1. **General**

   A. The FlightVu video surveillance system is designed to augment aircraft security by providing a secured unobstructed view of the cockpit entry area including identification of persons requesting entry when the cockpit door is closed and locked during flight or ground operations. Additionally, FlightVu provides a means to detect suspicious behavior or potential threat from the safety of either of the pilot’s positions.

   B. The FlightVu system uses three cameras linked to a LCD monitor mounted in the cockpit, which is accessible to either pilot's position. The cameras are positioned above the flight deck entry door and on either side of the entry corridor to cover the entire door area. The system also includes Infrared illuminators enabling the area to be viewed even with the cabin lights are extinguished.

   C. The FlightVu system consists of three cameras, three IR illuminators (paired to each camera), three camera control units, a video switch unit, a control panel, and a LCD monitor.

   D. Primary power for the system is 28 volts dc supplied from the 28 vdc bus 2 through a 2A circuit breaker labeled FLIGHTVU SYSTEM. Power to the system is controlled via the ON/OFF switch located on the Control Panel. The Control Panel also requires +5V ac lighting power.

2. **System Components**

   A. **Camera**

      (1) The monochrome CCD video camera is designed for use in pressurized, heated areas in the aircraft. The camera's small size allows for covert or overt mounting. The lens is changeable and allows for various fields of view as required for each position and area to be covered. All components of the camera are contained in an Aluminum Alloy housing.

      (2) Power is supplied to the camera from the Camera Control Unit which converts the 28V DC aircraft power to 9V DC. Maximum current draw of the camera is 1.1 watts at 9V DC.

   B. **IR Illuminators**

      (1) An Infrared (IR) illuminator is utilized for each area to be viewed. The IR Illuminator is powered from the aircraft 28V DC and provides invisible illumination so that the cameras can detect and present a clear image of the areas under surveillance in low or no light conditions.

   C. **Camera Control Unit**

      (1) The Camera Control Unit is used to interface the aircraft 28V DC power and video signal to and from the camera. The unit is contained in an Aluminum Alloy die-cast box having two electrical connectors for interface. Internal protection is provided by a resettable 1 amp fuse. The control unit is capable of converting un-balanced video to a balanced video output, if required.
D. Video Switch Unit

(1) The Video Switch Unit is the core part of the video system. This 2MCU sized unit mounts in the lower equipment bay. The Video Switch Unit switches the video output to the LCD monitor of the selected camera from the control panel. This video signal is then sent to the cockpit LCD Monitor for display. Contrast and Brightness of the LCD Monitor are controlled from the output of this unit via selection on the control panel. Power is converted from 28V DC aircraft power and is supplied at 12V DC to the LCD monitor. System power is switched on and off through this unit with control from the ON/OFF switch on the control panel.

(2) A red LED is mounted on the front panel of the Video Switching Unit and illuminates when 28v dc power is supplied to the unit.

E. Control Panel

(1) System control is through the Control Panel. This unit controls the CCTV system power (On/Off), Camera input select, LCD monitor brightness and contrast. The panel, mounted by four Dzus fasteners, is located in the pedestal or the overhead panel and is clearly marked as to function. The panel overlay is connected to the existing aircraft panel lighting for visibility at low light or nighttime operation.

(a) OFF / ON: Power for the system is routed from the relevant circuit breaker through the Video Switch Unit and controlled by this switch, allowing for total power isolation of the system.

(b) LEFT DOOR RIGHT: A three-position switch labeled for the location of each camera. Only one camera source can be viewed at a time.

(c) BRT: Adjusts the brightness of the LCD Monitor.

(d) CONTRAST: Adjusts the contrast of the LCD Monitor.

F. LCD Monitor

(1) The LCD Monitor is used to display images from the selected camera. The monitor uses a 50 ohm balanced video input from the Video Switch Unit. Connection is through one Mil-C-38999 series connector on the rear of the unit. The monitor can be mounted in various locations in the cockpit such as forward or aft control stand and aft overhead panel using Dzus fasteners.

(2) Monitor power is supplied at 12V DC from the Video Switch Unit.
FlightVu System - General Description

Internal Monochrome Camera
IR Illuminator
Camera Control Unit
Video Switch unit
LCD Monitor
Control Panel

EFFECTIVITY:
AIRPLANE WITH FLIGHTVU SYSTEM INSTALLED

23-79-00

Page 3
May 19/03
3. **System Operation**

   **A. General**

   (1) The FlightVu provides a means for monitoring the door area outside of the flight crew compartment.

   (2) By observing the display of video information on the LCD monitor, the pilot can determine who may be standing outside the flight deck door, and their possible intentions.

   **B. Video Operation**

   (1) 28V dc power is available to the system when the system circuit breaker is engaged. The system is not powered until the power switch on the control panel is set to the ON position.

   (2) When set to the ON position, electrical power is routed through the Video Switch Unit to the LCD Monitor and each Camera Control Unit (CCU) installed. The LCD Monitor will come on and display the selected video source in a few moments. Each CCU will supply electrical power to the respective camera. Each CCU will begin to feed video back to the Video Switch Unit.

   (3) The Brightness and Contrast of the LCD Monitor can be adjusted using the two control knobs on the control panel.

   (4) Video source selection is accomplished by using the camera select knob on the control panel. When a particular camera is selected (LEFT, DOOR, or RIGHT), a ground is applied to a particular relay inside the Video Switch Unit and video is fed to the monitor.
FlightVu System - System Summary

**EFFECTIVITY:**

AIRPLANE WITH FLIGHTVU SYSTEM INSTALLED

23-79-00

May 19/03
COCKPIT DOOR SURVEILLANCE SYSTEM - TROUBLESHOOTING

1. General
   A. You can use an equivalent FlightVu component from a different location to do trouble-shooting of the defective component. Change the possibly defective component with the equivalent good component. If the system operates correctly after the component is changed, you have found the defective component.

   B. If the FlightVu system does not operate, make sure the proper voltages are available to the system. Make sure the circuit breaker on load control center P18 is closed (pushed in). Make sure the power is supplied.

   C. To prevent trouble-shooting that is not necessary, make sure the specified problem continues to occur. If the flight report says that the FlightVu component does not operate in a particular position or source location, try to operate the system in that position or source location.

   D. Use the charts that follow to do more trouble-shooting of the FlightVu system components.

2. Prepare for Troubleshooting
   A. Procedure
      (1) Supply electrical power to that airplane.

      (2) Make sure that these circuit breaker(s) on panel P18 are closed:

          (a) FLIGHTVU SYSTEM

          (b) Panel Lighting circuit breakers

      (3) Set the Control Panel ON/OFF switch to the ON position.

      (4) Adjust the Contrast and Brightness for comfortable viewing.

      (5) Set the camera select knob to DOOR.
3. **Trouble Shooting Chart**

**VIDEO - LCD MONITOR**

**VIDEO DOES NOT APPEAR ON MONITOR** - 
Select all camera source positions on Control Panel. Make sure video is displayed.

IF -

<table>
<thead>
<tr>
<th>NO VIDEO AT ALL CAMERA POSITIONS</th>
<th>NO VIDEO AT ONE OR TWO CAMERA POSITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check for 12v dc power at LCD Monitor connector.</td>
<td>Go to VIDEO - CAMERAS.</td>
</tr>
<tr>
<td>IF -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NO 12V DC POWER AT LCD MONITOR</th>
<th>12V DC POWER AT LCD MONITOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check for 28v dc power at Video Switch Unit connector.</td>
<td>Check for video signal at LCD Monitor connector.</td>
</tr>
<tr>
<td>IF -</td>
<td>IF -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NO 28V DC POWER AT VIDEO SWITCH UNIT CONNECTOR</th>
<th>28V DC POWER AT VIDEO SWITCH UNIT CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repair or replace defective wiring. Replace FLIGHTVU SYSTEM C/B.</td>
<td>Replace Video Switch Unit (23-79-01/401). Repair or replace defective wiring. Replace Control Panel (23-79-03/401).</td>
</tr>
</tbody>
</table>

**A**

<table>
<thead>
<tr>
<th>NO VIDEO SIGNAL AT LCD MONITOR</th>
<th>VIDEO SIGNAL AT LCD MONITOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace Video Switch Unit (23-79-01/401). Repair or replace defective wiring.</td>
<td>Replace LCD Monitor (23-79-02/401).</td>
</tr>
</tbody>
</table>

| B |
VIDEO - CAMERAS

NO VIDEO AT ONE OR MORE CAMERA POSITIONS -
Check for 28v dc power at Camera Control Unit (CCU) connector P1.
IF -

NO 28V DC POWER AT CCU CONNECTOR
P1 -
Check for 28v dc power at Video Switch Unit connector.
IF -

28V DC POWER AT CCU CONNECTOR P1 -
Check for 9v dc power at Camera Control Unit connector J2.
IF -

B

NO 28V DC POWER AT VIDEO SWITCH UNIT -
Repair or replace defective wiring.
Replace FLIGHTVU SYSTEM circuit breaker.

28V DC POWER AT VIDEO SWITCH UNIT CONNECTOR -
Replace Video Switch Unit (23-79-01/401).
Replace Control Panel (23-79-03/401).

NO 9V DC POWER AT CCU CONNECTOR
J2 -
Replace Camera Control Unit (23-79-05/401).

9V DC POWER AT CCU CONNECTOR J2 -
Check for 9v dc power at Camera connector P1.
IF -

NO 9V DC POWER AT CAMERA CONNECTOR P1 -
Replace Camera Cable (23-79-03-01).

9V DC POWER AT CAMERA CONNECTOR
P1 -
Replace Camera (23-79-04/401).
Replace Camera Control Unit (23-79-05/401).
### VIDEO - IR ILLUMINATORS

<table>
<thead>
<tr>
<th>NO VIDEO AT ONE OR MORE CAMERA POSITIONS DURING NIGHTTIME CONDITIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Check for 28v dc power at IR Illuminator connector.</td>
<td>IF</td>
</tr>
</tbody>
</table>

#### NO 28V DC POWER AT ILLUMINATOR CONNECTOR |
- Check for 28v dc power at Video Switch Unit connector. |
  - IF |

#### 28V DC POWER AT ILLUMINATOR CONNECTOR |
- Replace IR Illuminator (23-79-04/401) |

#### NO 28V DC POWER AT VIDEO SWITCH UNIT |
- Repair or replace defective wiring. |
- Replace FLIGHTVU SYSTEM circuit breaker. |
  - IF |

#### 28V DC POWER AT VIDEO SWITCH UNIT CONNECTOR |
- Replace Video Switch Unit (23-79-01/401). |
- Replace Control Panel (23-79-03/401). |
1. **General**
   A. This procedure has these tasks:
      (1) A removal of the FlightVu video switch unit.
      (2) An installation of the FlightVu video switch unit.
   B. The FlightVu video switch unit (VSU) is located in the main equipment center.

2. **FlightVu Video Switch Unit - Removal**
   A. **References**
      (1) AMM TASK 20-10-07-000-801 p201, E/E Box Removal
      (2) AMM TASK 20-40-12-000-802 p201, ESDS Handling for Metal Encased Unit Removal
   B. **Access**
      (1) Location Zones
         (a) 117 Electrical and Electronics Compartment - Left
         (b) 118 Electrical and Electronics Compartment - Right
         (c) 211 Flight Compartment - Left
         (d) 212 Flight Compartment - Right
      (2) Access Panels
         (a) 117A Electronic Equipment Access Door
   C. **Removal Procedure**
      (1) Open these circuit breakers and attach DO-NOT-CLOSE tags:
         (a) Circuit Breaker Panel, P18-2:
             1) FLIGHTVU SYSTEM
      (2) Open the Electronic Equipment Access Door, 117A.

      **CAUTION:** DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE FLIGHTVU VIDEO SWITCH UNIT. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE FLIGHTVU VIDEO SWITCH UNIT.

      (3) Before you touch the FlightVu video switch unit, do this task: ESDS Handling for Metal Encased Unit Removal (AMM TASK 20-40-12-000-802 p201).

      (4) To remove the FlightVu video switch unit, do this task: E/E Box Removal (AMM TASK 20-10-07-000-801 p201).
3. **FlightVu Video Switch Unit - Installation**

   A. **References**
   
   (1) AMM TASK 20-10-07-400-801 p201, E/E Box Removal
   (2) AMM TASK 20-40-12-400-802 p201, ESDS Handling for Metal Encased Unit Removal
   (3) AMM TASK 24-22-00-860-811 p201, Supply Electrical Power
   (4) AMM TASK 24-22-00-860-812 p201, Remove Electrical Power

   B. **Access**
   
   (1) Location Zones
   
   (a) 117 Electrical and Electronics Compartment - Left
   (b) 118 Electrical and Electronics Compartment - Right
   (c) 211 Flight Compartment - Left
   (d) 212 Flight Compartment - Right

   (2) Access Panels
   
   (a) 117A Electronic Equipment Access Door

   C. **Installation Procedure**
   
   (1) Make sure that these circuit breakers are open:
   
   (a) Circuit Breaker Panel, P18-2:  
   1) FLIGHTVU SYSTEM

   **CAUTION:** DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE FLIGHTVU VIDEO SWITCH UNIT. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE FLIGHTVU VIDEO SWITCH UNIT.

   (2) Before you touch the FlightVu video switch unit, do this task: ESDS Handling for Metal Encased Unit Removal (AMM TASK 20-40-12-400-802 p201).

   (3) To install the FlightVu video switch unit, do this task: E/E Box Installation (AMM TASK 20-10-07-400-801 p201).

   (4) Remove the DO-NOT-CLOSE tags and close these circuit breakers:
   
   (a) Circuit Breaker Panel, P18-2:  
   1) FLIGHTVU SYSTEM

   D. **Test the Video Switch Unit**
   
   (1) Do this task: Supply Electrical Power (AMM TASK 24-00-00-860-811 p201).

   (2) To test the FlightVu system, do this task: FlightVu Adjustment and Test (AMM TASK 23-79-00 p501).

   E. **Put the Airplane Back to Its Initial Condition**
   
   (1) Close the Electronic Equipment Access Door, 117A.

   (2) Do this task: Remove Electrical Power (AMM TASK 24-22-00-860-812 p201).
FLIGHTVU LCD MONITOR - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) A removal of the FlightVu LCD monitor.
      (2) An installation of the FlightVu LCD monitor.
   B. The FlightVu LCD monitor is located in the aft pedestal or overhead panel.

2. FlightVu LCD Monitor - Removal
   A. References
      (1) AMM TASK 20-40-12-000-802 p201, ESDS Handling for Metal Encased Unit Removal
      (2) AMM TASK 20-40-12-000-803 p201, Conductive Dust Cap and Connector Cover Installation
   B. Access
      (1) Location Zones
          (a) 211 Flight Compartment - Left
          (b) 212 Flight Compartment - Right
   C. Removal Procedure
      (1) Open these circuit breakers and attach DO-NOT-CLOSE tags:
          (a) Circuit Breaker Panel, P18-2:
             1) FLIGHTVU SYSTEM

           CAUTION: DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE
           FLIGHTVU LCD MONITOR. IF YOU TOUCH THESE CONDUCTORS,
           ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE FLIGHTVU LCD
           MONITOR.

      (2) Before you touch the FlightVu LCD monitor, do this task: ESDS Handling for Metal Encased
           Unit Removal (AMM TASK 20-40-12-000-802 p201).

      (3) Do these steps to remove the LCD monitor:
          (a) Loosen the four quarter-turn fasteners.
          (b) Carefully lift the LCD monitor to get access to the electrical connector.
          (c) Disconnect the electrical connector.
          (d) To install protective covers on the electrical connector, do this task: Conductive Dust
              Cap and Connector Cover Installation (AMM TASK 20-40-12-000-803 p201).
3. **FlightVu LCD Monitor - Installation**

A. **References**
   (1) AMM TASK 20-40-12-400-802 p201, ESDS Handling for Metal Encased Unit Installation
   (2) AMM TASK 20-40-12-400-803 p201, Conductive Dust Cap and Conductor Cover Removal
   (3) AMM TASK 24-22-00-860-811 p201, Supply Electrical Power
   (4) AMM TASK 24-22-00-860-812 p201, Remove Electrical Power

B. **Access**
   (1) Location Zones
      (a) 211 Flight Compartment - Left
      (b) 212 Flight Compartment - Right

C. **Installation Procedure**
   (1) Make sure that these circuit breakers are open:
      (a) Circuit Breaker Panel, P18-2:
         1) FLIGHTVU SYSTEM

   **CAUTION:** DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE LCD MONITOR. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE LCD MONITOR.

   (2) Before you touch the LCD Monitor, do this task: ESDS Handling for Metal Encased Unit Installation (AMM TASK 20-40-12-400-802 p201).

   (3) Do these steps to install the LCD Monitor:
      (a) To remove the protective covers from the electrical connector, do this task: Conductive Dust Cap and Conductor Cover Removal (AMM TASK 20-40-12-400-803 p201).
      (b) Examine the electrical connector for bent or broken pins, dirt, and damage.
      (c) Connect the electrical connector.
      (d) Put the LCD monitor in its position on the P8 panel.
      (e) Tighten the four quarter-turn fasteners.

   (4) Remove the DO-NOT-CLOSE tag and close the circuit breaker for the LCD Monitor that you installed:
      (a) Circuit Breaker Panel, P18-2:
         1) FLIGHTVU SYSTEM
D. Test the LCD Monitor

(1) Do this task: Supply Electrical Power (AMM TASK 24-00-00-860-811 p201).

(2) To test the FlightVu system, do this task: FlightVu Adjustment and Test (AMM TASK 23-79-00 p501).

E. Put the Airplane Back to Its Initial Condition

(1) Do this task: Remove Electrical Power (AMM TASK 24-22-00-860-812 p201).
FLIGHTVU CONTROL PANEL - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) A removal of the FlightVu control panel.
      (2) An installation of the FlightVu control panel.
   B. The FlightVu control panel is located in the aft pedestal or overhead panel.

2. FlightVu Control Panel - Removal
   A. References
      (1) AMM TASK 20-40-12-000-802 p201, ESDS Handling for Metal Encased Unit Removal
      (2) AMM TASK 20-40-12-00-803 p201, Conductive Dust Cap and Connector Cover Installation
   B. Access
      (1) Location Zones
         (a) 211 Flight Compartment - Left
         (b) 212 Flight Compartment - Right
   C. Removal Procedure
      (1) Open these circuit breakers and attach DO-NOT-CLOSE tags:
         (a) Circuit Breaker Panel, P18-2:
            1) FLIGHTVU SYSTEM
            CAUTION: DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE
            FLIGHTVU CONTROL PANEL. IF YOU TOUCH THESE CONDUCTORS,
            ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE FLIGHTVU
            CONTROL PANEL.
      (2) Before you touch the FlightVu control panel, do this task: ESDS Handling for Metal Encased
            Unit Removal (AMM TASK 20-40-12-000-802 p201).
      (3) Do these steps to remove the control panel:
         (a) Loosen the four quarter-turn fasteners.
         (b) Carefully lift the control panel to get access to the electrical connector.
         (c) Disconnect the electrical connector.
         (d) To install protective covers on the electrical connector, do this task: Conductive Dust
            Cap and Connector Cover Installation (AMM TASK 20-40-12-00-803 p201).
3. **FlightVu Control Panel - Installation**

   **A. References**
   (1) AMM TASK 20-40-12-400-802 p201, ESDS Handling for Metal Encased Unit Installation
   (2) AMM TASK 20-40-12-400-803 p201, Conductive Dust Cap and Conductor Cover Removal
   (3) AMM TASK 24-22-00-860-811 p201, Supply Electrical Power
   (4) AMM TASK 24-22-00-860-812 p201, Remove Electrical Power

   **B. Access**
   (1) Location Zones
   (a) 211 Flight Compartment - Left
   (b) 212 Flight Compartment - Right

   **C. Installation Procedure**

   (1) Make sure that these circuit breakers are open:
   (a) Circuit Breaker Panel, P18-2:
      1) FLIGHTVU SYSTEM

   **CAUTION:** DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE CONTROL PANEL. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CONTROL PANEL.

   (2) Before you touch the control panel, do this task: ESDS Handling for Metal Encased Unit Installation (AMM TASK 20-40-12-400-802 p201).

   (3) Do these steps to install the control panel:
   (a) To remove the protective covers from the electrical connector, do this task: Conductive Dust Cap and Conductor Cover Removal (AMM TASK 20-40-12-400-803 p201).
   (b) Examine the electrical connector for bent or broken pins, dirt, and damage.
   (c) Connect the electrical connector.
   (d) Put the control panel in its position on the P8 panel.
   (e) Tighten the four quarter-turn fasteners.

   (4) Remove the DO-NOT-CLOSE tag and close the circuit breaker for the control panel that you installed:
   (a) Circuit Breaker Panel, P18-2:
      1) FLIGHTVU SYSTEM
D. Test the LCD Monitor

(1) Do this task: Supply Electrical Power (AMM TASK 24-00-000-860-811 p201).

(2) To test the FlightVu system, do this task: FlightVu Adjustment and Test (AMM TASK 23-79-00 p501).

E. Put the Airplane Back to Its Initial Condition

(1) Do this task: Remove Electrical Power (AMM TASK 24-22-00-860-812 p201).
FLIGHTVU CAMERA AND IR ILLUMINATOR - REMOVAL/INSTALLATION

1. General
   A. The FlightVu Cameras and IR Illuminators are located in the overhead interior in three (3) locations. The Camera and IR Illuminator is installed in a camera housing assembly.
   B. Three types of camera housing assemblies are used: a corner/ceiling camera housing and a long and a short camera housing. This procedure assumes the removal of the camera housing assembly prior to the removal of the Camera or IR Illuminator.

2. Referenced Procedures
   A. 24-22-00 - Manual Control - Maintenance Practices (Apply Power)

3. Remove Camera Long/Short Housing Assembly
   A. Open the following circuit breaker and attach DO-NOT-CLOSE tags:
      (1) P18 circuit breaker panel
      (a) FLIGHTVU SYSTEM
   B. Gain access to the overhead interior in the area around the flight deck door.
   C. Disconnect the Camera electrical connector from the CCU.
   D. Disconnect the IR Illuminator electrical jiffy junction connections.
   E. Support camera housing assembly and remove four (4) screws securing housing to interior panel. Retain hardware for re-installation.
   F. Route wiring through hole in panel and lower camera housing assembly from interior panel.

4. Remove Corner/Ceiling Camera Housing Assembly
   A. Open the following circuit breaker and attach DO-NOT-CLOSE tags:
      (1) P18 circuit breaker panel
      (a) FLIGHTVU SYSTEM
   B. Gain access to the overhead interior in the area around the galley area.
   C. Disconnect the Camera electrical connector from the CCU.
   D. Disconnect the IR Illuminator electrical jiffy junction connections.
   E. Support camera housing assembly and remove two (2) screws and washers securing housing to interior panel. Retain hardware for re-installation.
   F. Route wiring through hole in panel and lower camera housing assembly from interior panel.
5. **Remove IR Illuminator and Camera (Long/Short Housing)**

**NOTE:** On the long camera housing, it may be necessary to remove the housing cover assembly prior to removal of the camera bracket assembly.

A. Measure angle of camera lens (viewing angle) to housing assembly. Record this information for use during installation of camera.

B. Support housing and camera bracket assembly and remove four (4) screws and washers securing camera bracket assembly to housing assembly. Retain hardware for re-installation.

C. Carefully remove camera bracket assembly from housing assembly; guide wiring from housing to avoid damage. Place housing assembly to one side.

D. Support camera bracket assembly and remove two (2) nuts and washers securing IR Illuminator and camera cover to bracket assembly. Retain hardware for reinstallation.

E. Carefully remove IR Illuminator and camera cover; guide wiring from bracket assembly to avoid damage. Place IR Illuminator and camera cover to one side.

F. Support camera bracket assembly and remove four (4) cap screws securing camera to camera bracket assembly. Retain hardware for re-installation.

G. Remove camera from camera bracket assembly.

H. Cap all electrical connections.

6. **Remove IR Illuminator and Camera (Corner/Ceiling Housing)**

A. Support camera housing and remove three (3) screws securing housing face assembly to camera housing assembly. Retain hardware for re-installation.

B. Carefully remove housing face assembly from camera housing assembly; guide wiring from housing to avoid damage. Place camera housing assembly to one side.

C. Support housing face assembly and joggle plate and remove two (2) screws and washers securing joggle plate to housing face assembly. Retain hardware for reinstallation.

**NOTE:** The camera and IR illuminator are secured to the joggle plate

D. Support joggle plate and remove two (2) nuts securing IR Illuminator to joggle plate. Retain hardware for reinstallation.

E. Carefully remove IR illuminator; guide wiring from joggle plate to avoid damage. Place IR illuminator to one side.

F. Support joggle plate and remove four (4) cap screws securing camera to joggle plate. Retain hardware for re-installation.

G. Remove camera from joggle plate.
IR Illuminator and Camera, Long/Short Housing - Removal / Installation
Figure 401
IR Illuminator and Camera, Corner/Ceiling Housing - Removal / Installation
Figure 402
7. **Install IR Illuminator and Camera** (Long/Short Housing)

   A. Position and align camera to camera bracket assembly. Secure using cap screws retained from removal.

   **NOTE:** When installing video camera, position camera in mount so that the camera wiring is positioned at the bottom of the camera after installation is complete.

   Use removable Loctite Threadlocker Blue, or equivalent, on camera cap screws.

   B. Align camera cover to camera bracket assembly, making sure the camera lens fits through opening in camera cover.

   C. Carefully position and align IR illuminator to the camera cover and camera bracket assembly. Guide wiring through opening in both units to avoid damage. Secure using nuts and washers retained from removal.

   D. Position and align camera bracket assembly to camera housing. Carefully guide wiring through opening in camera housing to avoid damage.

   E. While supporting camera housing and camera bracket assembly, secure bracket assembly to camera housing using screws and washers retained from removal. Screws should be tight enough to hold camera at any angle but allow movement adjustment for alignment purposes.

   F. Using a protractor, adjust camera viewing angle to measurement made during removal procedure.

   G. Tighten screws securely to hold camera at measured viewing angle.

8. **Install IR Illuminator and Camera** (Corner/Ceiling Housing)

   A. Position and align camera to joggle plate. Secure using cap screws retained from removal.

   **NOTE:** When installing video camera, position camera in mount so that the camera wiring is positioned at the bottom of the camera after installation is complete.

   Use removable Loctite Threadlocker Blue, or equivalent, on camera cap screws.

   B. Position and align IR illuminator to the joggle plate. Carefully guide wiring through opening in joggle plate to avoid damage. Secure using nuts retained from removal.

   C. Position and align joggle plate to housing face assembly. Use care to ensure camera lens and IR illuminator fit through their respective openings.

   D. Support housing face assembly and secure joggle plate to housing face assembly using screws and washers retained from removal.

   E. Position and align housing face assembly to camera housing. Support camera housing and secure housing face assembly to camera housing using screws retained from removal.
9. **Install Camera Long/Short Housing Assembly**
   A. Gain access to the overhead interior in the area around the flight deck door.
   B. Route wiring through hole in panel and position camera housing assembly to interior panel.
   C. Support camera housing assembly and secure housing to interior panel using screws retained from removal.
   D. Remove electrical dust caps, if used.
   E. Connect the IR Illuminator electrical jiffy junction connections.
   F. Connect the Camera electrical connector to the CCU.

10. **Install Corner/Ceiling Camera Housing Assembly**
    A. Gain access to the overhead interior in the area around the galley area.
    B. Route wiring through hole in panel and position camera housing assembly to interior panel.
    C. Support camera housing assembly and secure housing to interior panel using screws retained from removal.
    D. Remove electrical dust caps, if used.
    E. Connect the IR Illuminator electrical jiffy junction connections.
    F. Connect the Camera electrical connector to the CCU.

11. **Test the Camera and IR Illuminator**
    A. Remove the DO-NOT-CLOSE tags and close these circuit breakers:
        (1) P18 circuit breaker panel
            (a) FLIGHTVU SYSTEM
    B. Carry out the FlightVu Adjustment and Test (Ref 23-79-00/501).
    C. Close and secure all overhead interior panels opened for this procedure.
FLIGHTVU CAMERA CONTROL UNIT - REMOVAL/INSTALLATION

1. General
   A. This procedure has these tasks:
      (1) A removal of the FlightVu camera control unit.
      (2) An installation of the FlightVu camera control unit.
   B. The FlightVu camera control units are located in the overhead cabin entryway in two locations.

2. FlightVu Camera Control Unit - Removal
   A. References
      (1) AMM TASK 20-40-12-000-802 p201, ESDS Handling for Metal Encased Unit Removal
      (2) AMM TASK 20-40-12-000-803 p201, Conductive Dust Cap and Connector Cover Installation
      (3) AMM TASK 25-21-71-000-801 p401, Forward and Aft Lowered Ceiling Panels Removal
   B. Access
      (1) Location Zones
         (a) 231 Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Left
         (b) 232 Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Right
   C. Removal Procedure
      (1) Open these circuit breakers and attach DO-NOT-CLOSE tags:
         (a) Circuit Breaker Panel, P18-2:
            1) FLIGHTVU SYSTEM
            CAUTION: DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE FLIGHTVU CAMERA CONTROL UNIT. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE FLIGHTVU CAMERA CONTROL UNIT.
      (2) Before you touch the FlightVu camera control unit, do this task: ESDS Handling for Metal Encased Unit Removal (AMM TASK 20-40-12-000-802 p201).
      (3) Do these steps to remove the camera control unit:
         (a) Gain access to the overhead interior in the area around the flight deck door.
         (b) Disconnect the electrical connectors.
         (c) Remove four screws and washers from the interior panel or bracket assembly.
         (d) To install protective covers on the electrical connectors, do this task: Conductive Dust Cap and Connector Cover Installation (AMM TASK 20-40-12-00-803 p201).
      (4) Do these steps to remove bracket assembly:
         NOTE: Removal of bracket assembly can be accomplished before or after removal of the CCUs.
         (a) Gain access to the overhead interior in the area around the flight deck door.
CAUTION: DISCONNECT ALL ELECTRICAL CONNECTORS PRIOR TO REMOVAL OF BRACKET ASSEMBLY IF THE CCU'S REMAIN ATTACHED TO BRACKET ASSEMBLY.

(b) Disconnect the electrical connectors.
(c) Remove four screws and washers.
(d) Remove bracket assembly.

3. FlightVu Camera Control Unit - Installation
A. References
   (1) AMM TASK 20-40-12-400-802 p201, ESDS Handling for Metal Encased Unit Installation
   (2) AMM TASK 20-40-12-400-803 p201, Conductive Dust Cap and Connector Cover Installation
   (3) AMM TASK 25-21-71-400-801 p401, Forward and Aft Lowered Ceiling Panels Installation
B. Access
   (1) Location Zones
      (a) 231 Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Left
      (b) 232 Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Right
C. Installation Procedure
   (1) Make sure that these circuit breakers are open:
      (a) Circuit Breaker Panel, P18-2:
         1) FLIGHTVU SYSTEM

   CAUTION: DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE CAMERA CONTROL UNIT. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CAMERA CONTROL UNIT.

   (2) Before you touch the camera control unit, do this task: ESDS Handling for Metal Encased Unit Installation (AMM TASK 20-40-12-400-802 p201).

   (3) Do these steps to install the camera control unit:
      (a) To remove the protective covers from the electrical connectors, do this task: Conductive Dust Cap and Conductor Cover Removal (AMM TASK 20-40-12-400-803 p201).
      (b) Examine the electrical connectors for bent or broken pins, dirt, and damage.
      (c) Put the camera control unit in its position on the ceiling panel or bracket assembly.
      (d) Install four screws and washers.
      (e) Connect the electrical connectors.

   (4) Do these steps to install bracket assembly:

   NOTE: Installation of the bracket assembly can be accomplished before or after the CCUs have been installed in bracket.
(a) Gain access to the overhead interior in the area around the flight deck door.
(b) Put the bracket assembly in its position on the ceiling panel.
(c) Install four screws and washers.
(d) Connect the electrical connectors.

(5) Remove the DO-NOT-CLOSE tag and close the circuit breaker for the control panel that you installed:
   (a) Circuit Breaker Panel, P18-2:
       1) FLIGHTVU SYSTEM

D. Test the camera control unit

   (1) Do this task: Supply Electrical Power (AMM TASK 24-00-000-860-811 p201).

   (2) To test the FlightVu system, do this task: FlightVu Adjustment and Test (AMM TASK 23-79-00 p501).

E. Put the Airplane Back to Its Initial Condition

   (1) Do this task: Remove Electrical Power (AMM TASK 24-22-000-860-812 p201).
COCKPIT DOOR SURVEILLANCE SYSTEM - ADJUSTMENT\TEST

1. General
   A. This procedure contains one task. The task is a system test of the FlightVu Surveillance System. This test requires two persons; one to operate the controls and evaluate the results, the other to stand in front of the cameras for identification purposes.

2. FlightVu Surveillance System - System Test
   A. General
      (1) This task includes these tests:
         (a) LCD Monitor Test
         (b) Control Panel Lightning Test
         (c) FlightVu Power Test
         (d) Camera Test - Daytime Conditions
         (e) Camera Test - Nighttime Conditions
   B. References
      (1) AMM 24-22-00-860-811 p201, Supply Electrical Power
      (2) AMM 24-22-00-860-811 p201, Remove Electrical Power
   C. Access
      (1) Location Zones
         211 Flight Compartment - Left
         212 Flight Compartment - Right
         221 Passenger Cabin - Left
         222 Passenger Cabin - Right
   D. Prepare for the Test
      (1) Do this task: Supply electrical power (AMM 24-22-00-860-811 p201).
      (2) Make sure that the following circuit breaker is closed:
         (a) Circuit Breaker Panel, 18-2:
            1) FLIGHTVU SYSTEM
      (3) On the FlightVu Control Panel, set the controls as follows:
         (a) On/Off - ON
         (b) Contrast - Set as required for comfortable viewing.
         (c) Brightness - Set as required for comfortable viewing.
         (d) Camera Select - Door
   E. LCD Monitor Test
      (1) Do these steps at the system control panel:
         (a) Vary the intensity of the Brightness knob.
            1) Observe that the brightness changes with the changing of the knob’s position.
         (b) Vary the intensity of the Contrast knob.
            1) Observe that the contrast changes with the changing of the knob’s position.
F. Control Panel Lightning Test

(1) Do these steps at the aft pedestal:
   (a) Vary the intensity of the Pedestal Lighting knob.
       1) Observe that the Control Panel lighting changes with the changing of the knob’s position.

G. FlightVu Power Test

(1) Do these steps at the P18 circuit breaker panel.
   (a) Open the FLIGHTVU SYSTEM circuit breaker.
       1) Make sure that the LCD Monitor turns off.

   NOTE: This circuit breaker removes power to all system components.

   (b) Reset the circuit breaker.
       1) Make sure that the LCD Monitor displays the Door Camera image.

(2) Do these steps at the system control panel:
   (a) Set the Control Panel On/Off switch to the OFF position.
       1) Make sure that the system turns off.
   (b) Set the Control Panel On/Off switch to the ON position.

H. Camera Test - Daytime Conditions

(1) Do these steps at the system control panel:
   (a) Make sure that the Control Panel camera select switch is set to the DOOR position.

(2) Do these steps at the cockpit door entry area:
   (a) Have a technician stand in view of the Door camera.

(3) Do these steps at the system control panel:
   (a) Evaluate the display on the LCD Monitor for clarity and the ability to verify and identify the individual at the door.

   NOTE: It is not satisfactory to just verify that someone at the door. Recognition of the individual is required.

(4) Do these steps at the system control panel:
   (a) Set the camera select switch to the LEFT position.
       1) Evaluate the display on the LCD Monitor for clarity and the ability to verify the area around the flight deck door.
   (b) Set the camera select switch to the RIGHT position.
       1) Evaluate the display on the LCD Monitor for clarity and the ability to verify the area around the flight deck door.

I. Camera Test - Nighttime Conditions

(1) Simulate night time lighting conditions on the aircraft.

(2) Do these steps at the system control panel:
   (a) Make sure that the Control Panel camera select switch is set to the DOOR position.
(3) Do these steps at the cockpit door entry area:
   (a) Have a technician stand in view of the Door camera.

(4) Do these steps at the system control panel:
   (a) Evaluate the display on the LCD Monitor for clarity and the ability to verify and identify
       the individual at the door.

   **NOTE**: It is not satisfactory to just verify that someone at the door. Recognition of the
   individual is required.

(5) Do these steps at the system control panel:
   (a) Set the camera select switch to the LEFT position.
       1) Evaluate the display on the LCD Monitor for clarity and the ability to verify the
          area around the flight deck door.
   (b) Set the camera select switch to the RIGHT position.
       1) Evaluate the display on the LCD Monitor for clarity and the ability to verify the
          area around the flight deck door.

J. Put the Airplane Back to Its Initial Condition

(1) Do this task: Remove Electrical Power (AMM 24-22-00-860-811 p201).