlock Indications

If an interlock stop occurs in the Facer/Canceler, a red lamp nearest the location will flash and only the Facer/Canceler will stop. The red malfunction lamp will flash on the Operator Control Panel, and the Operator Control Panel will display a “COVER OPEN” message. The message will not give a specific location, nor will it provide any other indication, even if you press the Next Display pushbutton. You must start looking for an open interlock at the point of the flashing red lamp.

5-1.6.5.3 Resetting an Interlock

To correct an open interlock condition, identify the problem interlock panel or door, and close it properly. After the open interlock condition is corrected, restart the machine using normal start procedures.

Table 5-1.6 (p. 1)
Operator Panel Malfunction Messages

Display	Explanation	Troubleshooting Assistance
NO Operator Control Panel alphanumeric display	V5P/F3 missing from AM DC Power Distribution System or cable from P-MPU86 master X3 to AM1 backplane.	Reference: POWER DISTRIBUTION Section 4.
NO Indicators illuminated or alphanumeric display on Operator Control Panel	AM1 DC Power Supply faulty.	Check LEDs: P-FAM2. Reference: POWER DISTRIBUTION or SYSTEM CONTROL Section 4.
!! ILLEGAL MESSAGE !!	Program Error.	Check LEDs: P-MPU86 master and/or reset P-MPU master. Reference: SYSTEM CONTROL Section 4.
* SCANNER SERVICE *	Scanner Maintenance switch on AAT is on.	Switch off for normal operation. Reference: IMAGE SCAN Section 4.
** COUNTERS CLEAR **	Message displayed after P-MPU86 statistical counters are reset.	Message displayed for 5–10 seconds. If it remains, reset P-MPU86 master. Reference: OPERATOR PANEL SCHEMATICS Appendix C.
** FEEDER FULL **	Buffer carriage 100%-full switch is actuated. Culler belts stop.	Check LEDs: P-CCI89. Reference: MOTOR CONTROL Section 4.
** STACKER FULL **	Stacker 100%-full switch is actuated. Feeder pickoff belts stop. Possible AM2 DC failure.	Reference: SORT or POWER DISTRIBUTION Section 4.
*** COVER OPEN ***	Interlock switch is open in the Facer/Canceler.	Check LEDs: P-FAM3. Reference: MOTOR CONTROL Section 4.
*** FEEDER TEST ***	Feeder servo is in test mode. P-FSC89 switch S2 is in test postion A-F.	Check LEDs: P-FSC89. Reference: SYSTEM CONTROL Section 4 or TEST MODES Section 3.
*** PLEASE WAIT ***	Message displayed at power up during UV Lamp warm-up time. AFCS/ISS will not start.	Message should clear after warm-up period when the Ready lamp lights.
AAT-TEST * NO START *	Message for Facer/Canceler Test 49. Scanner lamps are on. Start is disabled.	Deselect test 49. Reference: TEST MODES Section 3.
EMERG CULLER	Emergency Stop switch or interlock is open in the Culler.	Check LEDs: P-FAM3. Reference: MOTOR CONTROL Section 4.
EMERG FACER	Emergency Stop switch is open in the Facer/Canceler.	Check LEDs: P-FAM3. Reference: MOTOR CONTROL Section 4.
EMERG FEEDER	Emergency Stop switch is open in the Buffer/Feeder.	Check LEDs: P-CCI89. Reference: MOTOR CONTROL Section 4.
EMERG SING/SHINGLER	Emergency Stop switch is open in the Singulator/Shingler area.	Check LEDs: P-OTC89 and/or P-CCI89. Reference: MOTOR CONTROL Section 4.
EMERG SINGULATOR	Emergency Stop switch is open in the Singulator.	Check LEDs: P-CCI89. Reference: MOTOR CONTROL Section 4.
ILLEGAL HW-ERROR BIT	P-MPU86 master firmware control error.	Reset P-MPU86 master. Reference: SYSTEM CONTROL Section 4.
ILLEGAL MACHINE NO.	Machine ID Number is not within 1-16.	Check ID Switches: AM DC Power Distribution Box Front Panel. Reference: SYSTEM CONTROL.
ILLEGAL TEST NUMBER	Selected Test is not implemented.	Deselect Test Number.

Table 5-1.6 (p. 2)
Operator Panel Malfunction Messages

Display	Explanation	Troubleshooting Assistance
INCLINE COVER OPEN	Interlock switch is open in Incline AC Box.	Check LEDs: P-OTC89. Reference: MOTOR CONTROL Section 4.
INDICIA NEED CALIB	A P-BAT3 card is reporting loss of calibration.	Check displays: P-BAT3. Reference: INDICIA DETECT Section 4.
JAM CANCELER <Bx/By> (where x=1, 3, 5, or 7 and y=2, 4, 6, or 8)	Canceler Light Barrier is blocked/open.	Check LEDs: P-STA10. Reference: JAM/TRACKING Section 4.
JAM CULLER INPUT	Three or more PE cells in the Incline Conveyor are blocked/open.	Check LEDs: P-OTC89. Reference: JAM/TRACKING Section 4.
JAM CULLER OUTPUT	Edging Channel (Waterfall) PE cell is blocked/open.	Check LEDs: P-OTC89. Reference: JAM/TRACKING Section 4.
JAM DRYING LINE <Q#> (where #=1 or 3)	Drying line light barrier is blocked/open.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
JAM FCUL <Q#> (where #=1, 2, 3, 4, or 6)	A Fine Cull light barrier is blocked/open.	Check LEDs: P-FAT3. Reference: JAM/TRACKING or FINE CULL Section 4.
JAM FEEDER	Measuring light barrier Li1 or a P-SEN10 light barrier is blocked/open.	Check LEDs: P-SEN10. Reference: JAM/TRACKING Section 4.
JAM FEEDER <B4>	Measuring light barrier Li2 in Feeder is blocked/open.	Check LEDs: P-SEN10. Reference: JAM/TRACKING Section 4.
JAM IND DET 1 <Q#> (where #=1, 2, or 3)	Indicia Group A light barrier is blocked/open.	Check LEDs: P-FAM1. Reference: JAM/TRACKING Section 4.
JAM IND DET 2 <Q#> (where #=1, 2, or 3)	Indicia Group B light barrier is blocked/open.	Check LEDs: P-FAM1. Reference: JAM/TRACKING Section 4.
JAM INVERTER 1 <Q#> (where #=1, 2, 3, 4, 5, or 6)	An Inverter 1 light barrier is blocked/open.	Check LEDs: P-FAM1. Reference: JAM/TRACKING Section 4.
JAM INVERTER 2 <Q#> (where #=1 or 2)	An inverter 2 light barrier is blocked/open.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
JAM LEVELER INVERT 1	If approximately 17 mailpieces pass light barrier WM-Li1 and are *not* identified in time by light barrier IB-Li1, then a jam condition is reported.	Reference: JAM/TRACKING Section 4.
JAM LEVELER INVERT 2	If approximately 20 mailpieces pass light barrier WM2-Li1 and are *not* identified in time by light barrier DR1-Li2, then a jam condition is reported.	Reference: JAM/TRACKING Section 4.
JAM PRINTER 1 <Q#> (where #=1 or 2)	Printer 1 light barrier is blocked/open.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
JAM PRINTER 2 <Q#> (where #=4 or 5)	Printer 2 light barrier is blocked/open.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
JAM SCANNER 1 <Q#> (where #=2, 3, or 5)	Scanner 1 light barrier is blocked/open.	Check LEDs: P-TVL/GSC. Reference: JAM/TRACKING Section 4.
JAM SCANNER 2 <Q#> (where #=6, 7, or 9)	Scanner 2 light barrier is blocked/open.	Check LEDs: P-TVL/GSC. Reference: JAM/TRACKING Section 4.
JAM SINGULATOR	A Singulator fence proximity switch (1 or 2) is unblocked/open.	Check LEDs: P-CCI89. Reference: JAM/TRACKING Section 4.

Table 5-1.6 (p. 3)
Operator Panel Malfunction Messages

Display	Explanation	Troubleshooting Assistance
JAM SING DIODE ARR	P-SEN17 causing a jam condition.	Check LEDs: P-SEN17. Reference: JAM/TRACKING Section 4.
JAM SING MEAS.LB	The measuring light barrier or a P-SEN17 light barrier is blocked/open.	Check LEDs: P-SEN17. Reference: JAM/TRACKING Section 4.
JAM SING/SHINGLER	A Shingler Leveler (conveyor) proximity switch (1, 2, or 3) is unblocked/open.	Check LEDs: P-CCI89. Reference: JAM/TRACKING Section 4.
JAM STACK CARRIAGE	The Carriage proximity switch is blocked for 5 continuous seconds while the Culler is running.	Check LEDs: P-CCI89. Reference: JAM/TRACKING Section 4.
JAM STACKER <Q1>	The Stacker acceptance light barrier FSLEAB is blocked/open.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
JAM STACKER 1...3	A light barrier in Stacker 1 module is blocked/open. (Includes light barriers for bins 1–4)	Check LEDs: P-FO81 #1. Reference: JAM/TRACKING Section 4.
JAM STACKER 4...7	A light barrier in Stacker 2 module is blocked/open. (Includes light barriers for bins 5–7)	Check LEDs: P-FO81 #2. Reference: JAM/TRACKING Section 4.
JAM VERIFIER 1 <D3>	Verifier 1 light barrier (D3) is blocked/open.	Reference: JAM/TRACKING Section 4.
JAM VERIFIER 2 <D6>	Verifier 2 light barrier (D6) is blocked/open.	Reference: JAM/TRACKING Section 4.
MAL AM1/2 COMMUNICAT	Communication between P-MPU86 master and P-MPU86 slave failed.	Reference: SYSTEM CONTROL Section 4.
MAL AM2/1 COMMUNICAT	Communication between P-MPU86 slave and P-MPU86 master failed.	Reference: SYSTEM CONTROL Section 4.
MAL AM1 MPU BATTERY	P-MPU86 master RAM battery failure at power on or reset.	Reset P-MPU86 master. Replace P-MPU86 master. Reference: SYSTEM CONTROL Section 4.
MAL AM1 MPU TIMER X (where x=0 or 1)	Defective MPU86 master internal timer 0 or 1.	Replace P-MPU86 master. Reference: SYSTEM CONTROL Section 4.
MAL AM1 MPU SCC A	Serial Communications Control channel A (DCC) defective.	Replace P-MPU86 master. Reference: SYSTEM CONTROL Section 4.
MAL AM1 MPU PPI 8255	Peripheral Parallel Interface Controller defective.	Replace P-MPU86 master. Reference: SYSTEM CONTROL Section 4.
MAL AM1 MPU PIC A	Interrupt Controller A defective.	Replace P-MPU86 master. Reference: SYSTEM CONTROL Section 4.
MAL AM1 MPU PIC B	Interrupt Controller B defective.	Replace P-MPU86 master. Reference: SYSTEM CONTROL Section 4.
MAL AM1 POWER FAIL	Loss of AM1 Power Supply output or power failure in the AM1 Power Supply per sense line.	Check LEDs: P-FAM2. Reference: POWER DISTRIBUTION - AM DC Section 4.
MAL AM1 TRANS-CLOCK determine if:--------->	a) Facer/Canceler belts run for about 1 second then stops; indicates EN tach or system clock problem. b) Facer/Canceler belts do not move: indicates Motor Control or Power Distribution problem.	a) Check LED: H102 on MPU86 master. Reference: SYSTEM CONTROL Section 4. b) Check LEDs: P-FAM3. Reference: MOTOR CONTROL Section 4.

Table 5-1.6 (p. 4)
Operator Panel Malfunction Messages

Display	Explanation	Troubleshooting Assistance
MAL AM2 GAP-ERROR	Excessive gap errors in Enricher module as measure at light barrier DR1-Li2.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
MAL AM2 LBS LIGHT	One or more light barriers always reports light (does not change output during power on light barrier test).	Check LEDs: P-FAM5, P-FO81, and P-TVL/GSC cards with P-FAM3 switches S101 off (middle position). Reference: JAM/TRACKING Section 4.
MAL AM2 MPU BATTERY	P-MPU86 slave RAM battery failure at power on or reset.	Reset P-MPU86 slave. Replace P-MPU86 slave. Reference: SYSTEM CONTROL Section 4.
MAL AM2 NOT READY	P-MPU86 slave not ready.	Reset P-MPU86 slave. Reference: SYSTEM CONTROL Section 4.
MAL AM2 POWER FAIL	Loss of AM2 DC Power Supply output or power failure in AM2 DC Power Supply per sense line.	Check LEDs: P-FAM5. Reference: POWER DISTRIBUTION - AM DC Section 4.
MAL AM2 REFERENCE CLK	P-MPU86 slave missing 2.5 mm transport belt clock.	Reference: SYSTEM CONTROL or IMAGE TRACKING Section 4.
MAL AM2 RESET/PWFAIL	P-MPU86 slave is reset, after pressing reset button on card (or at power on cycle, or watchdog time out).	If machine starts, no action necessary. Reference: SYSTEM CONTROL Section 4.
MAL AM2 TRACKING	One or more tracking tables are not updated properly. A mailpiece is not at a tracking light when it should be. A tracking light barrier may be out.	Check LEDs: P-FAM5 and P-TVL/GSC. Restart Facer/Canceler. If problem persists after 3 attempted starts, problem exists. Reference: JAM/TRACKING Section 4.
MAL AM2 TRANS-CLOCK	P-MPU86 slave missing 20 mm transport belt clock.	Reference: SYSTEM CONTROL Section 4.
MAL AT ENCODER	Scanner clock (ATIT) or VCO on the right or left P-VCB95 is out of tolerance or has failed.	Check LEDs: P-TVL/GSC. Reference: IMAGE SCAN Section 4.
MAL AT FUSE	AAT DC Power Supply or fuse F7 failed at scanner module.	Check LEDs: P-TVL/GSC. Reference: POWER DISTRIBUTION - AAT DC or IMAGE SCAN Section 4.
MAL AT POWER FAIL	Loss of AAT DC power supply output or power failure in AAT DC power supply per sense line.	Check fuse in AAT DC Power Supply. Reference: POWER DISTRIBUTION - AAT DC or IMAGE SCAN Section 4.
MAL CANCELER <Bx/By> (where x=1, 3, 5, or 7 and y=2, 4, 6, or 8)	Light barrier failed low voltage light barrier test during P-MPU86 master cold or warm bootup.	Check LEDs: P-STA10. Reference: JAM/TRACKING Section 4.
MAL CANCELER FUSE	Loss of 42 VDC or fuse on the P-STA22.	Check LEDs: P-STA10 and P-STA22. Reference: CANCEL or POWER DISTRIBUTION - DLV DC Section 4.
MAL CANC CPR ROLLER 1	Canceler counter pressure roller 1 circuit is not working properly.	Check LEDs: P-STA22. Reference: CANCEL Section 4.
MAL CANC CPR ROLLER 2	Canceler counter pressure roller 2 circuit is not working properly.	Check LEDs: P-STA22. Reference: CANCEL Section 4.
MAL CANC DIE 1	Failure of the trail clutch/brake assembly to home properly or within two tries at startup.	Check LEDs: P-STA10 and P-STA22. Reference: CANCEL Section 4.

Table 5-1.6 (p. 5)
Operator Panel Malfunction Messages

Display	Explanation	Troubleshooting Assistance
MAL CANC DIE 2	Failure of the lead clutch/brake assembly to home properly or within two tries at startup.	Check LEDs: P-STA10 and P-STA22. Reference: CANCEL Section 4.
MAL CANC PWR 5V	Loss of 5 VDC on the P-STA22 or P-STA10.	Check LEDs: P-STA10 and P-STA22. Reference: CANCEL Section 4.
MAL CANC TECHNIC	Canceler reports undefined state.	Check LEDs: P-STA10. Reference: CANCEL Section 4.
MAL CULLER FUSE	DLV Fuses F1 & F2 are good. DLV backplane does not have power available.	Check LEDs: P-CCNT89. Reference: POWER DISTRIBUTION - DLV DC Section 4.
MAL CULLER TECHNIC	Technical error in status work (CUS0 - CUS3) being reported to P-FAM2 from the P-CCNT89.	Reset DLV Card Cage. Reference: SYSTEM CONTROL Section 4.
MAL CULLER WATCHDOG	Culler watchdog circuit timed out.	Reset DLV Card Cage. Check LEDs: P-OTC89 and P-CCNT89. Reference: SYSTEM CONTROL Section 4.
MAL CUL CKT-BREAKER	Circuit breaker tripped or aux line open in the DLV AC Box.	Check LEDs: P-CCI89. Reference: POWER DISTRIBUTION - DLV AC Section 4.
MAL CUL PWR FAIL AC	Circuit breaker tripped or aux line open in the incline AC Box.	Check LEDs: P-OTC89. Reference: POWER DISTRIBUTION - INCLINE AC Section 4.
MAL DRYING LINE <Q#> (where #=1 or 3)	Light barrier failed low voltage light barrier test during P-MPU86 master cold or warm bootup.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
MAL EN MAINT L-FIND	Line-Find module in maintenance mode.	Check LEDs and S-102 switch on P-YPZ88. Reference: LINE FIND Section 4.
MAL EN TRACKING	P-MPU86 slave out of sync with Line Find. No Line Find results to P-MPU86 slave.	Reset P-MPU86 slave. Check LEDs: P-EIF10 and P-UDE/S. Replace the P-YPZ88, P-YSW84, P-EIF10, or P-UDE/S. Check that thumbwheel switch on P-BAS90 is set at “5.” Reference: LINE FIND Section 4.
MAL EN WDOG L-FIND	Line Find control failure. Bad/No Line Find results to P-MPU86 slave.	Check LEDs on P-YPZ88, P-EIF10, and P-UDE/S. Check that thumbwheel switch on P-BAS90 is set at “5.” Reference: LINE FIND Section 4.
MAL FC AM1 GAP-ERROR	Excessive number of gap errors in Inverter 1 or Leveler 1 module as measured at Indicia Group B (IB-Li1).	Check LEDs: P-FAM1. Reference: JAM/TRACKING Section 4.
MAL FC AM1 TRACKING	Excessive mailpiece tracking errors between the Group A Indicia Detector light barrier (IA-Li1) and the hand-off light barrier (WM2-Li1).	Check LEDs: P-FAM1 and P-FAM5. Reference: JAM/TRACKING Section 4.
MAL FC CANCELER	Failure in the Canceler.	Check LEDs: P-STA22 and P-STA10. Reference: CANCEL Section 4.
MAL FC CKT-BREAKER	Circuit breaker tripped or aux line open in the En AC Power Distribution Box.	Reference: POWER DISTRIBUTION - EN AC Section 4.

Table 5-1.6 (p. 6)
Operator Panel Malfunction Messages

Display	Explanation	Troubleshooting Assistance
MAL FC INVERTER	Inverter gate malfunctioning. Determined by mailpiece blocking light barrier in wrong mail path in Inverter 1 section.	Check LEDs: P-WA50 for Inverter gate; Test Mode 13. Reference: INDICIA DETECT Section 4.
MAL FC POWER FAIL	Power failure in AM DC power supply per sense line.	Check LEDs: P-FAM2. Reference: POWER DISTRIBUTION - AM DC Section 4.
MAL FC POWER 42V	Loss of 42 VDC Power Supply in the Facer/Canceler.	Check LEDs: P-FAM2. Reference: POWER DISTRIBUTION - EN AC Section 4.
MAL FCUL DIVERTER	Fine Cull gate malfunction. Mailpiece that should have been ejected at Fine Cull is detected at input to Indicia Group A (IA-Li1) by the P-FAT3.	Check Fine Cull diverter gate. Reference: FINE CULL Section 4.
MAL FCUL POWER FAIL	Loss of 5 VDC in Fine Cull (P-FAT3).	Check LEDs: P-FAT3. Reset P-FAT3. Reference: FINE CULL Section 4.
MAL FCUL TRANS-CLOCK	Fine Cull encoder or clock malfunction.	Check LEDs: Fine Cull P-GL4. Reference: FINE CULL Section 4.
MAL FCUL UNDEFINED	An illegal or undefined status reported to the P-FAM1 by the P-FAT3.	Reset P-FAT3 or reset AM1 card cage. Reference: FINE CULL Section 4.
MAL FEEDER SIGNALS	Failure of Buffer/Feeder status messages to the P-FAM2 from the P-CCNT89.	Reset DLV card cage. Reference: MOTOR CONTROL Section 4.
MAL FEEDER TECHNIC	Most commonly failure of Feeder encoder or clock. (Also means technical error. Signal ZSTECH is sent to the P-FAM2 from the P-CCNT89.)	Check LEDs: Feeder P-GL4 and/or P-FSC89. Possible corrective action is to reset DLV card cage. Reference: MOTOR CONTROL, POWER DISTRIBUTION, or SYSTEM CONTROL Section 4.
MAL IND DET # [where #=1 or 2)	V24P/F1 is missing from AM Power Distribution Box if the following three malfunction messages appear: MAL IND DET 2, MAL IND DET 1, and EMERG FACER.	Check LEDs: P-FAM2, P-FAM3, and P-BAT4. Reference: POWER DISTRIBUTION Section 4.
MAL IND DET # [where #=3 or 4)	V24P/F2 is missing from AM Power Distribution Box if the following two messages appear: MAL IND DET 4 and MAL IND DET 3.	Check LEDs: P-FAM2, P-FAM5, and P-BAT4. Reference: POWER DISTRIBUTION Section 4.
MAL IND DET # [where #=1, 2, 3, or 4)	A halogen lamp or UV lamp is out in the identified detector. Also may be a loss of indicia ready signal or 24V power.	Check LEDs: P-BAT4. Reference: INDICIA DETECT or POWER DISTRIBUTION Section 4.
MAL IND DET # HW [where #=(1=>Group A) or (2=>Group B)	Failure of Acknowledge signal from the P-BAT4 card to the P-FAM2 card when mailpiece reached indicia group (A or B) acceptance light barrier (IA-Li3 or IB-Li3).	Check LEDs: P-FAM1 with P-FAM3 S101 off. Reference: INDICIA DETECT Section 4.
MAL IND DETS A	A timeout error for Indicia Group A. Failure of 1 or more of Group A P-BAT3s to transmit a watchdog signal to the P-FAM1.	Check LEDs: Group A P-BAT3. Reference: INDICIA DETECT Section 4.

Table 5-1.6 (p. 7)
Operator Panel Malfunction Messages

Display	Explanation	Troubleshooting Assistance
MAL IND DETS B	A timeout error for Indicia Group A. Failure of 1 or more of Group A P-BAT3s to transmit a watchdog signal to the P-FAM1.	Check LEDs: Group A P-BAT3. Reference: INDICIA DETECT Section 4.
MAL IND DET x <Q#> (where x=1 or 2 and #=1, 2, 3, or 4)	Light barrier failed low voltage light barrier test during P-MPU86 master cold or warm bootup.	Check LEDs: P-FAM1. Reference: JAM/TRACKING Section 4.
MAL INVERTER	Inverter gate stuck or diverter solenoid defective.	Check LEDs: Inverter 1 P-WA50. Reference: INDICIA DETECT, JAM/TRACKING, or POWER DISTRIBUTION Section 4.
MAL INVERTER <Q#> (where #=1, 2, 3, 4, 5, or 6)	Light barrier in Inverter 1 failed low voltage light barrier test during P-MPU86 master cold or warm bootup.	Check LEDs: P-FAM1. Reference: JAM/TRACKING Section 4.
MAL INVERTER 2 <Q#> (where #=1 or 2)	Light barrier in Inverter 2 failed low voltage light barrier test during P-MPU86 master cold or warm bootup.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
MAL ISS DISK DATA	STCP disk has corrupt data.	Reference: IMS Section 4.
MAL ISS DISK FULL	STCP hard disk is full of images. (IMS Message 212).	The AFCS/ISS must let IPSS transfer images from STCP hard disk. Reference: IMS Section 4.
MAL ISS HARD DISK	Severe STCP hard disk error.	Reference: IMS Section 4.
MAL ISS ID TAG EXCEEDED	The number of mailpieces with ID tag errors has exceeded the selected limit.	Reference: IMS, PRINT, or VERIFY Section 4.
MAL ISS LESS DATA	No image for Line Find results.	Reference: IMS or IMAGE TRACKING Section 4.
MAL ISS LESS HEADERS	No Line Find results for an image.	Reference: IMS Section 4.
MAL ISS NOT READY	If this indication occurs just after an unsuccessful attempt at Facer/Canceler startup, the IMS is performing self test. Otherwise, the IMS is not ready, possible DC power failure.	Reference: IMS or POWER DISTRIBUTION - STCP DC Section 4.
MAL ISS POWER FAIL	Loss of STCP DC power supply output or power failure in STCP DC per sense line.	Check LEDs: P-ISPA90 and P-FAM5. Reference: POWER DISTRIBUTION - STCP DC Section 4.
MAL ISS TECHNIC	General IMS error. IMS failed to respond to System Control status inquiry.	Reference: IMS Section 4.
MAL LB ALLW LIGHT	Light barrier always on (receiver shorted) during the no voltage light barrier test during P-MPU86 master cold or warm bootup.	Check LEDs: P-FAM1, P-STA10, and P-FAT3 with P-FAM3 switch S101 off (middle position). Reference: JAM/TRACKING Section 4.
MAL PRN 1 INK LOW	Printer 1 is not on, or fluids (ink or makeup) are low.	Check ID Tag Printer 1 ink and makeup level. Reference: PRINT Section 4.
MAL PRN 2 INK LOW	Printer 2 is not on, or fluids (ink or makeup) are low.	Check ID Tag Printer 1 ink and makeup level. Reference: PRINT Section 4.

Table 5-1.6 (p. 8)
Operator Panel Malfunction Messages

Display	Explanation	Troubleshooting Assistance
MAL PRINTER 1 <Q#> (where #=1 or 2)	Light barrier failed low voltage light barrier test during P-MPU86 cold or warm bootup.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
MAL PRINTER 2 <Q#> (where #=4 or 5)	Light barrier failed low voltage light barrier test during P-MPU86 cold or warm bootup.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
MAL PRINTER 1 TECHNIC	ID Tag Printer 1 failure. Printer 1 is not ready.	Check Printer 1 display. Reference: PRINT Section 4.
MAL PRINTER 2 TECHNIC	ID Tag Printer 2 failure. Printer 1 is not ready.	Check Printer 2 display. Reference: PRINT Section 4.
MAL SCANNER	General Scanner failure.	Check LEDs: P-TVL/GSC, P-TTH/GSC, and P-TZS90. Reference: IMAGE SCAN, LINE FIND, IMAGE TRACKING, or POWER DISTRIBUTION - AAT DC Section 4.
MAL SCANNER 1 <Q#> (where #=2, 3, or 5)	Light barrier failed low voltage light barrier test during P-MPU86 cold or warm bootup.	Check LEDs: P-TVL/GSC. Reference: JAM/TRACKING or IMAGE SCAN Section 4.
MAL SCANNER 2 <Q#> (where #=6, 7, or 9)	Light barrier failed low voltage light barrier test during P-MPU86 cold or warm bootup.	Check LEDs: P-TVL/GSC. Reference: JAM/TRACKING or IMAGE SCAN Section 4.
MAL SCANNER LAMP	Halogen Lamp failure in Scanner. Possible loss of 5V power Fuse F5, or circuit breaker on start-up.	Check LEDs: P-TVL/GSC, SCANNER lamps, and Fuse F5. Reference: IMAGE SCAN and POWER DISTRIBUTION - AAT DC Section 4.
MAL SINGULATOR TECHNIC	Technical error in status work (DLS0 - DLS3) being reported to the P-FAM2 from the P-CCNT89.	Reset the DLV card cage. Reference: SYSTEM CONTROL or MOTOR CONTROL Section 4.
MAL SING NOT READY	DLV control not ready.	Reset DLV card cage. Reference: SYSTEM CONTROL Section 4.
MAL SING TRANS-CLOCK	Loss of Singulator encoder or clock.	Check LEDs: Singulator P-GL4. Reference: SYSTEM CONTROL Section 4.
MAL SING WATCHDOG	DLV watchdog time out.	Reset DLV card cage. Reference: SYSTEM CONTROL Section 4.
MAL STACKER GATE	Stacker gate malfunctioning.	Check LEDs: P-FO81s, P-FAM5, and stacker P-WA50s. Reference: SORT Section 4.
MAL STACKER <Q1>	Light barrier failed low voltage light barrier test during P-MPU86 cold or warm bootup.	Check LEDs: P-FAM5. Reference: JAM/TRACKING Section 4.
MAL VERIFIER 1 <D#> (where #=3 or 6)	Light barrier failed low voltage light barrier test during P-MPU86 cold or warm bootup.	Check LEDs: H-111 on each P-LAT88 during a warm or cold bootup. If the LED flashes between one and three times, the LB is working. Reference: JAM/TRACKING or VERIFY Section 4.
MAL VER 1 TECHNIC	Verifier 1 failure.	Check LEDs: P-LAT88. Reset P-LAT88. Reference: VERIFY Section 4.
MAL VER 2 TECHNIC	Verifier 2 failure.	Check LEDs: P-LAT88. Reset P-LAT88. Reference: VERIFY Section 4.

Table 5-1.6 (p. 9)
Operator Panel Malfunction Messages

Display	Explanation	Troubleshooting Assistance
MES. BUF OVERFLOW !!	Malfunction message buffer in P-MPU86 master is over full.	Self regulating. Buffer empties as next Display is pressed and error messages are displayed.
POWER ON/RAM CLEAR	P-MPU86 master RAM memory error during cold boot up.	Reset P-MPU86 master. Reference: SYSTEM CONTROL Section 4.
RESET/POWER FAIL	P-MPU86 master or slave was reset or power failed during warm or cold boot up.	No action necessary if machine starts. Reference: SYSTEM CONTROL Section 4.
RESET/RAM CLEAR	P-MPU86 master RAM memory error during warm boot up.	Reset P-MPU86 master. Reference: SYSTEM CONTROL Section 4.
SING SLIDE OPEN	Singulator slide switch is open. Power failure DLV-DC.	Check LEDs: P-FSC89 and P-SEN17. Reference: MOTOR CONTROL or POWER DIS TRIBUTION - DLV DC Section 4.
SING TEST MODE	Singulator servo is in test mode. P-FSC89 card switch S4 is in test position.	Check LEDs: P-FSC89. Reference: TESTMODES Section 3.
SORT PLAN ERRORS	System control unable to sort mailpiece. Sorting data indicates a switch has destination inputs for more than 1 Stacker (e.g., Cat A and Cat B/C).	Toggle all sort switches. Reference: SYSTEM CONTROL Section 4.
T: xx (Test Name)	Displays Facer/Canceler test being run by name and number.	Reference: TEST MODES Section 3.
WATERFALL OPEN	An Edger Channel (waterfall) interlock switch is open.	Check LEDs: P-OTC89. Reference: MOTOR CONTROL Section 4.
WELCOME TO AEG AFCS/ISS **PLEASE WAIT**	Normal display after Power ON. Message will scroll across display until startup is complete.	If message does not appear at Power ON, check P-MPU86, Power to Operator Control Panel, and P-MIF10. Reference: POWER DISTRIBUTION or SYSTEM CONTROL Section 4.

5-1.7 AFCS/ISS Power-Off Procedures

The power-off procedures for the AFCS/ISS are listed below.

1. The first step in turning off the AFCS/ISS is to power off the ID Tag Printers. **Note:** Both printers can be powered down at the same time.
   a. To power off the left-side ID Tag Printer, press the OFF button. The shutdown process takes about 4 minutes.
   b. When this process is complete, press the OFF button on the right-side ID Tag Printer. The shutdown process takes about 4 minutes.
2. Once both ID Tag printers are properly powered down, press the POWER OFF button on the upper left-hand side of the Operator Control Panel.

5-2 Emergency Shutdown Procedures

Pressing any emergency stop switch on the AFCS/ISS immediately stops all motors and belts. This is the first step to be taken in any emergency because it takes only a second to trip an emergency stop switch. However, the emergency stop switches do not remove power from the AFCS/ISS, and in case of electrocution or fire, the emergency shutdown procedure must be performed.

Use the following procedures to perform an emergency shutdown:

1. Locate the closest emergency stop switch.
2. Press the red, mushroom-shaped pushbutton.
3. Press the POWER OFF switch on the Operator Control Panel Assembly.
4. Turn the CB1 MAIN DISCONNECT switch on the Main Power Distribution Unit 4 to the OFF position.

   Note: Even with the CB1 MAIN DISCONNECT switch set to OFF, there is still 208 volt, 3-phase AC power at 80 amperes present at the main power distribution unit, as well as 24 VAC to the Operator Control Panel Assembly.

   Note: The location of site power circuit breakers are different for each facility. Ensure that all operating and maintenance personnel are advised of circuit breaker locations.
5. To remove all AC power from the main power distribution unit, place site power circuit breakers to the OFF position.

After the emergency shutdown condition is corrected, restart the AFCS/ISS as follows:

1. Place site power circuit breakers to the ON position.
2. Turn the CB1 MAIN DISCONNECT switch on the main power distribution unit to the ON position.
3. Verify that the INPUT POWER AVAILABLE indicators PH-A, PH-B, and PH-C on the main power distribution unit light up.
4. Press the POWER ON switch on the Control Panel Assembly and verify that the POWER ON indicator lights up.

   Note: The EMERG. STOP indicator on the Control Panel Assembly flashes when the switch or any emergency stop switch is pressed.
5. Reset the flashing emergency stop switch by turning the mushroom-shaped head clockwise or by pulling it up.
6. Return to normal operation by performing AFCS/ISS Power On and AFCS/ISS Start Procedures.

5-3 AFCS/ISS Modes of Operation

Five modes of operation are available for the AFCS/ISS. Four of the modes are normal operational modes and are selected using the rotary ISS Mode switch on the Operator Control Panel. The fifth mode, “Cancel Only,” is a special operation mode used to backstamp mail and is activated by the Cancel Only switch on the Operator Control Panel. Refer to **Figure 5-3** and **Table 5-3** at the end of this section.

5-3.1 Normal Operation Modes

The rotary ISS Mode switch controls the ISS and Enricher functions as described below.

a. ENR OFF (Enricher OFF). The AFCS/ISS identifies all indicia types but performs no address analysis and captures no mailpiece images. FIM A and C, stamp, meter, and FIM B and D mailpieces will not have an ID Tag sprayed on the back side of the mailpieces, ID Tag verification will not take place, and the image scan, Line Find, and IMS functions will not be turned on. FIM A and C mailpieces will sort to CAT A, and stamp, meter, and FIM B and D mailpieces will sort to CAT B.

b. ISS OFF (ISS OFF). Images are scanned and address analysis is performed. No images are captured because all ISS functions are turned off. Sortation is made per sort plan.

   FIM A and C mailpieces will not have an ID Tag sprayed on the back side of the mailpieces, ID Tag verification will not take place, and the image captured by image scan will not be sent to Line Find or IMS. Mailpieces will sort to CAT A.

   Stamp, Meter, and FIM B and D mailpieces will not have an ID Tag sprayed on the back side of the mailpieces, ID Tag verification will not take place, and the image will not be sent to IMS. The image captured by image scan will be sent to Line Find for a script, imprint, or no line decision. Script mailpieces will sort to CAT B, and imprint mailpieces will sort to CAT C.

   Mailpieces on which indicia could not be identified will be designated as bypass (reject) mailpieces, no ID Tag will be sprayed or verified, and the image captured by image scan will not be sent to either Line Find or IMS. The mailpieces will sort to CAT D.

c. ISS SC. (ISS SCRIPT). Images are scanned, address analysis is performed, and only script images are captured. ID Tags are printed on all mailpieces, except FIM A and C and Reject mail. Sortation is made per sort plan.

   FIM A and C mailpieces do not have an ID Tag sprayed on the back side of the mailpieces, and ID Tag verification will not take place. The image captured by image scan will not be sent to Line Find or IMS. Mailpieces will sort to CAT A.

Stamp, Meter, and FIM B and D will have ID Tags sprayed on the back side of the mailpiece, ID Tags will be verified, and the image captured by image scan will be sent to Line Find for a script, imprint, or no line decision. The image will also be sent to IMS, and if the Line Find result was script, the image will be compressed and merged with a header (made up of information provided by system control). If the Line Find result for the mailpiece was imprint, only the header will be stored. If the mailpiece image cannot be matched to a header (header contains a script Line Find result) by IMS, or if an ID tag verify error flag or image length flag was set in the information provided by system control, the image will be discarded and only the header will be stored. Script mailpieces will sort to CAT B, and imprint mailpieces will sort to CAT C.

Mailpieces on which indicia could not be identified will be designated as bypass (reject) mailpieces, no ID Tag will be sprayed or verified, and the image captured by image scan will not be sent to either Line Find or IMS. Mailpieces will sort to CAT D. Also mailpieces where the image length does not match the mailpiece length will be designated for bypass (reject) by system control.

d. ISS SC. + IM. (ISS SCRIPT + IMPRINT). Images are scanned, address analysis is performed, and both script and printed addresses are captured. ID Tags are printed on all mailpieces, except FIM A and C and Reject mail. Sortation is made per sort plan.

FIM A and C mailpieces will not have an ID Tag sprayed on the back side of the mailpieces, ID Tag verification will not take place, and the image captured by image scan will not be sent to Line Find or IMS. Mailpieces will sort to CAT A.

Stamp, Meter, and FIM B and D will have ID Tags sprayed on the back side of the mailpiece, ID Tags will be verified, and the image captured by image scan will be sent to Line Find for a script, imprint, or no line decision. The image will also be sent to IMS, where it will be compressed and merged with a header (made up of information provided by system control). If the mailpiece image cannot be matched to a header by IMS, or if an ID tag verify error flag or image length flag was set in the information provided by system control, the image will be discarded and only the header will be stored. Script mailpieces will sort to CAT B, and imprint mailpieces will sort to CAT C.

Mailpieces on which indicia could not be identified will be designated as bypass (reject) mailpieces, no ID tag will be sprayed or verified, and the image captured by image scan will not be sent to either Line Find or IMS. The mailpieces will sort to CAT D. Also mailpieces where the image length does not match the mailpiece length will be designated for bypass (reject) by system control.

5-3.2 Cancel Only Mode

Cancel Only mode is activated by pressing the top of the Cancel Only rocker switch on the Operator Control Panel. The main purpose for using the Cancel Only mode of operation is to “backstamp” mailpieces or cancel pre-faced mail from the Buffer/Feeder without requiring active indicia or requiring indicia to be in a specific orientation (side or position).

For Cancel Only operation, if the indicia must be canceled, all mailpieces must be loaded on the Buffer with the indicia leading and down. If the mailpieces are to be backstamped, all mailpieces must be loaded with the indicia trailing and down. During Cancel Only operation, the inverter gate is disabled (no mail is inverted), only the Lead cancel die is activated, and all other indicia and image processing functions are disabled. The mailpieces will be sorted in sequence from bin 1 through 6. When a bin becomes 100% full, mail will be directed into the next available (unfull) bin. If all six bins become full, the feeder servo motor will stop. The Facer/Canceler must be stopped and restarted to resume mail feed once one or more bins are emptied. Most importantly, the mailpieces statistics will NOT be incremented for the report data.

Figure 5-3
Sortation Configuration

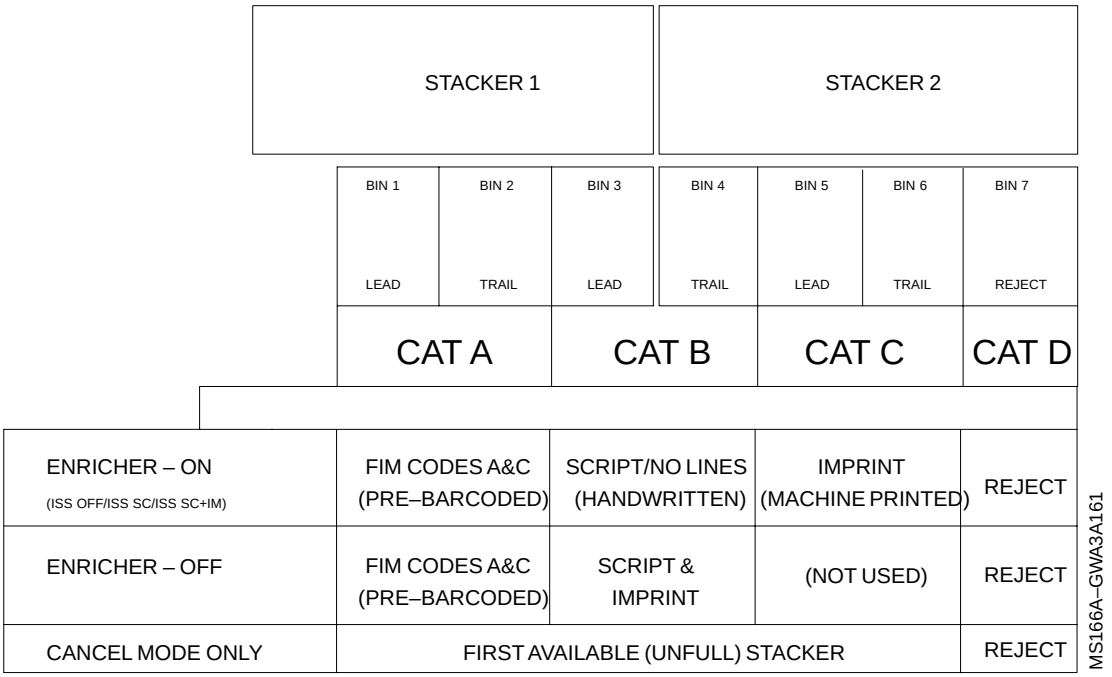


Table 5-3
Operating Decision Table

Mode	Results		ID-Tag		Data Set on STCP Hard Disk	Stacker Sort
	Indicia	**Line Find**	**Printer**	**Verifier**		
ENR off	FIM A & C	off	no tag	N/A	N/A	CAT A
	stamp meter FIM B & D	off	no tag	N/A	N/A	CAT B
	bypass					CAT D
ISS off	FIM A & C	no	no tag	N/A	N/A	CAT A
	stamp meter FIM B & D	script	no tag	N/A	N/A	CAT B
		imprint	no tag	N/A	N/A	CAT C
	bypass					CAT D
ISS script only	FIM A & C	not enabled	no tag	N/A	N/A	CAT A
	stamp meter FIM B & D	imprint	print	N/A	store header only set flags: - machine printed - ID verify result	CAT C
		script	print	ID verify passed	store header with image, set flags: - not machine printed - no ID verify error	CAT B
				ID verify failed	store header only set flags: - not machine printed - ID verify error	
	bypass					CAT D
ISS script and imprint	FIM A & C	not enabled	no tag	N/A	N/A	CAT A
	stamp meter FIM B & D	script/imprint	print	ID verify passed	store header with image, set flags: - machine printed or not machine printed - no ID verify error	script CAT B or imprint CAT C
				ID verify failed	store header only set flags: - machine printed or not machine printed - ID verify error	
	bypass					CAT D
Cancel Only	N/A	N/A	N/A	N/A	N/A	See Figure 5-3

5-4 AFCS/ISS Image Lift Strategies

When determining image lift strategies, a *Script Only* strategy is appropriate in most cases and conditions. System (P&DC & REC) processing costs as a whole are clearly increased using a *Script and Enriched* image lift configuration. However, the above mentioned AFCS/ISS processing options should be utilized as processing tools, similar to other technological options available to mail processing managers. Day of week, time of day, on-hand volumes, clearance times, and automated equipment utilization, to name a few, must all be considered when determining lift strategies. For example, it would not seem appropriate to lift the enriched portion while MLOCR equipment sits idle. Conversely, situations that could dictate a change include ML-ISS breakdowns and unusually heavy meter volumes. In situations such as these, lifting script and enriched *to avoid plan failures* would be acceptable.

Prior to effecting any operational deviations to the above, carefully consider the following issues:

a. MLOCR/ISS capacity
b. OSS capacity
c. RCR throughput capacity
d. DSU limitations
e. Volume arrival times
f. LAMM on-hand volumes
g. Clearance times
h. Originating cycle times
i. REC staffing levels
j. Image turnaround times

Managers must make certain that the perceived service benefits, achieved by lifting the *enriched portion* of AFCS/ISS, outweigh the clearly defined increased costs and that these service benefits can be realistically achieved and documented. Further, compelling evidence exists regarding the beneficial error rates that MLOCR processing provides when compared to the error rates associated with RCR processing. It is conceivable that, as technology enhancements mature, the above-mentioned image lift options and subsequent mailflow strategies might require still further review and should be monitored closely.

5-5 Stacker Sortation

To determine where mailpieces are sorted, system control uses firmware tables and inputs from system configuration switches, the ISS mode switch, and the sort plan selector switches on the Operator Control Panel. Refer back to Table 5-3. Mailpiece sortation by operational mode is provided below.

a. ENR OFF mode:
   (1) CAT A: Bins 1 and 2 receive FIM A and C mailpieces.
   (2) CAT B: Bins 3 and 4 receive script and imprint mailpieces.
   (3) CAT C: Bins 5 and 6 are not used.
   (4) CAT D: Bin 7 receives bypass (reject) mailpieces.

b. ISS OFF mode:
   (1) CAT A: Bins 1 and 2 receive FIM A and C mailpieces.
   (2) CAT B: Bins 3 and 4 receive Stamp, Meter, FIM B and D, script, and no (address) line mailpieces.
   (3) CAT C: Bins 5 and 6 receive Stamp, Meter, FIM B and D, and imprint mailpieces.
   (4) CAT D: Bin 7 receives bypass (reject) mailpieces.

c. ISS SC. mode:
   (1) CAT A: Bins 1 and 2 receive FIM A and C mailpieces.
   (2) CAT B: Bins 3 and 4 receive Stamp, Meter, FIM B and D, script, and no (address) line mailpieces.
   (3) CAT C: Bins 5 and 6 receive Stamp, Meter, FIM B and D, and imprint mailpieces.
   (4) CAT D: Bin 7 receives bypass (reject) mailpieces.

d. ISS SC. + IM. mode:
   (1) CAT A: Bins 1 and 2 receive FIM A and C mailpieces.
   (2) CAT B: Bins 3 and 4 receive Stamp, Meter, FIM B and D, script, and no (address) line mailpieces.
   (3) CAT C: Bins 5 and 6 receive Stamp, Meter, FIM B and D, and imprint mailpieces.
   (4) CAT D: Bin 7 receives bypass (reject) mailpieces.

e. CANCEL ONLY Mode

The mailpieces will be sorted in sequence from bin 1 through 6. When a bin becomes 100% full, mail will be directed into the next available (unfull) bin. If all six bins become full, the feeder servo motor will stop. The Facer/Canceler must be stopped and restarted to resume mail feed once one or more bins are emptied. Most importantly, the mailpieces statistics will NOT be incremented for the report data.

5-6 Test Modes

5-6.1 Culler Test Mode

5-6.1.1 Description

The P-OTC89 card may be placed in a test mode to activate various lamps and motors in Units 1–7. The primary advantage of the test mode is the continuous running of the Incline Conveyor belts or the Overthick Conveyor belts for belt tracking.

5-6.1.2 Procedure

Jumpers on the P-OTC89 card must be changed to the test mode configuration. Refer to **Table 5-6.1.2a.** The Culler section of the AFCS/ISS must be started to run the Culler tests. To start a specific test, move rotary switch S2 on the P-OTC89 card to the desired test position. Refer to **Table 5-6.1.2b.** To change to another test, move rotary switch S2 to the appropriate test position. To stop all Culler tests, place rotary switch S2 in the A - F position and stop the Culler section.

Note: After running the Culler tests, ensure that jumpers are configured to the normal mode and that rotary switch S2 is returned to its normal operation position.

Note: The beaters, overthick drums, and flats extractor wheels run in test positions 0–9.

Table 5-6.1.2a
Jumper Configuration

Jumper	J1	J2	J3
Test mode connections:	1-2	2-3	1-2
Normal mode connections:	1-2	1-2	1-2

Table 5-6.1.2b
Culler Tests

Switch Position	Test Name	Description
0	Main Overthick Conveyor	Continuously runs the flat overthick conveyor motor.
1	Secondary Overthick Conveyor	Continuously runs the incline overthick conveyor motor.
2	Edging Channel Conveyor	Continuously runs the edging channel conveyor (waterfall) motor.
3	Incline Conveyor	Continuously runs the incline conveyor motor at full speed.
4	Aux Relay	Activates the aux relay for surge feed motor run.
5	Hopper Vibrator	Continuously runs the vibrator in the input hopper.
6	Incline Jam Lamp	Blinks the red jam lamp at the incline conveyor.
7	Edging Channel Jam Lamps	Blinks the two red jam lamps at the edging channel (waterfall).
8	Incline Red Pole Lamp	Turns on the red (hopper empty) pole lamp at the incline conveyor.
9	Incline Yellow Pole Lamp	Turns on the yellow (hopper low) pole lamp at the incline conveyor.
A - F	Stop all Culler tests	All lamps, motors, and belts are off.

5-6.2 Servomotor Test Modes

5-6.2.1 Description

Six tests are available for each of the Singulator and Feeder servo motor systems. Refer to **Table 5-6.2.1.** Three of the servo tests — tests A, E, and F — are used during alignment of the servo motors (in Table 5-6.2.1, these three tests are noted with an asterisk). Test C is a good operational test of the servomotor subsystem. When a test is selected, the /FTEST signal is set to an active low state, and approximately 1 second later the /FLTEST signal is set to low and the test begins. Whenever a test is running, the TEST and START LEDs on the P-FSC89 card should be on.

5-6.2.2 Procedure

Tests are selected by using the appropriate rotary switch on the P-FSC89 printed circuit card. Switch S2 controls Feeder tests, and switch S4 controls Singulator tests. Servo tests may be started by two separate methods. One method is to select the desired test and then start the machine. The other method is to start the machine and then select the desired test. While the machine is running, move the rotary switch to a new position to begin a new test. To restart a test if a test has been stopped, move the rotary switch to another position and return it to the previous test position. The test will restart in 1–2 seconds. All tests can be stopped by moving the rotary switch to a normal setting position (0–9).

Note: Ensure rotary switches S2 and S4 are returned to their normal operating positions after running these test modes.

Table 5-6.2.1
Servomotor Test Modes

Switch Position	Test Name	Test Description	Action to Stop Test
A*	Short Servo Exerciser	Servo is ramped up and down with a quick cycle time.	Open slide; block array or measuring light barrier.
B	Single Pickoff	One letter is fed, then test is stopped.	Open slide.
C	Operational Check	Servomotor is run without motor control enable signals /FFEEDON or /SFEEDON from the P-FSC89 card.	Open slide.
D	Long Servo Exerciser	Servomotor is ramped up and down with a long cycle time.	Open slide, block array or measuring light barriers.
E*	Servo Top Speed	Servomotor is run at top speed for alignment.	Open slide.
F*	Servo Zero Speed	Servomotor is run at zero speed (null creep) for alignment.	Open slide.

** Used during servo motor alignment.*

5-6.3 Facer/Canceler Tests

Note: When any valid test mode is run (01–99), no statistical data is updated or saved by the master or slave P-MPU86 processors.

5-6.3.1 Description

There are many test modes available to aid in the maintenance and diagnosis of problems in the Facer/Canceler. Refer to **Table 5-6.3.1.** The tests are comprised of seven different categories:

a. System Tests
b. Gate Tests
c. Canceler Tests
d. Indicia Detection Tests
e. Scan/Line Find Tests
f. Stacker Gate Tests
g. Print/Verifier Tests.

5-6.3.2 Procedure

With the Facer/Canceler stopped, dial in the appropriate test number on the Operator Control Panel TEST thumbwheel switches. Then press the Start FACER/CAN pushbutton. The thumbwheel switches will be read during the startup sequence, and the Facer/Canceler will then operate in the chosen test mode. To stop a test, stop the Facer/Canceler and return the TEST thumbwheel switches to the normal operation mode (00) position.

Table 5-6.3.1 (p. 1)
Facer/Canceler Tests

Test No.	Test Name	Description	Operator Panel Display
0X		**SYSTEM TESTS**	
00	Normal Operation	Normal Operation of Facer/Canceler	15 Runtime Displays/Messages
01	No ID Tag Printing	Same as for Test 00, but no ID Tags printed. Every mailpiece is counted as an ID Tag Verify Error and reported to IMS. Canceler not Activated.	15 Runtime Display/Messages
02	No ID Tag Printing	Same as for Test 01, (no ID Tags printed) No ID Tag Verify Errors reported to IMS. Canceler not activated.	15 Runtime Display/Messages
1X		**GATE TESTS**	
11	Fan Sort Up	Sorts mailpiece in order from bin 2, 3, 4, 5, 6, 1; mechanical rejects to bin 7. Indicia detection, Scan, Line Find, and Cancel functions are not activated.	T: 11 FAN SORT UP
12	Fan Sort Down	Sorts mailpiece in order from bin 5, 4, 3, 2 1, 6; otherwise same as Test 11.	T: 12 FAN SORT DOWN
13	Inverting Gate-Alternating	Switches the diverter gate with each mailpiece. Sort is per Cancel Only mode. Indicia detect, Scan, Line Find, and Cancel functions are not activated.	T: 13 ALTERN. INVERT.
2X		**CANCELER TESTS**	
21	Trail Die Operate (Canceler 1)	The trail clutch brake assembly (trail die) is activated by the trailing edge of the mailpiece unblocking Canceler Q2 light barrier (except mechanical rejects). Sort per Cancel Only mode. Indicia detection, Scan, and Line Find functions are deactivated and are not monitored by System Control.	T: 21 CANCELER TRAIL
22	Lead Die Operate (Canceler 2)	The lead clutch brake assembly (lead die) is activated by the leading edge of the mailpiece blocking Canceler Q4 light barrier (except mechanical rejects). Otherwise same as Test 21.	T: 22 CANCELER LEAD
23	Cancel Dies-Alternating 1	The diverter gate and the canceler dies alternate operation with each mailpiece. Sort directs lead mailpieces to bin 1 and trail mailpieces to bin 2.	T: 23 ALTERN. CANCEL
24	Cancel Dies-Alternating 2	This is the same as Test 23, but mailpieces are sorting using the fan sort up sequence (bins 2, 3, 4, 5, 6, 1).	T: 24 ALTERN. CANCEL
25	Cancel Service	Enables the P-STA22 toggle switches for control of the cancel operation.	T: 25 CANC. SERVICE

Table 5-6.3.1 (p. 2)
Facer/Canceler Tests

Test No.	Test Name	Description	Operator Panel Display
3X		**INDICIA DETECTION TESTS**	
30	Indicia Calibration	Enables Indicia Calibration mode of operation. Monitors input of the Indicia Calibration light barrier (IALI11). Enables P-BAT3 calibration circuits, and ignores P-BAT4 needs calibration signals. Calibration cards are sorted to bin 7. Must use Indicia Calibration Card set.	T: 30 INDICIA CALIBRATION
31	IND DET 1 results	The results of the indicia scan for the last letter fed for the specified detector is displayed. The canceler is disabled, and sortation is per sort plan switches.	IND: x :FIM l 1 l 2 l 3 l 4 l Where x is the detector number and Column 1 is the FIM type
32	IND DET 2 results	Same as for Test 31.	Column 2 is Red stamp.
33	IND DET 3 results	Same as for Test 31.	Column 3 is Green stamp.
34	IND DET 4 results	Same as for Test 31.	Column 4 is Meter mark.
4X		**SCAN/LINE FIND (ENRICHER) TESTS**	
		The following error/malfunction/test messages may occur in Test 41 - 44. Also provided is a brief description for each message. Message Format: ENx <a> <b> <c> <d> See below for interpretation.	
	x = Test Mode 1 = Test 41 2 = Test 42	a = Image side <TR> = trail <LD> = lead	
	b = Address Type <SC> = script <IM> = imprint	c = Results <> = Lines <NO> = no lines	
	d = Not Used		
	EN TEST * NO INFOR *	Enricher does not provide any information.	
	EN TEST * ILLEG INFOR *	Enricher provides information, but none expected.	
	EN TEST * BAD UALE *	Enricher information is for wrong side (lead/trail).	
	EN TEST * ERROR SET *	Enricher signal ENFEHL is active (watchdog, etc.).	
	MAL EN TRACKING	Enricher dialog is too erroneous, or signals ENFEHL OR ENINFO are active after enricher reset. (This message appears only when the enricher is on.)	
41	Trail Enricher Test	Each mailpiece (except mechanical rejects) is enabled as trail for enricher scan and Line Find processing. The result for each mailpiece is displayed. Sortation follows this criteria: Bin 1: Script (handwriting). Bin 2: Print (machine imprinted). Bin 3: No line. Bin 4: Bin 7:	EN1: <> <> <> <>
42	Lead Enricher Test	Same as Test 41	EN2: <> <> <> <>

Table 5-6.3.1 (p. 3)
Facer/Canceler Tests

Test No.	Test Name	Description	Operator Panel Display
4X		**SCAN/LINE FIND (ENRICHER) TESTS**	
43	Enricher Test	Same as normal operation, but cancelers are disabled. Sortation per sort plan switches. In case of error, the enricher is not reset and initialized.	T: 43 ENRICHER TEST
44	Enricher Single Feed Left Side	When requested by enricher, a single mailpiece is fed. Sortation into stacker 6.	T: 44 EN 1 SINGLE FEED
45	Scanner Maintenance	Same as normal operation, but cancelers are disabled, and results are not evaluated. Items are sorted to Bin 1.	T: 45 SCANNER MAINT.
46	Enricher Single Feed Right Side	Same as Test 44, but for the right side.	T: 46 EN2 SINGLE FEED
49	Scanner Lamp Test	Selected when the AFCS/ISS is stopped. The scanner halogen lamps are turned on. Machine START switches are disabled.	AAT - TEST *NO START*
5X		**STACKER GATE TESTS**	
51	Stacker 1 Gate	All items are sorted to the designated stacker. The inverter, Indicia detection, Scan, Line Find, and Canceler are disabled.	T: 5X SINGLE STK SORT
52	Stacker 2 Gate	Same as Test 51.	Same as Test 51.
53	Stacker 3 Gate	Same as Test 51.	Same as Test 51.
54	Stacker 4 Gate	Same as Test 51.	Same as Test 51.
55	Stacker 5 Gate	Same as Test 51.	Same as Test 51.
56	Stacker 6 Gate	Same as Test 51.	Same as Test 51.
6X		**PRINTER VERIFIER TESTS**	
		The following ID Tag information is displayed at the Operator Control Panel for tests 61–64. The information displayed is provided by the active ID Tag verifier, determined by position of test select switches. 1234+12+13+12345+1+0 (1234) = Machine Number (12) = Day (1..31) (13) = Time (0..47) (12345) = Sequence Number (0..25000) (1) = Mail Class (1,3) (0) = Error (0..3) If the verifier does not detect an ID tag or detects a ID Tag error, it will display one of the following: **INVALID ID TAG** - Incorrect ID Tag **NO ID TAG** - No ID Tag found If the “+” character is replaced with a “-”, the bar code data is correct, but the distance between the bar codes is not.	

Table 5-6.3.1 (p. 4)
Facer/Canceler Tests

Test No.	Test Name	Description	Operator Panel Display
6X		**PRINTER VERIFIER TESTS**	
61	Printer 1 Test (Lead)	Print 1 (Lead) is activated for every mailpiece. Each mailpiece is directed over both inverters. Verifier 1 (Lead) evaluates the printed ID tag and displays the results on the Operator Control Panel. The sortplan has the following format: Bin 1: 0 Error in the ID tag. Bin 2: 1 Error in the ID tag. Bin 3: 2 Error in the ID tag. Bin 6: Illegal code. Bin 7: Missing code.	**ID TAG TEST**
62	Printer 2 Test (Trail)	Same as for test 61, but for right printer.	**ID TAG TEST**
63	Verifier 1 Test (Lead)	For each mailpiece, Verifier 1 left reads the ID Tag and the result is displayed on the Operator Control Panel. Sort is as in Test 61.	**ID TAG TEST**
64	Verifier 2 Test (Trail)	Same as for Test 63, but for right verifier.	**ID TAG TEST**

5-6.4 Printer Tests

5-6.4.1 System Print Test

The System Print Test exercises the P-MPU86 slave, P-PIF10, and both ID Tag printers from the AFCS/ISS Operator Control Panel. This test is useful in troubleshooting interface problems in the ID Tag Print Function to isolate the cause of a print-related problem. Use the following procedures to run the System Print Test:

1. Enter the appropriate test number (“61” to test ID Tag Printer 1 - Lead, or “62” to test ID Tag Printer 2 - Trail) using the test Mode Thumbwheel switches on the Operator Control Panel. Refer to Test No. 6X in Table 5-6.3.1.
2. Press the Start Facer/Can switch on the Operator Control Panel.
3. Feed a blank test card.

The selected ID Tag printer prints an ID Tag on the test card. The ID Tag Verify function for that ID Tag printer scans, processes, and reports the ID Tag result to the P-MPU86 slave. The P-MPU86 slave sends the ID Tag result in a data word to the P-MPU86 master, and the master displays the ID Tag result on the Operator Control Panel. The display is formatted as shown in Test No. 6X in Table 5-6.3.1. Sortation of test cards is also described in Test No. 6X in Table 5-6.3.1.

Note: MMO-010-96 refers to the standard ID Tag Template (NSN 9330-03-000-6399) for the Remote Bar Code System (RBCS).

5-6.4.2 P-PIF10 Print Test

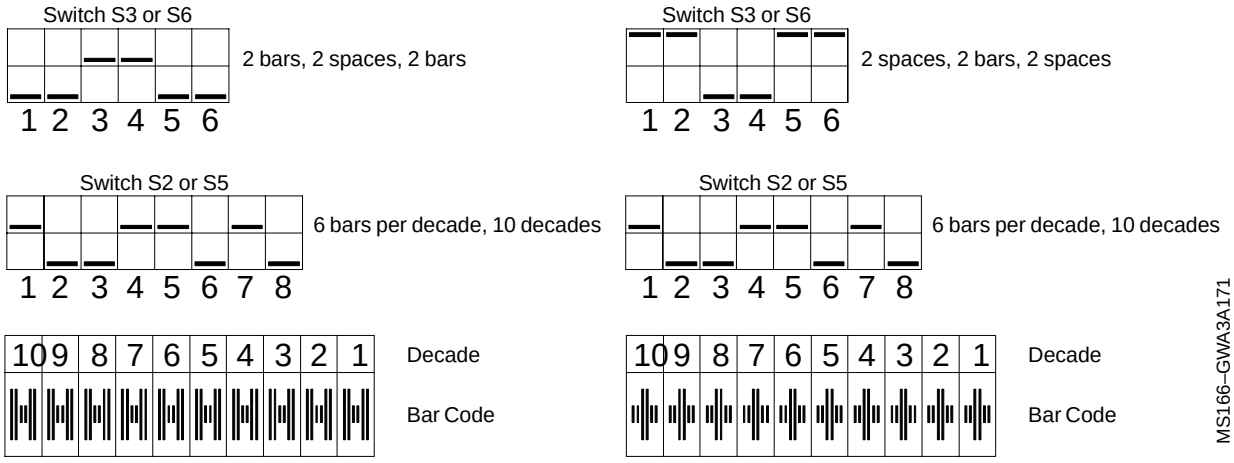
The P-PIF10 Print Test is used to check the interface between the P-PIF10 and the ID Tag printers. When the P-PIF10 is in the TEST PRINT mode, the P-MPU86 slave will not send ID Tag print data to the P-PIF10 for forwarding to the ID Tag printer. The ID Tag printers will print an ID Tag on each side of the same blank test card as determined by the positioning of the P-PIF10 DIP switches S2 and S3 for ID Tag Printer 1, and S5 and S6 for ID Tag Printer 2. Use the following procedures to run the P-PIF10 Print Test:

1. Set the appropriate DIP switches on the P-PIF10.

   Note: The structure of the ID Tag patter is divided into decades. A decade is defined as the specific space needed to print six bars or a combination of bars and spaces equal to six. Positioning a DIP switch segment UP turns that segment ON. Leaving the DIP switch segment DOWN turns that segment OFF.

   ID Tag Printer 1. P-PIF10 DIP switch S3/1-6 determines the bar pattern for one decade. DIP switch S2/1-4 determines the number of bars (2-6 bars) per decade, and DIP switch S2/5-8 determines the number of decades to spray. Refer to **Figure 5-6.4.2** for switch setting examples.

Figure 5-6.4.2
Switch Setting Examples for the P-PIF10 Print Test



ID Tag Printer 2. DIP switch S6/1–6 determine the bar pattern for one decade. DIP switch S5/1–4 determine the number of bars (2–6 bars) per decade, and DIP switch S5/5–8 determine the number of decades to spray. Refer to Figure 5-6.4.2 for switch setting examples.

Note: Placing the Test Print switch on the service panel in the AM2 card cage to the ON position will override settings on the Operator Control Panel.

2. Place the TEST PRINT switch on the service panel in the AM2 card cage to the ON position. The yellow LEDs H2 and H3 on the P-PIF10 will light up.
3. Press the Start Facer/Can switch on the Operator Control Panel.
4. Feed a blank test card.
5. The selected ID Tag test pattern for ID Tag Printers 1 and 2 (as set on switches S2, S3, S5, and S6 on the P-PIF10) will be sprayed on each side of the blank test card.
6. The blank test card sorts to the Reject Bin.

DIP switches S3 and S6 have eight segments, but only the first six are used. Each segment is set to represent either a bar or a space.

DIP switches S3 and S6 settings: ON (UP) = 0 or a Space;
OFF (DOWN) =1 or a Bar.

DIP switches S2 and S5 use a binary count as show in **Table 5-6.4.2.**

Table 5-6.4.2
Binary Number Settings for S2 and S5

DIP SWITCH S2	1	2	3	4	5	6	7	8
BINARY NUMBER	1	2	4	8	1	2	4	8
DIP SWITCH S5	1	2	3	4	5	6	7	8
BINARY NUMBER	1	2	4	8	1	2	4	8

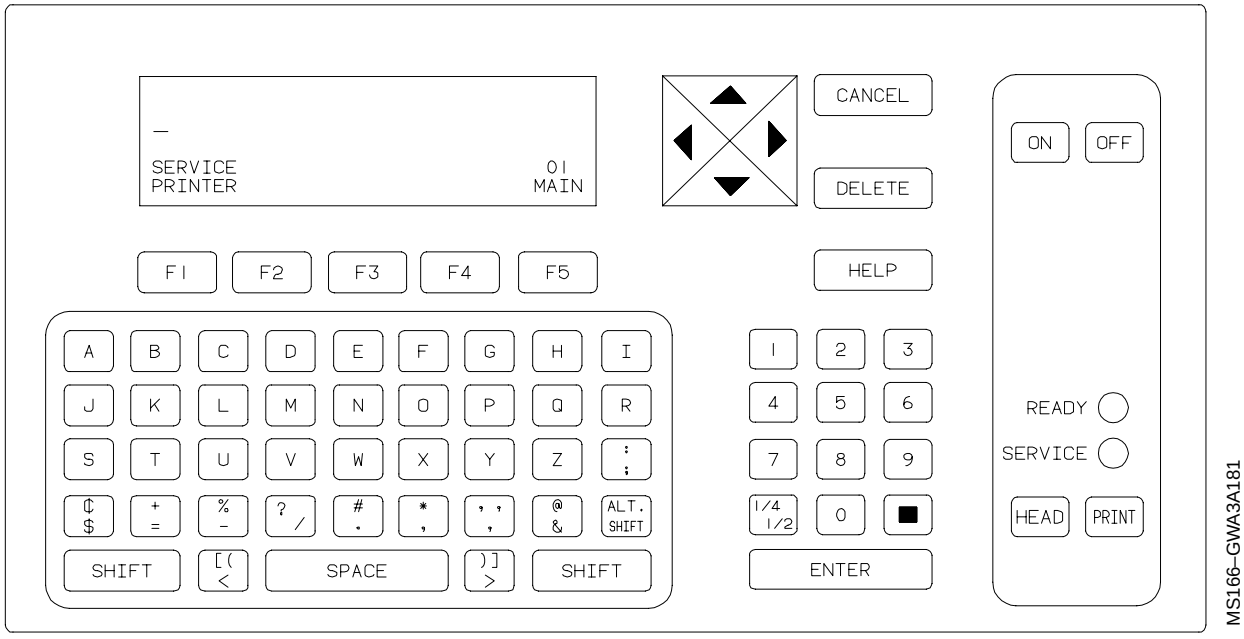
DIP switches S2 and S5 settings: ON (UP) = 0; OFF (DOWN) = 1.

Switch Setting Examples for the P-PIF10 Print Test

5-6.4.3 PC-80 Printer Test

The PC-80 Printer Test is a stand-alone test that is a useful troubleshooting tool. The PC-80 Printer Test is used to determine the ability of the ID Tag printer to spray an ID Tag of all bars for 30 seconds. (See **Figure 5-6.4.3** for an illustration of the PC-80 printer control panel.)

Figure 5-6.4.3
Ink Jet Printer (PC-80) Printer Control Panel



Use the following procedures to test either PC-80 printer.

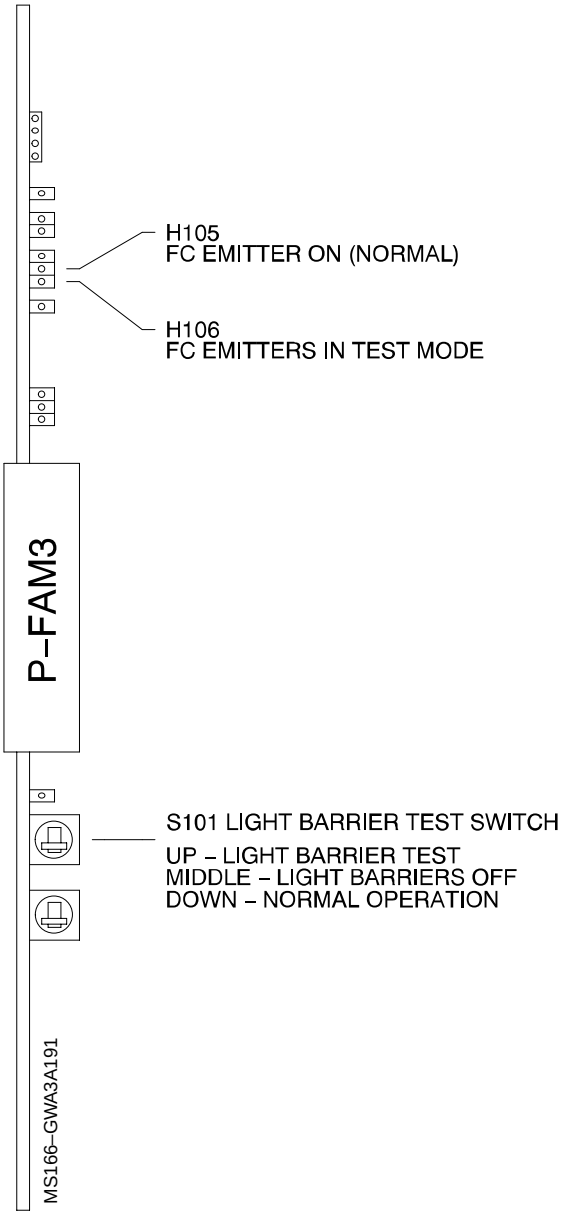
1. Ensure the AFCS/ISS is not running.
2. Make sure the green Ready, Head, and Print LEDs are illuminated on the ID Tag Printer Control Panel.
3. Press the Print key on the keypad. The green LED on the Print key and the Ready key LED will be extinguished.
4. Place a piece of white card stock between the printhead nozzle and the transport belt (NOT between the transport belts).
5. On the ID Tag Printer Control Panel, press the F1 key on the keypad.
6. Press the F5 key on the keypad. The ID Tag Printer Control Panel display will read “SERVICE”.
7. Press the F2 key on the keypad to enable the high voltage to the printhead.
8. Hold down the Shift key on the keypad, press the F3 key, and then release both keys. The ID Tag printer will spray a series of bars for 30 seconds. Move the card stock to the right or left to record the bar pattern. To stop the test before the end of the 30-second time period, press the F3 key on the keypad.
9. At the end of 30 seconds, the ID Tag printer will automatically exit the test and stop spraying bars.
10. Press the Enter key on the keypad twice.
11. Press the print key on the keypad. The green Ready, Head, and Print LEDs on the ID Tag Printer Control Panel will illuminate to signify the ID Tag printer has returned to the normal mode of operation.

5-6.5 Facer/Canceler Light Barrier Test

5-6.5.1 Description

Testing all light barriers in the Facer/Canceler is made easy by a three-position switch (S101) on the P-FAM3 card (see **Figure 5-6.5.1**).

Figure 5-6.5.1
P-FAM3 Circuit Card Test Modes



5-6.5.2 Procedure

When the S101 switch on the P-FAM3 card is placed in the UP position, all light barriers are placed into the low voltage test mode. In this test mode, the applied emitter voltage is about +4 VDC. This causes a reduction in the intensity of the infrared light to the receivers, thus providing a check for marginally operational light barriers.

To locate a weak or faulty light barrier, simply start the Facer/Canceler. If the Facer/Canceler runs, all Facer/Canceler light barriers have passed the test. If the Facer/Canceler does not run, check the control panel for a jam message. Also, perform a check of all LEDs that monitor light barriers on specific PC cards. All green light barrier LEDs should be on when unblocked, and all red LEDs should be off when unblocked.

The jam message will give you the physical location of the faulty light barrier and a Q number representing the light barrier within the location area. Pushing Next Display button on the control panel at this time will show the next faulty light barrier, if there is one. Refer to the Jam/Tracking Section 4 for location of any faulty light barriers.

Note: Stacker jam messages do not indicate a specific stacker light barrier; instead, they show the stacker module where the jam occured.

When this switch is placed in the MIDDLE position, all light barriers are placed into the no-voltage test mode. In this test mode the applied emitter voltage is 0 VDC. This removes any infrared light to the receivers, thus providing a check for shorted or always unblocked light barriers. Again, observe the LEDs that monitor light barriers. All green light barrier LEDs should be off, and red LEDs should be on.

6 Data Collection Computer and Software Reference Guide

6-1 Introduction

This section provides instructions for using the Data Collection Computer (DCC) software. The use of DCC/MEAS (Maintenance Expert Advisor System) software will require some familiarity with the Windows environment. DCC software provides the capability to monitor AFCS status, collect data, send collected data over a network, and produce reports for up to eight AFCS machines.

DCC software provides the following options:

a. The ability to display the current status of each AFCS, display and print a log showing the maintenance work performed on each machine, display corrective actions for various AFCS failures, print reports, and set program configuration parameters for MEAS functions.

b. The ability to connect or disconnect AFCSs, poll (i.e., collect) data from the AFCSs and display the data on a computer monitor, send test information to an AFCS, and set program configuation parameters for RS-485 communications.

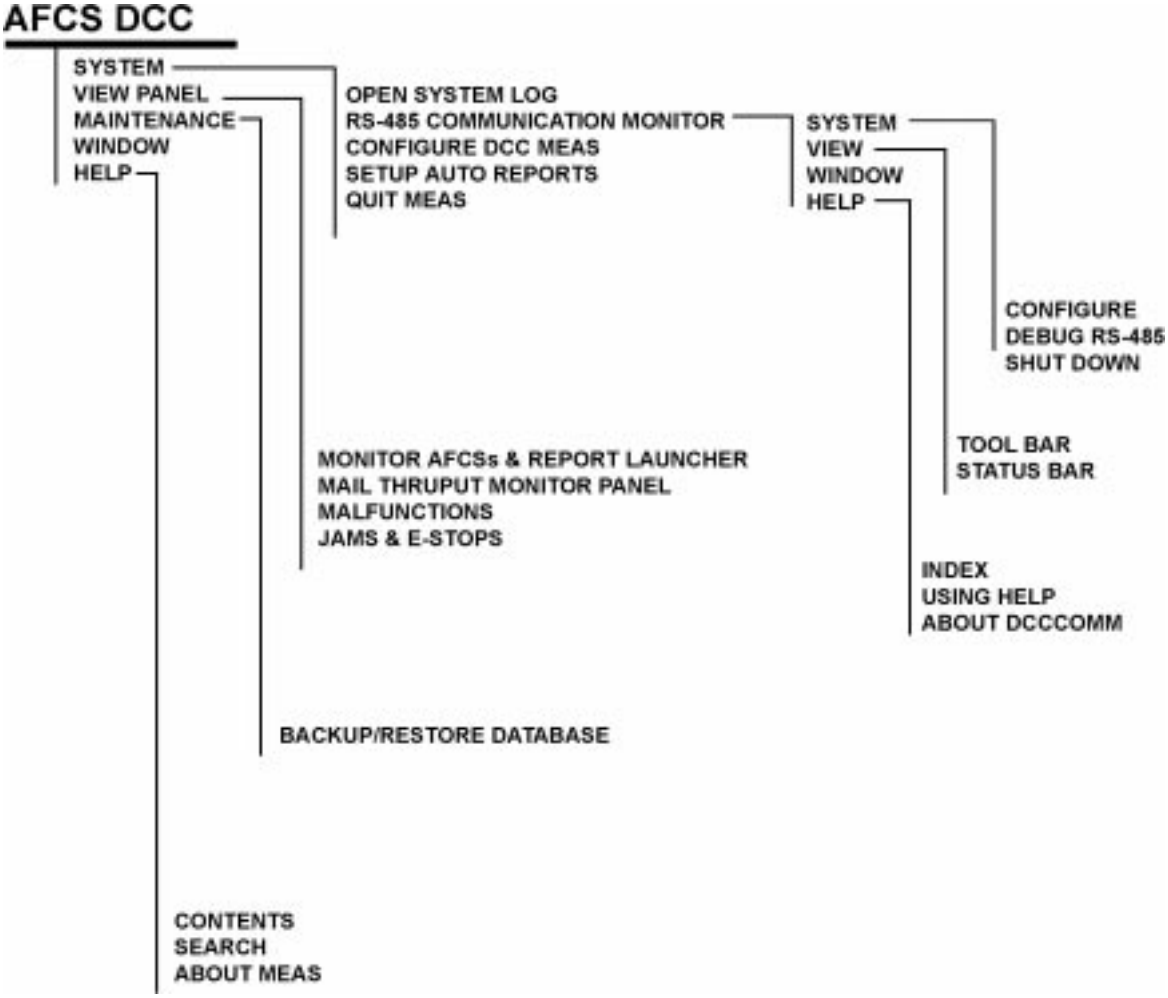
c. The ability to install and uninstall National Directory Subsystem (NDSS) communications, back up and restore the AFCS database, access program modules, change the time zone and daylight saving time settings, and shut down the program.

6-2 About This Software

6-2.1 DCC Menu Flow

DCC is a menu driven program. **Figure 6-2.1** illustrates the configuration of the software options.

Figure 6-2.1
DCC Menu Flow Diagram



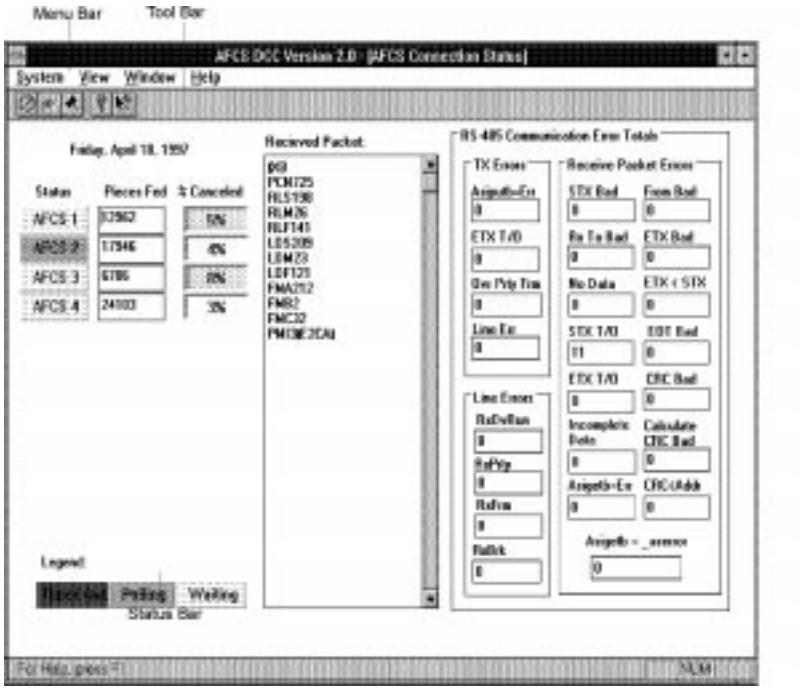
6-2.2 Typical Window Design

All DCC windows are designed in a similar manner. Menu options and tool bars might differ from window to window, but in all windows menu options and tool bars are always located in the same area and are always accessed in the same manner. The following sections describe typical DCC software features.

6-2.2.1 Menu Bar, Tool Bar, Status Bar

Figure 6-2.2.1 illustrates the menu bar, tool bar and status bar.

Figure 6-2.2.1
Menu Bar, Tool Bar, Status Bar



The menu bar is located near the top of the window. The menu displays the names of top-level options. Clicking on a top-level option usually results in the display of a list of related sub-options.

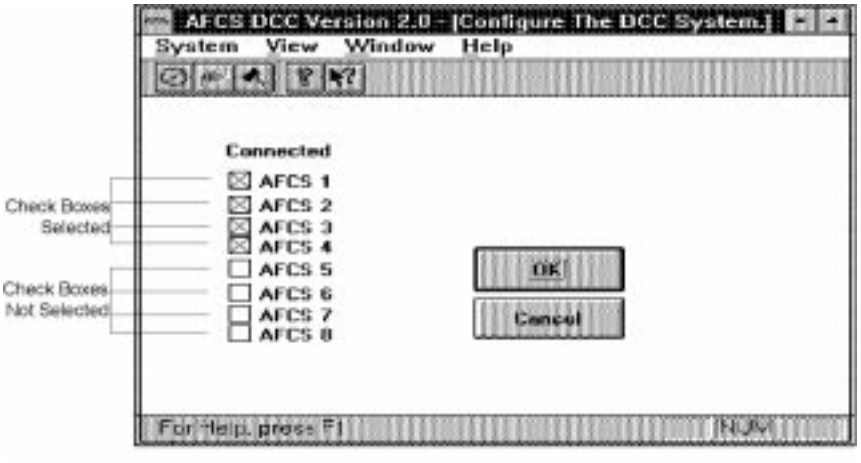
The tool bar is located near the top of the window directly below the menu bar. The tool bar contains icons (small graphics). Clicking on an icon activates the function it represents.

The status bar is located near the bottom of the window. The status bar displays descriptive information pertaining to some of the displayed functions. Status bar information changes to represent the selected function.

6-2.2.2 Check Boxes

Check boxes are designed so that either an “X” or a check mark results from the mouse click. A blank box indicates an off status or unselected parameter. **Figure 6-2.2.2** shows examples of some check boxes (in the figure, four are selected and four are not selected).

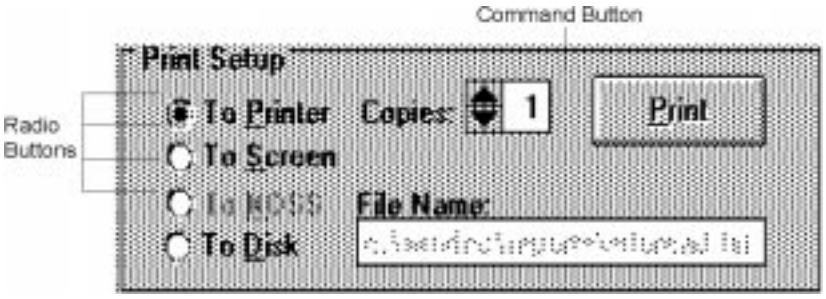
Figure 6-2.2.2
Check Boxes Example



6-2.2.3 Buttons

Figure 6-2.2.3 illustrates a portion of a window that uses the two basic types of buttons used throughout the DCC software — radio buttons and command buttons.

Figure 6-2.2.3
Radio Buttons and Command Buttons



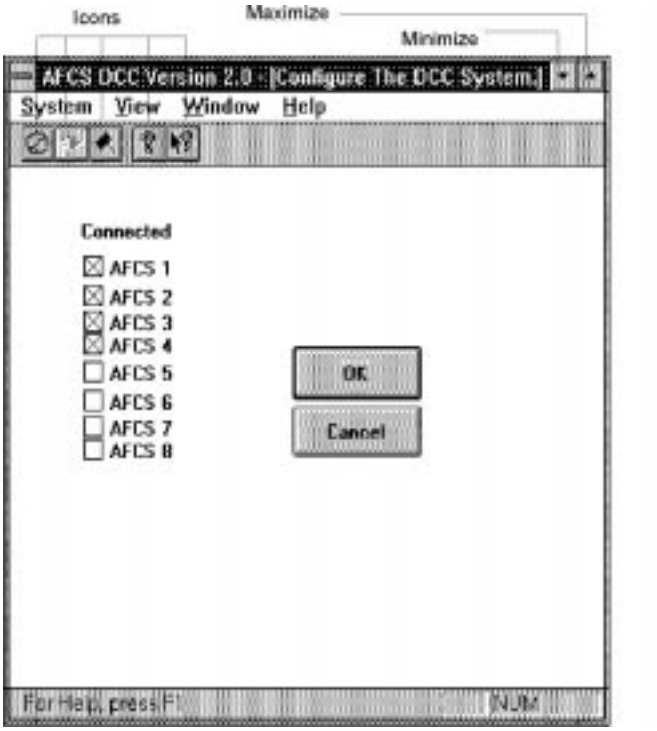
Radio buttons are in the shape of circles and are located next to parameters. They are used to show the status (selected or not selected) of the parameter. The circle has a dark center when a parameter is selected.

Command buttons represent functions that can be executed by clicking on the desired command button.

6-2.2.4 Icons, Minimize, Maximize, Restore

Icons are small graphic images with specific meanings. There are two types of icons used in Windows programs — application icons and function icons. An application icon represents an application and is displayed when the application is inactive. A function icon appears in the toolbar and represents functions such as stop, go to (another window or the next or previous page), print, and zoom. Icons are illustrated in **Figure 6-2.2.4.**

Figure 6-2.2.4
Minimize/Maximize Buttons and Icons



A window can be minimized but still be easily accessible by clicking on the down-pointing arrow in the upper-right corner of window (see **Figure 6-2.2.4**). The window turns into an icon located at the bottom of the window. To restore the window (icon) to its original size, click on the icon and select the restore option.

A window can be made as large as the computer screen allows by clicking on the maximize button. A maximized window can quickly be restored to its original size and shape by clicking on the restore button, which is a double-headed triangle in the upper-right corner of the window (not shown).

6-3 Installing the AFCS DCC Software

WARNING: ***Installing this program will reformat the entire hard drive. All files will be deleted from the hard drive. If this program is being installed on a computer with files that need to be saved, follow local backup procedures before installation.***

CAUTION: ***Do not install this software unless the computer has a minimum of 12 MB RAM and 170 MB hard disk space. If the computer does not meet these hardware requirements, upgrade the computer in accordance with the AFCS Data Collection Computer Hard Drive and Memory Upgrade Procedure located in Section 6-7 before continuing.***

This procedure assumes that all hardware is installed, plugged into a power source, and powered up.

The AFCS DCC program consists of the following seven diskettes:

1. Setup
2. WIN-1
3. WIN-2
4. WIN-3
5. APP-1
6. APP-2
7. Emergency Bootup

Select one of the following installation procedures:

a. If software is being installed onto a hard drive that already has data on it, go to Section 6-3.1.

b. If the software is being installed onto a newly installed hard drive, go to Section 6-3.2.

c. If the software is being installed onto a newly purchased computer, or is being reinstalled after a software failure occurs and there is no backup diskette available, go to Section 6-3.3.

d. If the sortware is being reinstalled after a software failure occurs and a backup diskette is available, go to Section 6-3.4.

6-3.1 Installing on a Hard Drive With Existing Data

WARNING: ***FDISK will erase all of the data from the hard drive. All files will be deleted from the hard drive. Follow local backup procedures before performing the following procedure.***

Insert the Emergency Bootup diskette into drive A and then simultaneously press the Ctrl, Alt, and Delete keys. In a few moments the computer will reboot.

The following screen will be displayed:

Installing on a Hard Drive With Existing Data — Screen 1

```
Starting MS-DOS

Current date is Wed 01-20-1999
Enter new date (mm-dd-yyyy)
```

If the data is correct, press the Enter key. (If the date is not correct, enter the correct date and then press the Enter key.)

The following screen will be displayed:

Installing on a Hard Drive With Existing Data — Screen 2

```
Current time is 13:26:56.22p
Enter new time:
```

If the time is correct, press the Enter key. (If the time is not correct, enter the correct time and then press the Enter key.)

The following screen will be displayed:

Installing on a Hard Drive With Existing Data — Screen 3

```
Microsoft® MS-DOS® Version 6.22

© Copyright Microsoft Corp 1981–1984
A:\>
```

Enter FDISK and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 4

```
                    FDISK Options

Current Fixed disk drive:  1

Choose one of the following:
1. Create DOS partition or logical Drive
2. Set active partition
3. Delete partition or Logical DOS Drive
4. Display partition information

Enter choice [ ]

Press Esc to exit FDISK
```

Enter 3 and then press the Enter key.

The following screen will be displayed:

Installing on a Hard Drive With Existing Data — Screen 5

Delete DOS Partition or Logical Drive

Current Fixed disk drive: 1

Choose one of the following:
1. Delete Primary DOS Partition
2. Delete Extended DOS Partition
3. Delete Logical DOS Drive(s) in the Extended DOS Partition
4. Delete NON-DOS Partition

Enter choice [ ]

Press Esc to exit FDISK

Enter 3 and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 6

Delete Logical DOS Drive(s) in the Extended DOS Partition

Current Fixed disk drive: 1

Drive	*Volume Label*	*Mbytes*	*System*	*Usage*
D		*97*	*UNKNOWN*	*100%*

Total Extended DOS Partition size is 97 Mbytes (1 Mbyte = 1048576 bytes)

WARNING! Data in the deleted Logical DOS Drive will be lost.
What drive do you want to delete..? [ ]

Press Esc to continue

Note the volume label, if any. Enter D and then press the Enter key.

The following will be displayed near the bottom of the screen:

Installing on a Hard Drive With Existing Data — Screen 7

Enter Volume Label……? [ ]

There are two possible actions:

a. If there was no volume label shown in Screen 6, press the Enter key.

b. If there was a volume label shown in Screen 6, enter [Volume Label] (up to 11 alphanumeric characters) and then press the Enter key.

The following will be displayed near the bottom of the screen:

Installing on a Hard Drive With Existing Data — Screen 8

Are you sure (Y/N)……[N]

Enter Y and then press the Enter key.

The following will be displayed near the bottom of the screen:

Installing on a Hard Drive With Existing Data — Screen 9

All logical drives deleted in the Extended DOS Partition.

Press the Esc key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 10

```
Delete Logical DOS Drives in the Extended DOS Partition
No logical drives defined
Drive letters have been changed or deleted
Press Esc to continue
```

Press the Esc key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 11

```
                    FDISK Options
Current Fixed disk drive:  1
Choose one of the following:
1. Create DOS partition or logical Drive
2. Set active partition
3. Delete partition or Logical DOS Drive
4. Display partition information
Enter choice [ ]
Press Esc to exit FDISK
```

Enter 3 and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 12

```
                Delete DOS Partition or Logical Drive
Current Fixed disk drive:  1
Choose one of the following:
1. Delete Primary DOS Partition
2. Delete Extended DOS Partition
3. Delete Logical DOS Drive(s) in the Extended DOS Partition
4. Delete NON-DOS Partition
Enter choice [ ]
Press Esc to exit FDISK
```

Enter 2 and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 13

```
                Delete Extended DOS Partition
Partition  Status  Type      Volume Label  Mbytes  System    Usage
C:1                PRI DOS                 65      UNKNOWN   40%
  2                EXT DOS                 97      UNKNOWN   60%
Total disk space is 162 Mbytes (1 Mbyte = 1048576 bytes)
WARNING! Data in the deleted Logical DOS Drive will be lost.
Do you wish to continue?          [Y]       [N]
Press Esc to continue
```

Enter Y and then press the Enter key.

The following will be displayed near the bottom of the screen:

Installing on a Hard Drive With Existing Data — Screen 14

```
Extended DOS Partition deleted
```

Press the Esc key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 15

```
                    FDISK Options

Current Fixed disk drive:  1

Choose one of the following:
1. Create DOS partition or logical Drive
2. Set active partition
3. Delete partition or logical Drive
4. Display partition information

Enter choice [ ]

Press Esc to exit FDISK
```

Enter 3 and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 16

```
                Delete DOS Partition or Logical Drive

Current Fixed disk drive:  1

Choose one of the following:
1. Delete Primary DOS Partition
2. Delete Extended DOS Partition
3. Delete Logical DOS Drive(s) in the Extended DOS Partition
4. Delete NON-DOS Partition

Enter choice [ ]

Press Esc to exit FDISK
```

Enter 1 and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 17

```
                    Delete Primary DOS Partition

Partition     Status   Type         Volume Label   Mbytes   System      Usage
C:1                    PRI DOS                     65       UNKNOWN     40%

Total disk space is 162 Mbytes (1 Mbyte = 1048576 bytes)

WARNING: Data in the deleted Logical DOS Drive will be lost.
What primary partition do you want to delete.....? [ ]

Press Esc to continue
```

Note the Volume Label, if any. Enter 1 and then press the Enter Key.

The following will be displayed near the bottom of the screen:

Installing on a Hard Drive With Existing Data — Screen 18

```
Enter Volume Label.....? [ ]
```

There are two possible actions:

a. If there was no volume label shown in Screen 17, press the Enter key.

b. If there was a volume label shown in Screen 17, enter [Volume Label] (up to 11 alphanumeric characters) and then press the Enter key.

The following will be displayed near the bottom of the screen:

Installing on a Hard Drive With Existing Data — Screen 19

```
Are you sure (Y/N).....? [N]
```

Enter Y and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 20

```
                    Delete Primary DOS Partition
Current Fixed disk drive: 1
Total disk space is 162 Mbytes (1 Mbyte = 1048576 bytes)
Primary DOS Partition deleted
Press Esc to continue
```

Press the Esc key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 21

```
                        FDISK Options
Current Fixed disk drive:  1
Choose one of the following:
1. Create DOS partition or logical Drive
2. Set active partition
3. Delete partition or Logical DOS  Drive
4. Display partition information
Enter choice [ ]
Press Esc to exit FDISK
```

Enter 1 and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 22

```
                  Create DOS Partition or Logical Drive
Current Fixed disk drive:  1
Choose one of the following:
1.  Create Primary DOS Partition
2.  Create Extended DOS Partition
3.  Create Logical DOS Drive(s) in the Extended DOS Partition
Enter choice [ ]
Press Esc to return to FDISK options
```

Enter 1 and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 23

Create Primary DOS Partition

Current Fixed disk drive: 1

Choose one of the following:
Do you wish to use the maximum available size for a Primary DOS Partition and make the partition active (Y/N)? [ ]

Press Esc to return to FDISK options

Enter Y and then press the Enter key.

The following screen will be displayed near the bottom of the screen:

Installing on a Hard Drive With Existing Data — Screen 24

Primary DOS Partition created, drive letters changed or added

Press the Esc key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 25

FDISK Options

Current Fixed disk drive: 1

Choose one of the following:
1. Create DOS partition or logical Drive
2. Set active partition
3. Delete partition or Logical DOS Drive
4. Display partition information

Enter choice [ ]

Press Esc to Exit

Press the Esc key.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 26

System will not restart

Insert DOS system diskette in drive A:
Press any key when ready

Press the Enter key. The computer will reboot.

After the computer has rebooted, press the Enter key twice, and enter C: at the A:\> prompt.

Remove the Bootup diskette from drive A and then insert the Setup diskette.

Simultaneously press the Ctrl, Alt, and Delete keys.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 27

```
AFCS DCC Computer Installation, PHASE I
This procedure will FORMAT the Hard Drive
ALL DATA IN C: WILL BE LOST!!

DO YOU WISH TO CONTINUE (Y/N)
```

Enter Y.

A screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 28

```
AFCS DCC COMPUTER INSTALLATION, PHASE I
This procedure will FORMAT the Hard Drive
All DATA IN C: WILL BE LOST!!!

Formatting Hard Drive...Please Wait...
```

This will take a few minutes to complete. Follow the screen prompts.

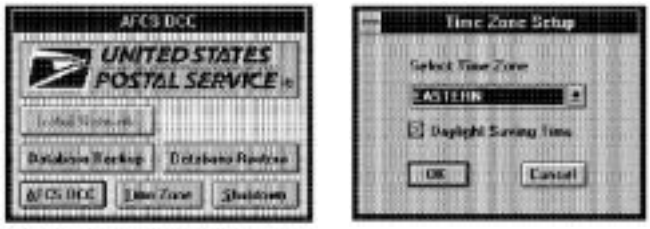
After the software is installed, a screen similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 29

```
SYSTEM INSTALLATION COMPLETED.
The system will now reboot.
Remove the disk from drive A: and
press any key to continue...
```

The following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 30



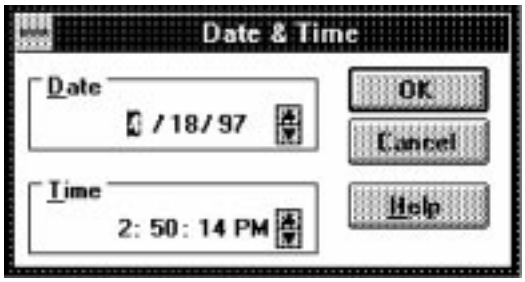
Select a time zone by clicking on the arrow next to the Select Time Zone field and then clicking on one of the choices. Select or deselect daylight saving time by clicking in the check box. Click on the OK button.

A window similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 31

A window similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 32



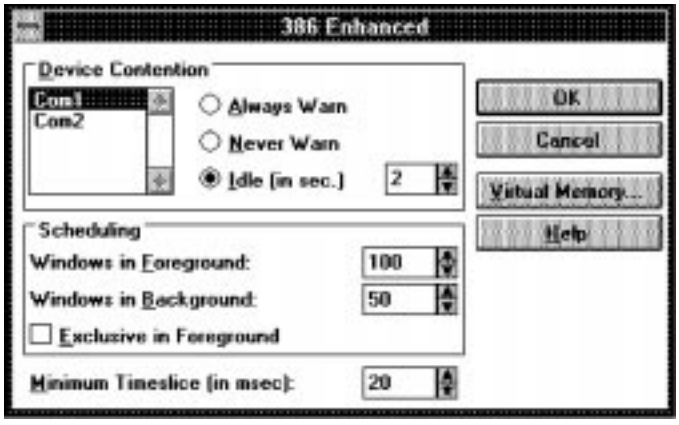
Note: Do not use Daylight Saving Time when setting computer time.

Set to the current date and local standard time and then click on the OK button.

The program will return to the window displayed in Screen 31. Double click on the 386 Enhanced icon.

A window similar to the following will be displayed:

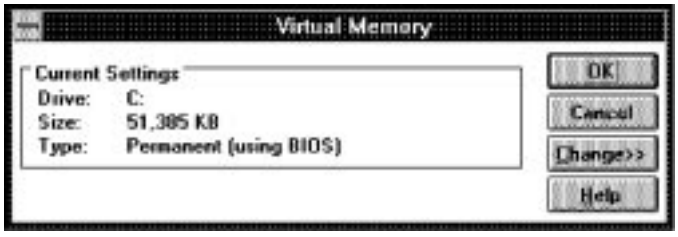
Installing on a Hard Drive With Existing Data — Screen 33



Click on the Virtual Memory button.

A window similar to the following will be displayed:

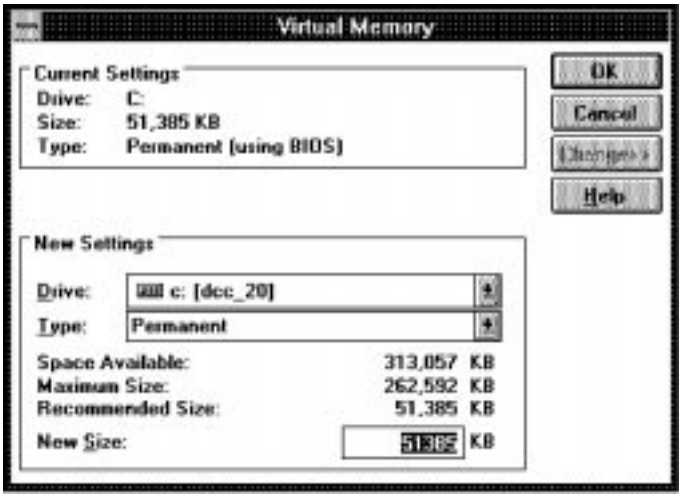
Installing on a Hard Drive With Existing Data — Screen 34



Click on the Change>> button.

A window similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 35



Review the display to ensure that the Drive, Type, and New Size settings are in agreement with Table 6-3.1.

Note: If the settings are not in accordance with Table 6-3.1, contact management immediately.

Table 6-3.1
Virtual Memory Settings (Installing on a Hard Drive With Existing Data)

Parameter	Setting
Drive	C:
Type	Permanent
New Size	Between 20,000 KB and 60,000 KB

Click on the OK button.

The following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 36

Click on the Yes button.

A message will be displayed showing the size of the virtual memory as set in Screen 34. Press the OK button.

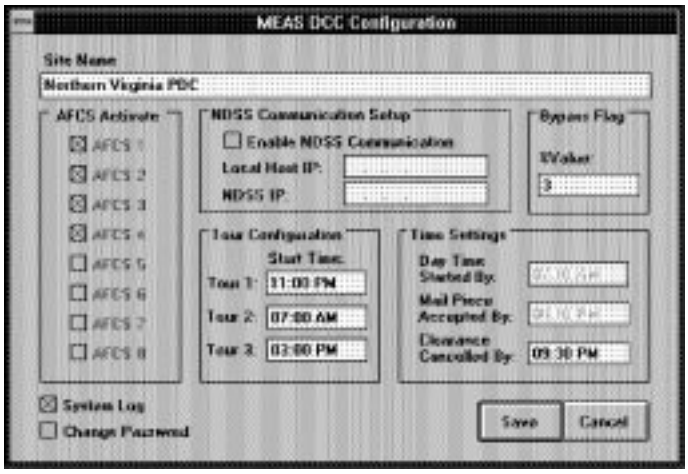
The following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 37

Click on the Restart Windows button. The screen will be blank for a few moments, and then the computer will reboot.

A window similar to the following will be displayed:

Installing on a Hard Drive With Existing Data — Screen 38



The cursor will be located in the Site Name entry field. Enter [SITE NAME] (up to 68 alphanumeric characters) and then press the Tab key.

Note: This window is automatically cleared after 25 minutes and then the Auto Report Setup window (see Screen 40) is displayed. If this occurs before completion of configuration, click on the Exit button and go to Section 6-4.3.1 and follow the procedures to configure DCC MEAS to complete the configuration process.

Enter 3 in the % Value field and then press the Tab key.

Enter [TOUR 1 START TIME] (format hh:mm am/pm) and then press the Tab key.

Enter [TOUR 2 START TIME] (format hh:mm am/pm) and then press the Tab key.

Enter [TOUR 3 START TIME] (format hh:mm am/pm) and then press the Tab key.

Enter [CLEARANCE TIME] (i.e., the time at which the last mailpiece will be cancelled) (format hh:mm am/pm).

Select the AFCSs that should be activated (an “x” denotes active).

There are two possible actions:

a. To set a password, select Change Password (an “x” denotes active) and then click on the Save button. You will then be at Screen 39.

b. To continue without setting a password, click on the Save button. You will then be at Screen 40.

Installing on a Hard Drive With Existing Data — Screen 39

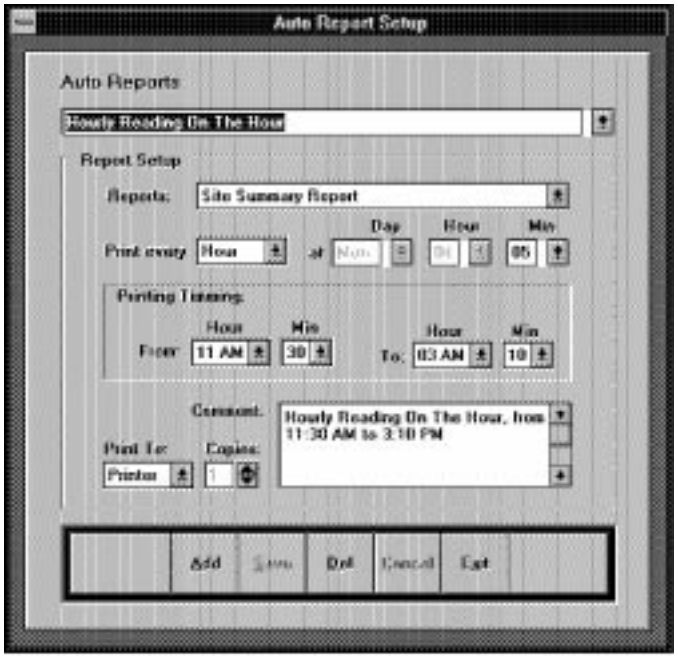
Click in the New Password entry field and enter [PASSWORD] (up to 20 characters). An asterisk will be displayed for each character entered. Press the Tab key and then re-enter the password. Click on the OK button.

There are two possible displays:

a. If the Passwords are not identical, a buzzer will sound and a screen similar to Screen 39 will be displayed again. Double click in the Confirm Password field, re-enter the password, and then click on the Retry button. Repeat this procedure until the password is accepted.

b. If both the New Password and Confirm Password are identical, Screen 40 will be displayed.

Installing on a Hard Drive With Existing Data — Screen 40



There are no settings that need to be made in this window. Click on the Exit button. Go to Section 6-4.

6-3.2 Installing on a New Hard Drive

Insert the Emergency Bootup diskette into drive A and then simultaneously press the Ctrl, Alt, and Delete keys. In a few moments the computer will reboot.

A screen similar to the following will be displayed:

Installing on a New Hard Drive — Screen 1

```
Starting MS-DOS

Current date is Thu 01-20-1999
Enter new date (mm-dd-yyyy)
```

If the data is correct, press the Enter key. (If the data is not correct, enter the correct date and then press the Enter key.)

The following screen will be displayed:

Installing on a New Hard Drive — Screen 2

```
Current Time is 11:17:56.22a
Enter new time:
```

If the time is correct, press the Enter key. (If the time is not correct, enter the correct time and then press the Enter key.)

The following screen will be displayed:

Installing on a New Hard Drive — Screen 3

```
Microsoft® MS-DOS® Version 6.22
© Copyright Microsoft Corp 1981–1984
A:\>
```

Enter FDISK

A screen similar to the following will be displayed:

Installing on a New Hard Drive — Screen 4

```
                    FDISK Options

Current Fixed disk drive:  1

Choose one of the following:
1. Create DOS partition or logical Drive
2. Set active partition
3. Delete partition or Logical DOS  Drive
4. Display partition information

Enter choice [ ]

Press Esc to Exit
```

Enter 1 and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a New Hard Drive — Screen 5

```
                Create DOS Partition or Logical Drive

Current Fixed disk drive:  1

Choose one of the following:
1. Create Primary DOS Partition
2. Create Extended DOS Partition
3. Create Logical DOS Drive(s) in the Extended DOS Partition

Enter choice [ ]

Press Esc to exit FDISK
```

Enter 1 and then press the Enter key.

A screen similar to the following will be displayed:

Installing on a New Hard Drive — Screen 6

Create Primary DOS Partition

Current Fixed disk drive: 1

Choose one of the following:
Do you wish to use the maximum available size for a Primary DOS Partition and make the partition active (Y/N)?.....[ ]

Press Esc to return to FDISK options

Enter Y and then press the Enter key.

The following will be displayed near the bottom of the screen:

Installing on a New Hard Drive — Screen 7

Primary DOS Partition created, drive letters changed or added

Press the Esc key.

A screen similar to the following will be displayed:

Installing on a New Hard Drive — Screen 8

FDISK Options

Current Fixed disk drive: 1

Choose one of the following:
1. Create DOS partition or logical Drive
2. Set active partition
3. Delete partition or Logical DOS Drive
4. Display partition information

Enter choice [ ]

Press Esc key to exit FDISK

Press the Esc key.

A screen similar to the following will be displayed:

Installing on a New Hard Drive — Screen 9

System will not restart

Insert DOS system diskette in drive A:
Press any key when ready...

Press the Enter key. The computer will reboot.

After the computer has rebooted, press the Enter key twice, and then enter C: at the A:\> prompt.

Remove the Bootup diskette from drive A:\ and then insert the Setup diskette. Simultaneously press the Ctrl, Alt, and Delete keys.

A screen similar to the following will be displayed:

Installing on a New Hard Drive — Screen 10

```
AFCS DCC Computer Installation, Phase I.
This procedure will FORMAT the HARD Drive
ALL DATA IN C: WILL BE LOST!!!

DO YOU WISH TO CONTINUE (Y/N)
```

Enter Y.

A screen similar to the following will be displayed:

Installing on a New Hard Drive — Screen 11

```
AFCS DCC Computer Installation, Phase I.
This Procedure will FORMAT the Hard Drive
ALL DATA IN C: WILL BE LOST!!!

Formatting Hard Drive...Please Wait...
```

This will take a few minutes to complete. Follow the on-screen prompts.

After the software is installed, a screen similar to the following will be displayed:

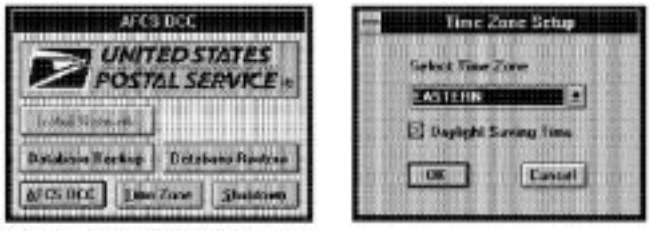
Installing on a New Hard Drive — Screen 12

```
SYSTEM INSTALLATION COMPLETED
The system will now reboot.
Remove the disk from drive A: and
press any key to continue...
```

Remove the Setup diskette from drive A:\ and then press the Enter key. The computer will reboot.

The following screen will be displayed:

Installing on a New Hard Drive — Screen 13



Select a time zone by clicking on the arrow next to the Select Time Zone field and then clicking on one of the choices. Select or deselect daylight saving time by clicking in the check box. Click the OK button.

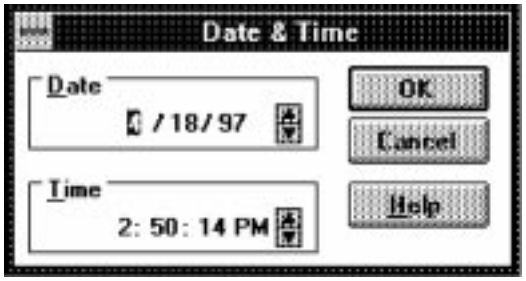
A window similar to the following will be displayed:

Installing on a New Hard Drive — Screen 14

Double click on the Date/Time icon.

A window similar to the following will be displayed:

Installing on a New Hard Drive — Screen 15



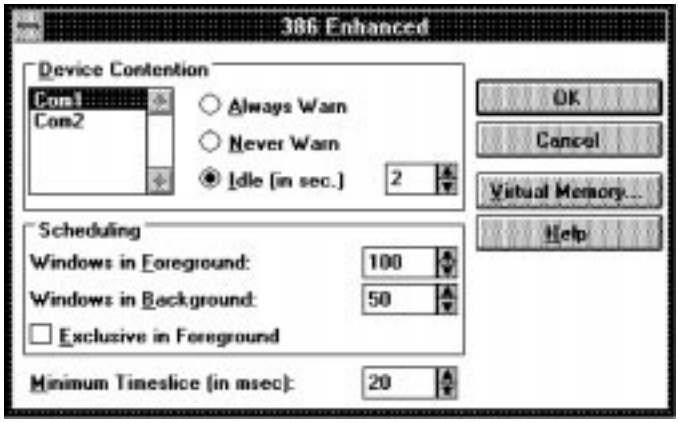
Note: Do not use Daylight Saving Time when setting computer time.

Set to the current date and local standard time and then click the OK button.

The program will return to the window displayed in Screen 14. Double click on the 386 Enhanced icon.

A window similar to the following will be displayed:

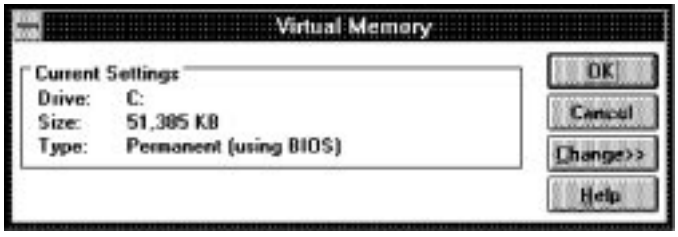
Installing on a New Hard Drive — Screen 16



Click on the Virtual Memory button.

A window similar to the following will be displayed:

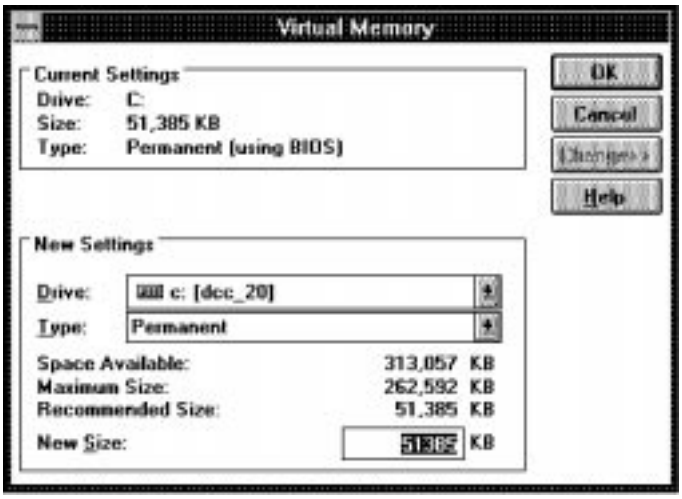
Installing on a New Hard Drive — Screen 17



Click on the Change>> button.

A window similar to the following will be displayed:

Installing on a New Hard Drive — Screen 18



Review the display to ensure that the Drive, Type, and New Size settings are in agreement with Table 6-3.2.

Note: If the settings are not in accordance with Table 6-3.2, contact management immediately.

Table 6-3.2
Virtual Memory Settings (Installing on a New Hard Drive)

Parameter	Setting
Drive	C:
Type	Permanent
New Size	Between 20,000 KB and 60,000 KB

Click on the OK button.

The following will be displayed:

Installing on a New Hard Drive — Screen 19

Click on the Yes button.

A message will be displayed showing the size of the virtual memory as set in Screen 17. Press the OK button.

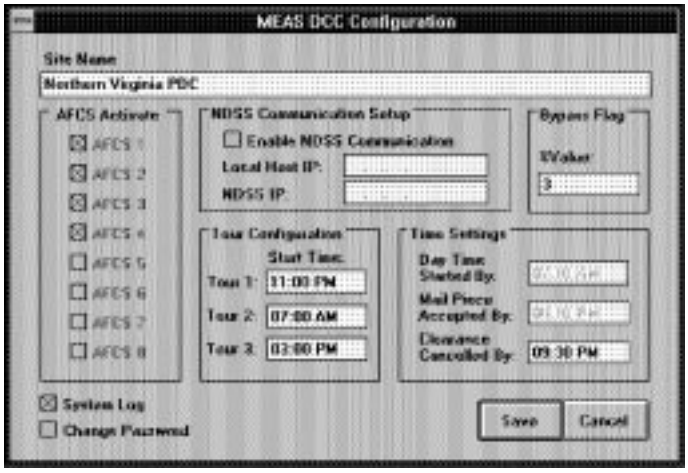
The following will be displayed:

Installing on a New Hard Drive — Screen 20

Click on the Restart Windows button. The screen will be blank for a few moments, and then the computer will reboot.

A window similar to the following will be displayed:

Installing on a New Hard Drive — Screen 21



The cursor will be located in the Site Name entry field. Enter [SITE NAME] (up to 68 alphanumeric characters) and then press the Tab key.

Note: This window is automatically cleared after 25 minutes, and then the Auto Report Setup window (see Screen 23) is displayed. If this occurs before completion of configuration, click on the Exit button and then go to Section 6-4.3.1 and follow the procedures to configure DCC MEAS to complete the configuration process.

Enter 3 in the % Value field and then press the Tab key.

Enter [TOUR 1 START TIME] (format hh:mm am/pm) and then press the Tab key.

Enter [TOUR 2 START TIME] (format hh:mm am/pm) and then press the Tab key.

Enter [TOUR 3 START TIME] (format hh:mm am/pm) and then press the Tab key.

Enter [CLEARANCE TIME] (time at which the last mailpiece will be cancelled, format hh:mm am/pm).

Select the AFCSs that should be activated (an “x” denotes active).

There are two possible actions:

a. To set a password, select Change Password (an “x” denotes active) and then click on the Save button. You will then be at Screen 22.

b. To continue without setting a password, click on the Save button. You will then be at Screen 23.

Installing on a New Hard Drive — Screen 22

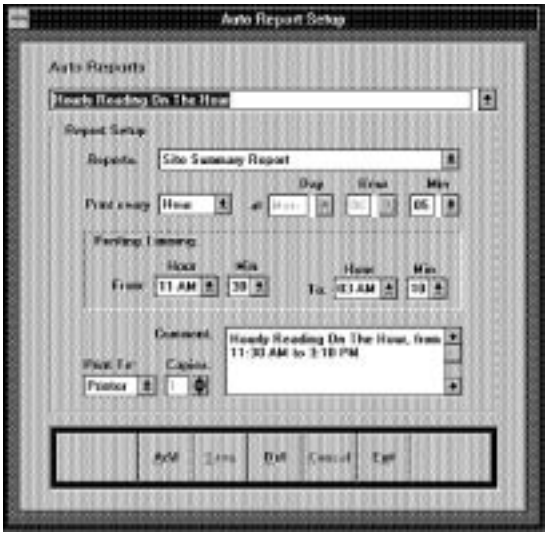
Click in the New Password entry field and enter [PASSWORD] (up to 20 characters). An asterisk will be displayed for each character entered. Press the Tab key and then re-enter the password. Click on the OK button.

There are two possible displays:

a. If the Passwords are not identical, a buzzer will sound and a screen similar to Screen 22 will be displayed again. Double click in the Confirm Password field, re-enter the password, and then click on the Retry button. Repeat this procedure until the password is accepted.

b. If both the New Password and Confirm Password are identical, Screen 23 will be displayed.

Installing on a New Hard Drive — Screen 23



There are no settings that need to be made in this window. Click on the Exit button. Go to Section 6-4.

6-3.3 Installing on a New Computer

Insert the Setup diskette into drive A and then simultaneously press the Ctrl, Alt, and Delete keys.

A screen similar to the following will be displayed:

Installing on a New Computer — Screen 1

```
AFCS DCC Computer Installation, PHASE I.
This procedure will FORMAT the HARD Drive
ALL DATA IN C: WILL BE LOST!!!

DO YOU WISH TO CONTINUE (Y/N)
```

Enter Y.

A screen similar to following will be displayed:

Installing on a New Computer — Screen 2

```
AFCS DCC Computer Installation, PHASE I.
This procedure will FORMAT the HARD Drive
ALL DATA IN C: WILL BE LOST!!!

Formatting Hard Drive...Please Wait...
```

This will take a few minutes to complete. Follow the on-screen prompts.

After the software is installed, a screen similar to the following will be displayed:

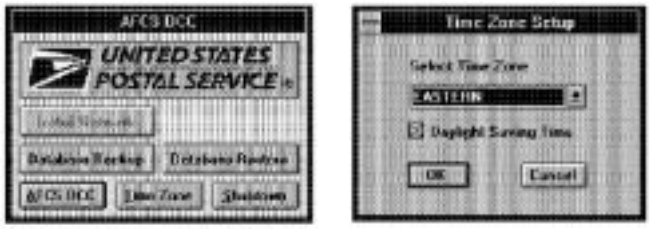
Installing on a New Computer — Screen 3

```
SYSTEM INSTALLATION COMPLETED
The system will now reboot.
Remove the disk from drive A: and
press any key to continue...
```

Remove the Setup diskette from A drive and then press the Enter key. The computer will reboot.

The following screen will be displayed:

Installing on a New Computer — Screen 4



Select a time zone by clicking on the arrow next to the Select Time Zone field and then clicking on one of the choices. Select or deselect daylight saving time by clicking in the check box. Click on the OK button.

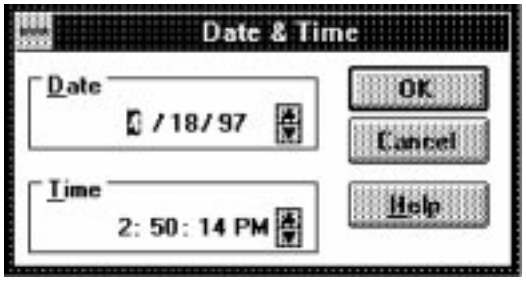
A window similar to the following will be displayed:

Installing on a New Computer — Screen 5

Double click on the Date/Time icon.

A window similar to the following will be displayed:

Installing on a New Computer — Screen 6



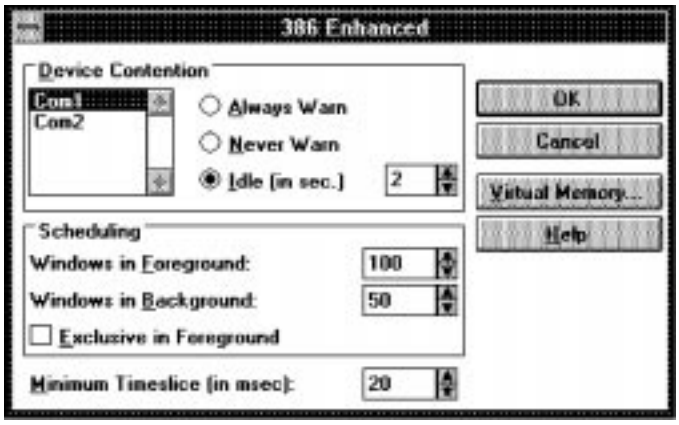
Note: Do not use Daylight Saving Time when setting computer time.

Set to the current date and local standard time and then click on the OK button.

The program will return to the window displayed in Screen 5. Double click on the 386 Enhanced icon.

A window similar to the following will be displayed:

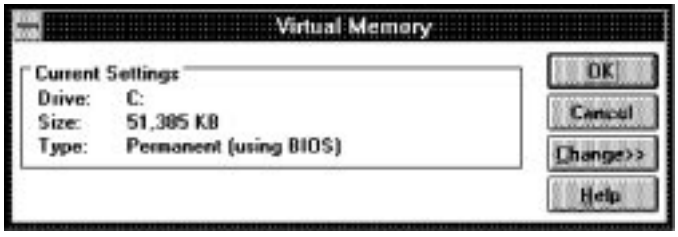
Installing on a New Computer — Screen 7



Click on the Virtual Memory button.

A window similar to the following will be displayed:

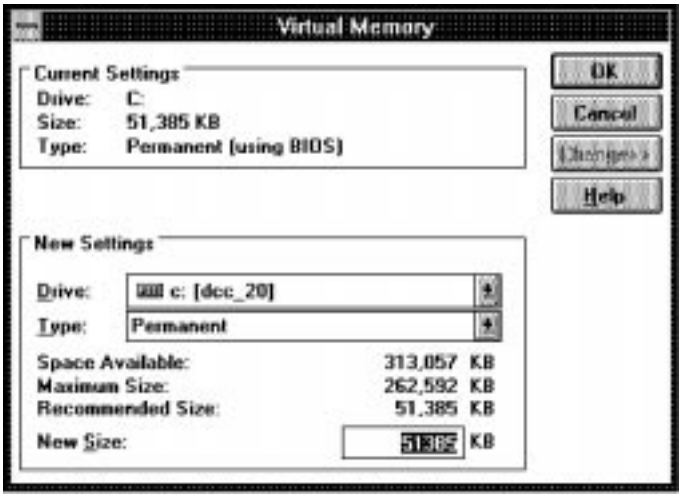
Installing on a New Computer — Screen 8



Click on the Change>> button.

A window similar to the following will be displayed:

Installing on a New Computer — Screen 9



Review the display to ensure that the Drive, Type, and New Size settings are in agreement with Table 6-3.3.

Note: If the settings are not in accordance with Table 6-3.3, contact management immediately.

Table 6-3.3
Virtual Memory Settings (Installing on a New Computer)

Parameter	Setting
Drive	C:
Type	Permanent
New Size	Between 20,000 KB and 60,000 KB

Click on the OK button.

The following will be displayed:

Installing on a New Computer — Screen 10

Click on the Yes button.

A message will be displayed showing the size of the virtual memory as set in Screen 8. Press the OK button.

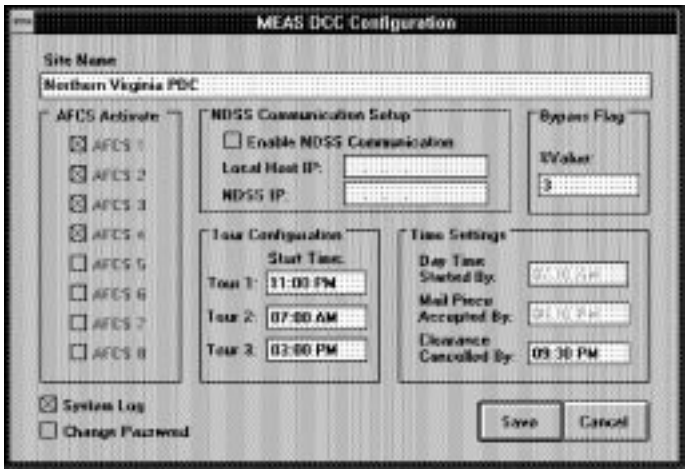
The following will be displayed:

Installing on a New Computer — Screen 11

Click on the Restart Windows button. The screen will be blank for a few moments, and then the computer will reboot.

A window similar to the following will be displayed:

Installing on a New Computer — Screen 12



The cursor will be located in the Site Name entry field. Enter [SITE NAME] (up to 68 alphanumeric characters) and then press the Tab key.

Note: This window is automatically cleared after 25 minutes and then the Auto Report Setup window (see Screen 14) is displayed. If this occurs before completion of configuration, click on the Exit button and then go to Section 6-4.3.1 and follow the procedures to configure DCC MEAS to complete the configuration process.

Enter 3 in the % Value field and then press the Tab key.

Enter [TOUR 1 START TIME] (format hh:mm am/pm) and then press the Tab key.

Enter [TOUR 2 START TIME] (format hh:mm am/pm) and then press the Tab key.

Enter [TOUR 3 START TIME] (format hh:mm am/pm) and then press the Tab key.

Enter [CLEARANCE TIME] (time at which the last mailpiece will be cancelled, format hh:mm am/pm).

Select the AFCSs that should be activated (an “x” denotes active).

There are two possible actions:

a. To set a password, select Change Password (an “x” denotes active) and then click on the Save button. You will then be at Screen 13.

b. To continue without setting a password, click on the Save button. You will then be at Screen 14.

The following will be displayed:

Installing on a New Computer — Screen 13

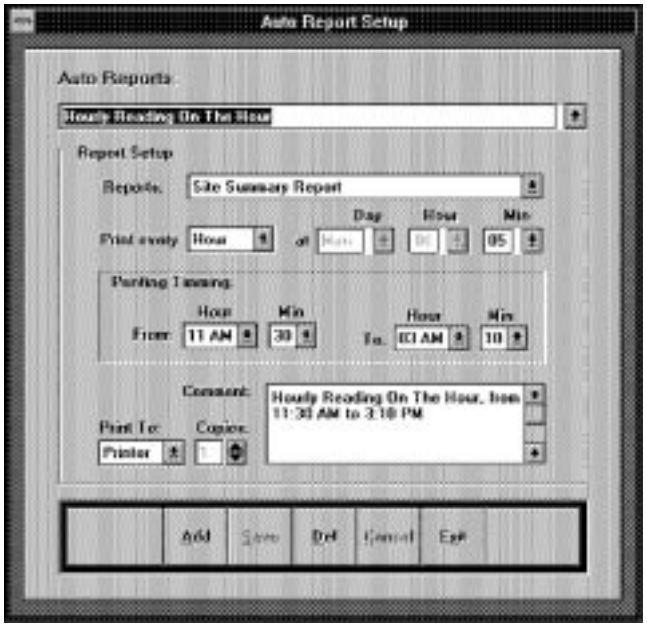
Click in the New Password entry field and enter [PASSWORD] (up to 20 characters). An asterisk will be displayed for each character entered. Press the Tab key and then re-enter the password. Click on the OK button.

There are two possible displays:

a. If the Passwords are not identical, a buzzer will sound and a screen similar to Screen 13 will be displayed again. Double click in the Confirm Password field, re-enter the password, and then click on the Retry button. Repeat this procedure until the password is accepted.

b. If both the New Password and Confirm Password are identical, Screen 14 will be displayed.

Installing on a New Computer — Screen 14



There are no settings that need to be made in this window. Click on the Exit button. Go to Section 6-4.

7 Operations Reports

7-1 DCC Initialization Procedures

To collect AFCS/ISS operational run data for reports, the DCC must be initialized for data collection. Perform the following steps to prepare the DCC and place it in the data collection mode:

1. Apply power to computer, printer, and monitor.
2. Enter the Power ON password to log on to the system (if applicable).
3. At the “DCC STARTUP MENU,” select Data Collection by pressing the “D” key.
4. Enter the appropriate responses to the dBase IV Login screen and password screen (if applicable).
5. Enter the appropriate responses to the DCC Initialization screen.

   Note: To enable collection of AFCS/ISS operational statistics, DCC polling must be enabled. Therefore, you must take the default “n” to the “Reports Only” question.
6. Leave the DCC at the “AFCS REPORT SELECTION SCREEN.” The DCC will poll each of the AFCS/ISS systems and automatically collect statistical operation data.

7-2 DCC Report Generation and Interpretation

7-2.1 Overview

The reports obtained from the DCC computer may be considered reports cards on how well the machine has been maintained.

7-2.2 Selecting a Report

To select a report, press the letter associated with that report (P, M, B, L, or S). There will be no immediate response to a report selection character if an informative message of an active task is being displayed in the lower left area of the monitor screen. After completion of the indicated task, the software will respond to your request.

Note: If the printer is not ready or is powered down when a report is selected, the message “The printer is not ready” is displayed to the right of the enter selection prompt on the main menu. You should make the printer ready and re-enter the report selection. The error message will remain on the screen until another report selection is made.

7-2.3 Entering Report Options

After a report is selected, a data entry screen will appear with report options set for the last report printed. The options include machine ID, data ranges, and number of copies.

If an invalid entry is made while updating a field on the data entry screen, an error message will appear on the last line of the display screen. The message will appear when the cursor is being moved to another field. Press the spacebar and then correct the error. These error messages are displayed in white on a red background.

A beep may occur during option entry. If an alpha character is entered in a numeric field, there will not be an error message. Instead, there will be a beep and the character will not be accepted in the field. Also, a beep will occur after entering the last character of a field. This beep informs the user that the cursor has automatically moved to the next field.

After all report options have been completed, press CTRL+END to start the report process.

Note: If no data is available for the selected machine ID or date range, no report will be printed.

7-2.4 Report Descriptions

The five statistical reports listed in **Table 7-2.4** are available to maintenance and operations personnel from AFCS/ISS operations data.

Table 7-2.4
Report Descriptions

Title	Description	Length (pages)
Single Machine Production Report	This report emphasizes production statistics and summarizes maintenance statistics.	1
Brief Single Machine Production Report	This report shows only the most important production statistics. It is a subset of the Single Machine Production Report.	<1
Single Machine Malfunction Report	This report lists all the malfunctions occurring on one machine; it does not include production data.	1
Single Machine Status Log Report	This report provides a running log of all malfunctions, in chronological order, for the previous 24-hour period. It may be more than one page, depending on the number of malfunctions.	>1
Site Summary Report	This report, also called the End of Run Report, summarizes production and maintenance statistics for all site AFCS/ISSs. It provides an easy comparison of the statistics for different machines. The length depends on the number of AFCS/ISSs at a site.	Varies

7-2.5 Exit From Data Collection Operation

To exit from the Data Collection program, press the F5 key.

7-2.6 Backup of Files to Hard Disk

When the F5 key is pressed, a backup of data files to the hard disk is initiated. As the data files are being updated, the screen will display informative messages. If the program is in the “REPORTS ONLY” mode of operation, those message will not be displayed. After the backup of the data files to the hard disk is completed, the backup to the floppy disk screen appears.

7-2.7 Backup of Files to Floppy Disk

In response to the prompt, press either A or B to indicate which floppy disk drive will be used to backup the data files. If you press any key other than A or B, the system exits from the program software, assuming that no backup is required.

Note: The floppy disks must be pre-formatted.

Insert a floppy disk into the selected drive and press any key. When the backup starts, the message “BACKUP OF DATA TO FLOPPY” is displayed.

7-2.8 Exiting DCC Software and Power Off

When backup is completed, the DCC STARTUP MENU is displayed. Press “x” to exit the DCC software and return to DOS. When the DOS prompt appears, you may then power down the computer.

CAUTION: Do NOT turn off the DCC unless the DOS prompt is displayed on the monitor. Turning off the DCC while in the DCC software may corrupt files!

7-2.9 Report Interpretation

The five reports listed in Table 7-2.4 provide information about the past performance of the AFCS/ISS systems. By analyzing the data within the reports, specific problem areas may be identified within an AFCS/ISS. However, the reports do not include any data on the ISS functions. Data for the ISS functions must be obtained from the IMS Terminal display.

Normal system performance statistics are provided in **Table 7-2.9** for reference information. These are average statistics that take in account variable mail mixes and operations.

Table 7-2.9
Normal System Performance Statistics

Category	Average
Throughput per hour	32,000
Bypass rate	<3.0%
Multi-indicia	<1.0%
ID Tag Error rate	<5.0%
Jams per hour	<4

8 Maintenance Strategies

8-1 Machine Maintenance

Machine utilization efficiency requires that equipment be kept in optimum operating condition. Therefore, scheduled maintenance windows must be observed, and preventive and predictive maintenance strategies must be included in standard procedures.

Operations supervisors must learn to recognize symptoms of poor machine performance and report these promptly to maintenance personnel.

Maintenance and operations supervisors should cultivate a cooperative working relationship. The technical expertise of maintenance personnel should be used as a resource to attain maximum effectiveness from the equipment.

8-2 Maintenance Windows

Machines do not operate proficiently when the required maintenance has not been performed.

The following guidelines can help ensure good maintenance:

a. Establish maintenance windows and enforce them.

b. Schedule maintenance windows at times of low volume and low utilization.

c. Have someone other than the person performing routes answer maintenance calls, which take away from the routes being performed.

8-3 Preventive Maintenance

Include time for cleaning and any planned corrective maintenance and/or maintenance work orders.

See Maintenance Management Orders for route requirements and checklists.

a. Daily route performance.

b. Weekly route performance.

c. Monthly route performance.

d. Quarterly route performance.

8-4 Maintenance Assistance to Operations

Maintenance personnel should provide the following assistance to operations personnel:

a. Analyze jam rates.

b. Analyze locations of jams. (Look for repeated areas).

c. Analyze reject rates.

d. Analyze rejects.

e. Monitor I.D. Tag quality.

f. Communicate with the operators and supervisors. Success is a joint effort.