Non-Standard Rotary Wing Aircraft

Rucker Cockpit Modification Program

Technical Instructions (TI)

Revision 02
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Non-Standard Rotary Wing Aircraft
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Rucker Cockpit Modification

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1. SCOPE

This Technical Instruction (TI) document describes the requirements for cockpit modification on Mi-8/17 variant aircraft and cockpit seat upgrade of variant aircraft listed including MMHP certification. The requirements contained within this document are in addition to or clarification of the requirements stated within contract XXXXXXXXXXXXXXXX.

This modification shall be prototyped, validated, and verified by the Contractor, as well as receive certification of the modification in the form of a Service Bulletin (SB) or an individual aircraft level Mil Moscow Helicopter Plant (MMHP), with the equivalent of certification BULLETIN T3301-БУ-БЭ-АБ.

This effort shall also ensure delivery of maintenance support. The Contractor shall maintain all aircraft IAW OEM procedures and/or IAC regulations throughout the duration of the effort.

All avionics equipment, gauges, and indicators shall be Night Vision Image System (NVIS) compatible IAW section 5.0 of this document and any referenced documents included therein.

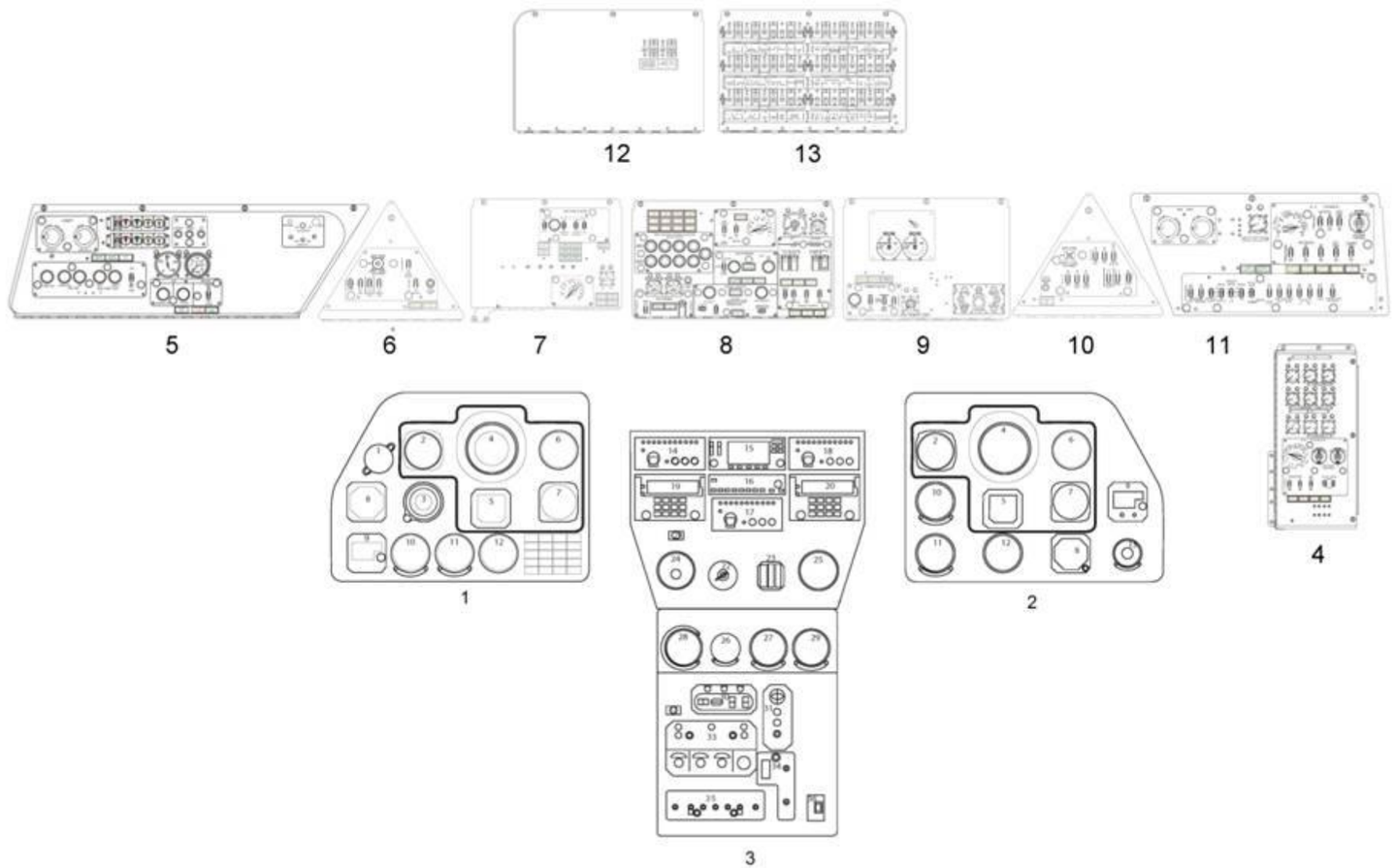

Figure 1: Rucker Instrument and Control Panel/Console Identification

5. Left Side Console
6. Left Triangular Panel
7. Left Overhead Console
8. Center Overhead Console
9. Right Overhead Console
10. Right Triangular Panel
11. Right Side Console
12. Left Overhead Circuit Breaker Panel
13. Right Overhead Circuit Breaker Panel

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2. Installation of Approved Upgraded Items

2.1. MMHP Approved Components

The location of these components and the install instructions has been approved by MMHP and will be found documented in the Mi-8MTV1 Helicopter supplement to the maintenance manual:

- Signal converter LUN17 94.5.
- Diplexer VOR/GS Comant CI-507.
- Internal communication system Cobham NAT N301A (7 points).
- Additional yaw roll turn indicator ЭУП-53К.
- Wulfsberg VHF/UHF RT-5000 radio with C5000 control head and RT 5000 Transciever (2 pcs).
- Vertical speed indicator ВРФ-6МПБ (2 pcs).
- Bendix King Radar altimeter KRA-405B with two indicators KNI-416.
- Bendix King EHSI KI-825, NVIS compatible, (2 pcs).
- Emergency locator transmitter Artex C406-2HM with unit 453-6500.
- Bendix King Transponder KT-76Cor KT-73 with C105 antennas.
- Navigation system GNS-430W, NVIS compatible, with antennas GA-35.
- Barometric altimeter encoding AAU-32/A-3 to replace VD-10K (2Pc)
- Davtron M880A clock, NVIS compatible (2 pcs)
- Aero Sonic Airspeed Indicator S-15KA(W) to replace the US-450K (2 Pc)

3. INSTRUMENT PANELS

3.1 Description

The Rucker cockpit has three main separate consoles pilot, copilot, and center as depicted in Figure 2. The distinction between the Pilot's Instrument Panel Figure 2 #2 and the Copilot's Instrument Panel Figure 2 #3 can be seen below. The specific components and avionics equipment is detailed in section 0 later in this document.

3.2 Cockpit and Component Layout

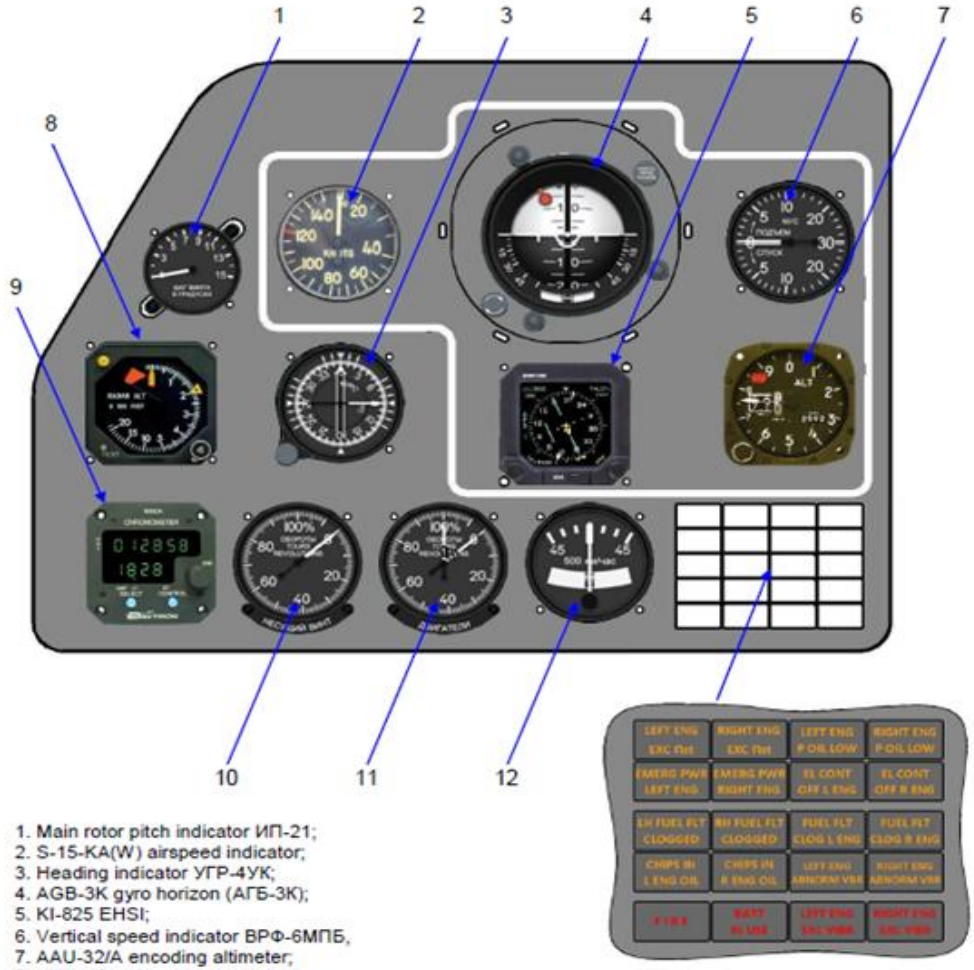
The Pilot's Instrument Panel (Figure 23) is installed in the front of the cockpit on the left side. It contains the primary flight instruments, navigational instruments, and master caution panels. The instrument board can be opened to gain access to the

instrument fittings, electrical components, and wiring. The panel is equipped with a glare shield and is NVIS compatible per MIL-STD-3009, Type II Class B.

The Copilot's Instrument Panel (Figure 24) is located in the front of the cockpit on the right side. It contains redundant flight instruments, navigational instruments, and the fuel gauge. The instrument board can be opened to gain access to the instrument fittings, electrical components, and wiring. The panel is equipped with a glare shield and is NVIS compatible per MIL-STD-3009, Type II Class B.

The Center Console Panel (Figure 25) is located in the center/front of the cockpit between the pilot/copilot seats. It contains redundant flight instruments, navigational instruments, and communications equipment. The instrument board can be opened to gain access to the instrument fittings, electrical components, and wiring. The panel is NVIS compatible per MIL-STD-3009, Type II Class B.

Figure 2: Cockpit Layout Diagram

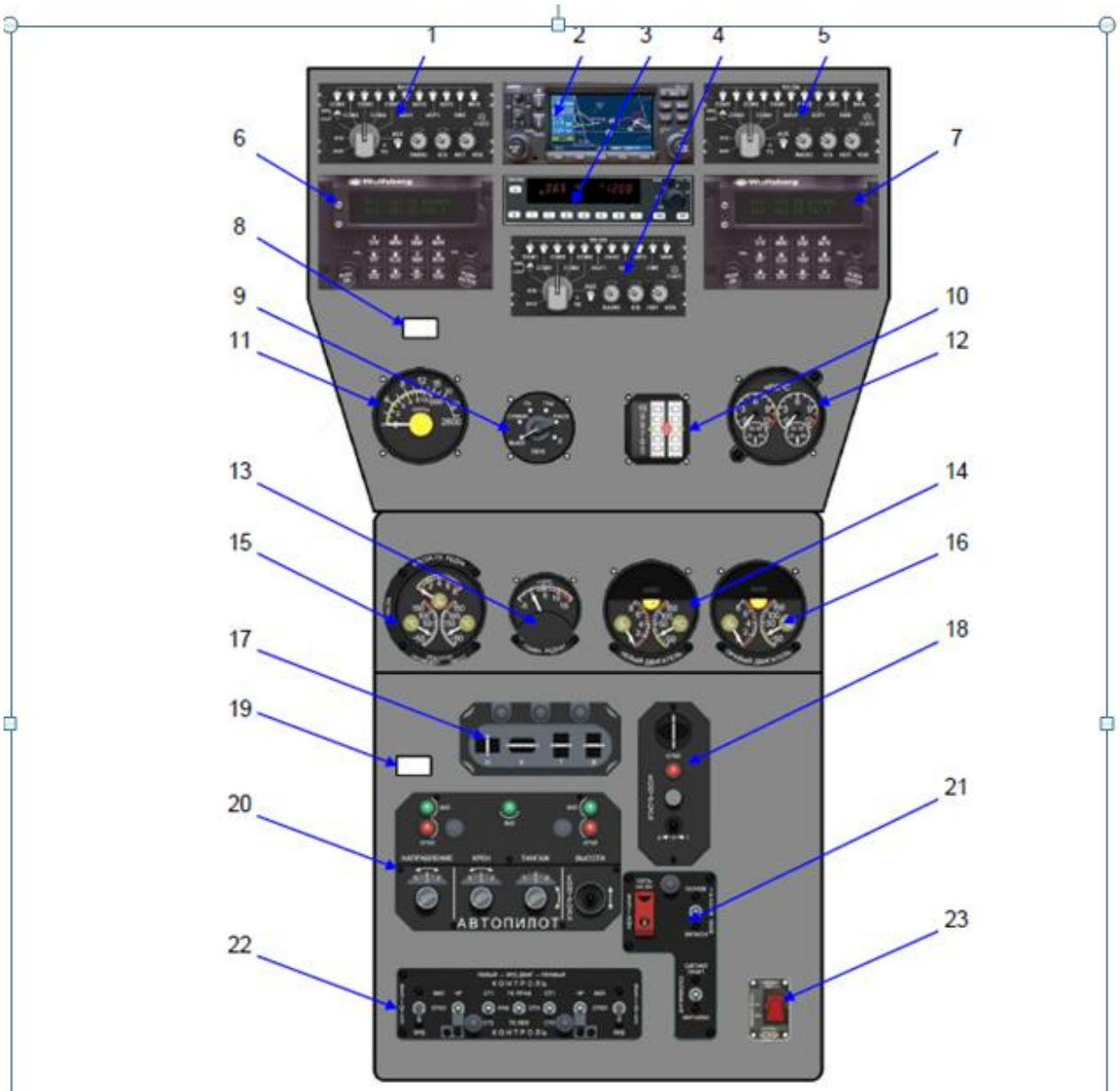


1. Main rotor pitch indicator ИП-21;
2. S-15-KA(W) airspeed indicator;
3. Heading indicator УГР-4УК;
4. AGB-3K gyro horizon (АГБ-3К);
5. KI-825 EHSI;
6. Vertical speed indicator ВРФ-6МПБ,
7. AAU-32/A encoding altimeter;
8. KNI-416 radar altimeter indicator;
9. M880A clock;
10. Main rotor tachometer indicator ИТЭ-1;
11. Two-pointer engine tachometer indicator ИТЭ-2;
12. Turn indicator ЭУП-53.

Figure 3: Pilots instrument panel

1. S-15-KA(W) airspeed indicator;
2. Main rotor tachometer indicator ИТЭ-1;
3. Gyro horizon АГБ-3К;
4. KI-825 EHSI;
5. Vertical speed indicator ВРФ-6МПБ;
6. AAU-32/A encoding altimeter;
7. M880A clock;
8. Two-pointer engine tachometer indicator ИТЭ-2;
9. Turn indicator ЭУП-53;
10. KNI-416 radar altimeter indicator;
11. Thermometer ТВ-1.

Figure 4: Co Pilots instrument panel



1. Intercom box NAT N301A (pilot-in-command),
2. Navigation system GNS-430W,
3. Transponder KT-76C,
4. Intercom box NAT N301A (flight engineer),
5. Intercom box NAT N301A (co-pilot),
6. Control head C-5000 (RT-5000 #1),
7. Control head C-5000 (RT-5000 # 2),
8. "270-LITER FUEL RSV" annunciator;
9. Fuel quantity switch П-8УК;
10. EPR indicator УР-117;
11. Fuel quantity indicator БЭ-09К;
12. Exhaust gas temperature indicator 2УТ-6К;
13. Main gearbox oil temperature indicator ТУЭ-48;
14. Oil pressure and temp. indicator УИЗ-3 (left eng.);
15. Three-pointer indicator УИЗ-6;
16. Oil pressure and temp. indicator УИЗ-3 (right eng.);
17. Trim indicator ИН-4;
18. Control unit БУ-32-1 of the pitch limit system СПУУ-52;
19. "CHIPS IN MAIN GEARBOX" annunciator;
20. Autopilot control unit АП-34Б,
21. Switches "RECTIFIER IN USE", "LAMP TEST", "TRANS. DIM";
22. Control panel of the electronic engine control ЭРД;
23. ELT control unit C406-2HM.

Figure 5: Center Instrument panel

3.3 Component Description

3.3.1 Engine Pressure Ratio (EPR) Indicator Fig 5 item 10

The engine pressure ratio indicator is used to monitor the engine power settings. The indicator displays the limited takeoff, nominal, and cruise power settings of the engines. It is located in the lower left area of the pilot's instrument panel.

- Engine Pressure Ratio (ERP) Indicator P/N: UR-117M

3.3.2 Power Turbine Inlet Temperature Gauge Fig 5 item 12

The power turbine inlet temperature (PTIT) gauge shall be located in the lower center area of the pilot's instrument panel. The indicator receives temperature indications from the thermocouple probes mounted on the engine power turbine housings. The gauge has two scales for each engine.

- Exhaust Gas Temperature Indicator P/N: 2UT-6K

3.3.3 Engine Dual Tachometer Indicator Fig 3 item 11 and Fig 4 item 8

A dual tachometer (ITE-2T) is used to monitor N1 RPM of both engines. Rotational speed is expressed as a percentage of maximum speed. The tachometer shall be located in the bottom left area of the instrument panel, pilot's side. A second engine dual tachometer shall be located on the instrument panel, copilot's side.

- Dual Tachometer, P/N ITE-2T

3.3.4 Oil Pressure/Temperature Gauges Fig 5 item 14 and 16

The engine oil pressure/temperature gauges, one for each engine, shall be mounted on the lower center section of the instrument panel. The gauges receive temperature indications from oil temperature probes installed in the outlet lines to the oil coolers.

- Oil Pressure and Temperature Indicator P/N: UIZ-3

3.3.5 Airspeed Indicator Fig 4 item 1 and Fig 3 item 2 (New)

Two airspeed indicators shall be installed on the helicopter, one on the pilot's side instrument panel and one on the copilot's side instrument panel. The helicopter may have U.S. military specification replacement airspeed indicators which display the indicated airspeed in a range of 0 to 150 knots. The foreign and U.S. airspeed indicators are differential pressure instruments, measuring the difference between dynamic and static pressure. The pilot's airspeed indicator is connected directly to the left pitot tube. The copilot's airspeed indicator is connected to the right pitot tube. Static pressure is supplied

to both airspeed indicators from both or either static port depending on the position of the static port switching valve. The following is the airspeed indicator that shall be installed:

- Aero Sonic Airspeed Indicator, P/N S-15-KA(W)

3.3.6 Encoding Altimeter Fig 3 item 7 and Fig 4 item 6 (New)

Two encoding altimeters shall be installed in the pilot and copilot side of the instrument panel. The AAU-32A is an integrally lighted, self-contained altimeter encoder having range of -100 to 50,000 ft. with an encoded altitude output in accordance with the US National Stands for Common System component Characteristics for SIF/ATRBS. The altimeter/encoder functions as barometric altimeter for the pilot and as an altitude sensor for the transponder in Mode C. The altimeter's operating range is from -1,000 to 50,000 feet. The instrument face has a marked scale from zero to nine in 50 foot increments. The following is the encoding altimeter indicator component:

- Kollsman AAU-32/A, P/N B45152-10-002

3.3.7 Vertical Speed Indicator Fig 3 item 6 and Fig 4 item 5 (New)

The standard Mi-17 helicopter is equipped with a VAR-30MK vertical speed indicator (VSI). The foreign VSI shall be mounted in the pilot's instrument panel (see Figure 2-8). It displays the helicopter's rate of ascent/descent in a range of ±30 meters per second (m/s). The indicator is actuated by the rate of atmospheric pressure change. It is connected to the static pressure system. In some Mi-17 helicopters, the foreign VSI has been replaced with a U.S. military specification VSI that displays the rate of ascent and descent in feet per second. The following is the vertical speed indicator component:

- OEM Vertical Speed Indicator (in feet/min), P/N ВРФ-6М ПБ (VRF-6M PB)

3.3.8 Turn and Slip Indicator Fig3 item 12and Fig 4 item 9(New)

The standard Mi-17 helicopter shall be equipped with two foreign turn and slip indicators. The indicators are mounted on the pilot's and copilot's sides of the instrument panel. It is powered with 27 VDC via the TURN IND circuit breakers on the right CB panel. The instrument scale displays in degrees with a range of ±45° in 15° increments. A U.S. military specification turn and slip indicator has been installed in some Mi-17 helicopters. The following is the turn and slip indicator component:

- 2x OEM Yaw/Roll Indicator, P/N ЗУП-53К (EUP-53K)

3.3.9 Digital Clock Fig 3 item 9 and 4 Fig item 7 (New)

The standard AChS-1 flight time clock will be replaced by two digital clocks mounted on the pilot and copilot's side of the instrument panel. The helicopter features the Davtron M880A

clock (2pcs). The clocks are installed on the LH and RH instrument panels and NVIS compatible.

The clock are supplied with electrical power from the battery bus through the circuit breaker АЗСГК-2-2с "CLOCK" located on the RH CB panel.

- Davtron Clock, P/N M880A-S

3.3.10 Mode A/C Transponder Fig 5 Item 3

The КТ-76С transponder is designed for interaction with secondary surveillance radars (SSR) of ATCRBS systems, and automatic transmission of information upon interrogations of ground SSRs. The secondary surveillance radar system is designed for aiding the air traffic control on air routes in airport area; it includes airborne (transponder) and ground (SSR and display hardware) equipment. A ground SSR transmits interrogation pulses within its range to airborne transponders. Airborne transponders transmit encoded responses depending on the transponder mode. The SSR receives the response code and transmit it to the ATC tower.

The КТ-76С transponder installed on the helicopter is designed for operation in A and C modes. In these modes, the transponder receives ground radar interrogations at 1030 +2.5 MHz, and returns a coded response of pulses to ground based radar on a frequency of 1090 + 3 MHz. The coded response may contain Information which depends on the interrogation code and operating mode in accordance with ICAO standards.

Specifications:
Receiver frequency – 1030 + 2.5 MHz;
Receiver sensitivity – not worse than 102 dB/W;
Transmitter frequency – 1090 + 3 MHz;
Transmitter power – 125 - 500 W;

Mode A Capability: 4096 identity codes plus Special Identification Pulse;
Mode C Capability: standard ICAO Altitude Transmission Code, reporting in 100 ft. increments from -1000 ft. up to 63,000 feet;

The transponder will operate normally in the following conditions:
- ambient air temperature: -20oC…+55oC;
- relative air humidity: 90-95% non condensing
- on altitudes up to 35,000 ft

Components and arrangement
- КТ-76С – electronic unit; installed on the additional mount on the central pedestal;
- AAU-32/A (left) – encoding altimeter; installed on the LH instrument panel;
- КА-60 – antenna; installed on the bottom of the flight compartment, between fr. 2H-3H on the RH side.

3.3.11 COM/NAV/GPS Receiver (GNS 430W) NVG

The GNS-430W system is a GPS unit providing pilots with precision navigation data, short-range navigation data for precision approach and radio communication with air traffic controller via a built-in VHF communications transceiver.

A built-in database (loaded form a changeable NAV DATA card) contains an interbational database with information on aiports, non-diractional beacons and intersections of air routes. It is recommended to update the database after every 28 days.
The airborne GNS-430W system includes the following parts:

- unit GNS-430W;
- antenna GPS – GA-35;
- antenna VOR/LOC – CI-205-3;
- antenna VHF – CI-109;
- data card NavData with database;

The GNS-430W system is NVIS compatible and interfaced with indicators KI-825 (2 pcs).

The built-in VHF communications transceiver with digital tuning, navigatuon GPS unit and VOR/LOC receivers allows to perorm radiocommunication and navigation.

The main function of the VOR/ILS receiver is to receive signals from VOR, LOC and glide slope beacons.

GNS-430 front panel

3.3.12. Electronic Horizontal Situation Indicator (EHSI)

The KI 825 (EHSI) is a flight-navigation instrument which combines the display functions of the standard Directional Gyro with VOR/LOC course deviation indication, glide slope deviation, and bearing.

When interfaced to a GPS system, the KI 825 will display a GPS flight path with waypoint indications.

The KI 825 can be operated in any one of three modes: HSI mode, 360 Map mode, and Arc Map mode. The EHSI's are installed on the LH and RH instrument panels and shall be NVIS compatible.

The circuit breakers "EHSI LEFT" and "EHSI RIGHT" are located on the RH circuit breaker panel.

3.3.13. Radar Altimeter System

Radar altimeter KRA 405B is designed for measurement of Above Ground Level (AGL) altitude and its display on instruments. The radio altimeter provides the following information to indicators and aircraft systems:

– AGL altitude on indicators of pilots and navigator;visual and aural warnings when the helicopter reaches the desired flight altitude (decision height);AGL altitude information to flight data recorder.

The radio altimeter includes the following units: transceiver KRA-405B, two indicators KNI-416, NVIS compatible, and two antennas KA-54A (transmitting and receiving). The transceiver is installed in radio compartment; Indicators are installed in the left and right parts of the instrument panel and shall be NVIS compatible; Antennas are installed on the bottom of the tail boom along the helicopter symmetry axis.

3.3.14. Wulfsberg Radio VHF/UHF RT 5000 with C-5000 Head

The helicopter is equipped with two radio stations RT-5000 with control head C-5000. The RT-5000 radio station is designed for communication with ground or airborne radio station in UHF/VHF bands, and provides two-way communication via the N301A audio controller. On the N301A interphone control box, the microphone selector switch should be in one of the following positions depending on the selected communication channel:

- **COM1** = UHF/VHF#1 (Wulfsberg RT-5000 #1)
- **COM2** = UHF/VHF#2 (Wulfsberg RT-5000 #2)

The main unit of the radio station is the transceiver RT-5000 (Fig. 8.15.2a.1).

Transceivers are installed in the radio compartment, displays C-5000 are installed on the additional mount of the central pedestal, antenna of the radio station No.1 is located on the tail boom between frames 6-7, antenna of the radio station No.2 is located on the tail boom between frames 2-3.

3.3.15. ARTEX ELT P/N C406-1HM

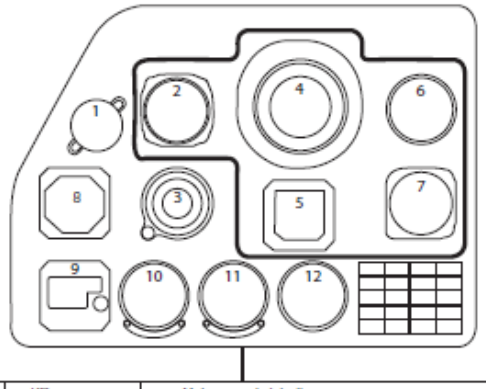
The ELT ARTEX C406-2HM is designed for transmission of radio signals via the Cospas/Sarsat satellite system to data acquisition stations.

The C406-2HM automatically activates during a crash and transmits the standard swept tone on 121.5 and 243 MHZ every 50 seconds for 520 milliseconds. An encoded message is sent to the satellite at 406.025 MHZ. The information contained in that message is shown below:

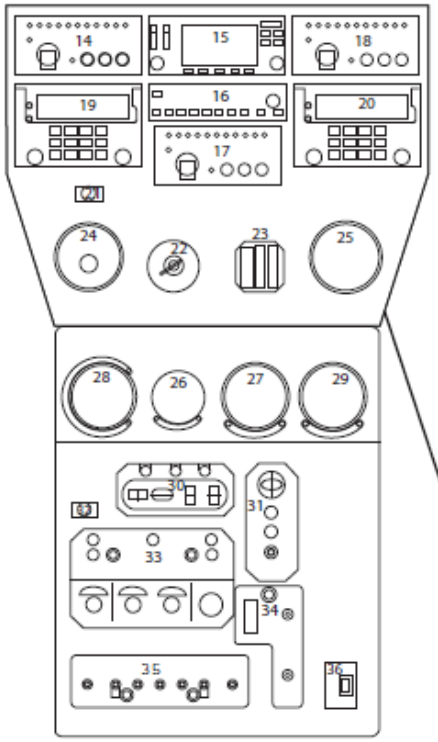
- Serial No. of the transmitter or aircraft ID;
- Country code;
- I.D. code;
- position coordinates (when coupled to an ARTEX ELT/NAV ELT/NAV interface unit).

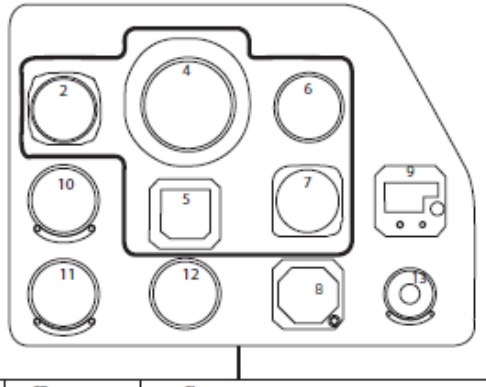
The 406.025 MHz transmitter will operate for 24 hours and then shuts down automatically. The 121.5/243.0 MHz transmitter will continue to operate until the unit has exhausted the battery power which typically will be at least 72 hours.

Ft. Rucker Cockpit



1	ИП-21	Main rotor pitch indicator
2	S-15-KA(W)	airspeed indicator
3	УГР-4УК	Heading indicator
4	АГБ-3К	АОШ-3К gyro horizon
5	KI-825	EHSI
6	ВРФ- 6МПБ	Vertical speed indicator
7	AAU-32/A	encoding altimeter
8	KNI-416	radar altimeter indicator
9	M880A	clock
10	ИТЭ-1	Main rotor tachometer indicator
11	ИТЭ-2	Two-pointer engine tachometer indicator
12	ЭУП-53	Turn indicator





13	ТВ-1	Therometer

14	NAT N301A	Intercom box (pilot-in-command)
15	GNS-430W	Navigation system
16	KT-76C	Transponder
17	NAT N301A	Intercom box (flight engineer)
18	NAT N301A	Intercom box (co-pilot)
19	RT-5000 #1	Control head C-5000
20	RT-5000 #2	Control head C-5000
21		300 L FUEL RSV red annucaiator
22	П-8УК	Fuel quantity switch
23	УР-117	EPR indicator
24	БЭ-09К	Fuel quantity indicator
25	2УТ-6К	Exhaust gas temperature indicator
26	ТУЭ-48	Main gearbox oil temperature indicator
27	УИЭ-3	Oil pressure and temp. indicator (left eng.)
28	УИЭ-6	Three-pointer indicator
29	УИЭ-3	Oil pressure and temp. indicator
30	ИН-4	Trim indicator
31	БУ-32-1	Control unit of the pitch limit system СПУУ-52
32		CHIPS IN MAIN G/B yellow annunciator
33	АП-34Б	Autopilot control unit
34		Switched "RECTIFIER IN USE," "LAMP TEST," "TRANS.DIM"
35	ЭРД	Control panel of the electronic engine control
36	С406-2НМ	ELT control unit

1. Pilot's Instrument Panel
2. Center Console with added avionics
3. Copilot's Instrument Panel

Figure 7: Full Cockpit Photograph

Figure 8: Center Console Photograph

Figure 9: Lower Console Photograph

3.4. Right Rear Console

3.4.1 Description

The Right Rear Console (Figure 10) is installed to the right rear of the right pilot station. It contains the switches, gauges, knobs and informational lighting for the aircraft electrical loads and voltage output. The console can be opened to gain access to the indicators, electrical components, and wiring. The console is NVIS compatible per MIL-STD-3009, Type II Class B.

3.4.2 Components

• DC Battery Voltmeter	• AC Generator Ammeter 2
• DC Battery Ammeter 1	• AC Generator Selector Switch
• DC Battery Ammeter 2	• Voltage Control Rotary Switch 1

• AC Rectifier Voltmeter	• Voltage Control Rotary Switch 2
• AC Rectifier Ammeter 1	• Generator 1 Switch
• AC Rectifier Ammeter 2	• Generator 2 Switch
• AC Generator Voltmeter	• External Power Switch
• AC Generator Ammeter	• Inverter 1 MAN/AUTO Switch
• Inverter 2 MAN/AUTO Switch	
• GEN 1 FAIL ANNUNCIATOR LIGHT (RED)	• EXT PWR ON ANNUNCIATOR LIGHT (AMBER)
• GEN 2 FAIL ANNUNCIATOR LIGHT (RED)	• NO-500 INV ON ANNUNCIATOR LIGHT (AMBER)

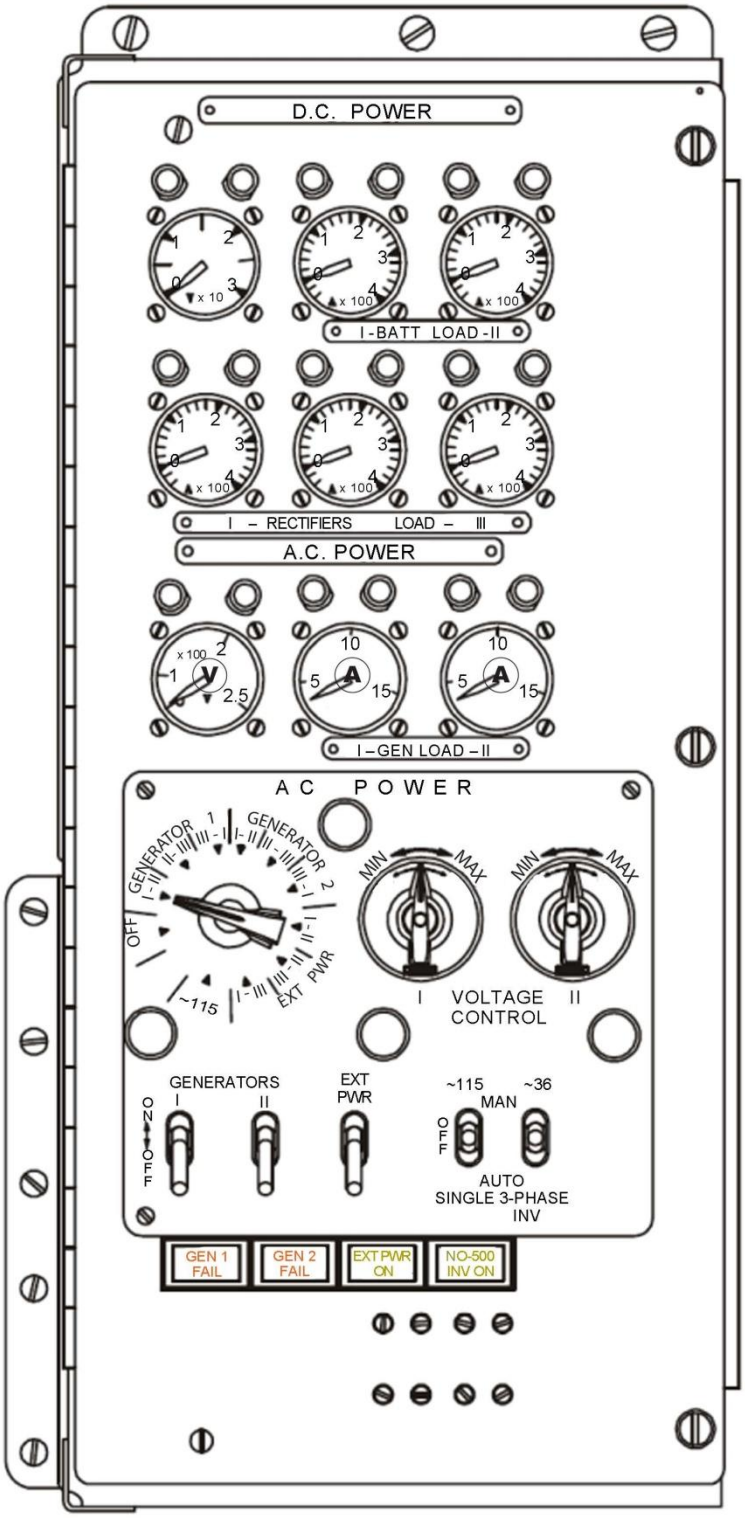


Figure 10: Right Rear Console Diagram

Figure 11: Right Rear Console Photograph

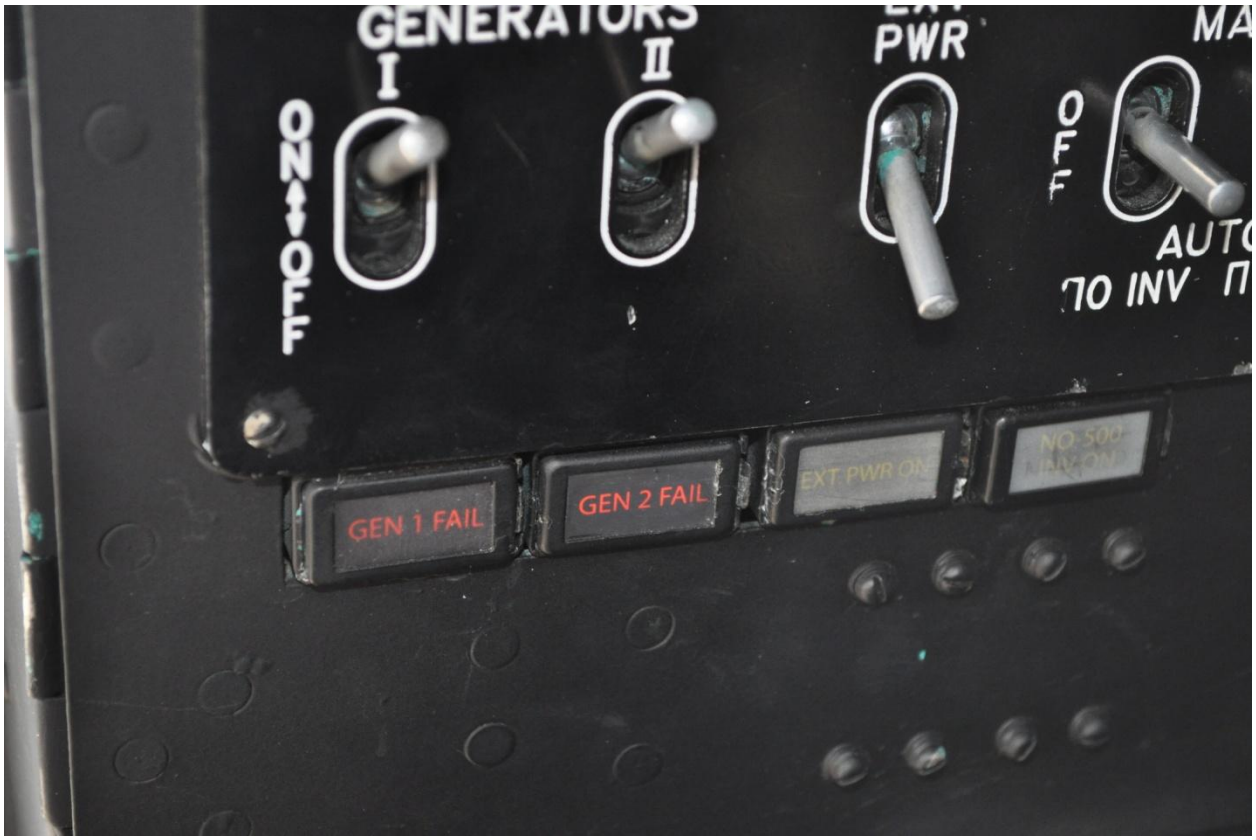


Figure 12: Bottom Portion of Right Rear Console Photograph

3.5 Left Side Panel

3.5.1 Description

The Left Side Console (Figure 13) is installed on the left side of the left pilot station. It contains the Monitoring of Brake Air Pressure, Lft/Rgt Engine Temperature Limiter, Voice Warning and Voice Recording. The console panel can be opened to gain access to the instrument fittings, electrical components, and wiring. The console is NVIS compatible per MIL-STD-3009, Type II Class B.

3.5.2 Components

1. Dimmer Rotary Switches (LH/RH)	• Cockpit Voice Recorder (CVR) Switch (OFF/ON)
• n&c EGT LIMIT LH (GREEN)	• FDR ON (GREEN)
• n&c EGT LIMIT RH (GREEN)	• Pressure Gauge (Landing Gear Wheels Brake System)
• HORN ON (GREEN)	• Pressure Gauge MBY-10K
	• Diming Rotary Switch (GROUP 1)

• Diming Rotary Switch (GROUP 2)	• DOORS OPEN (AMBER)
• SHAKLE OPEN (GREEN)	• CODE NAV LIGHTS Switch (AIR)
• AIR HORN Switch	• DROP EXT LOAD (BRAKE)

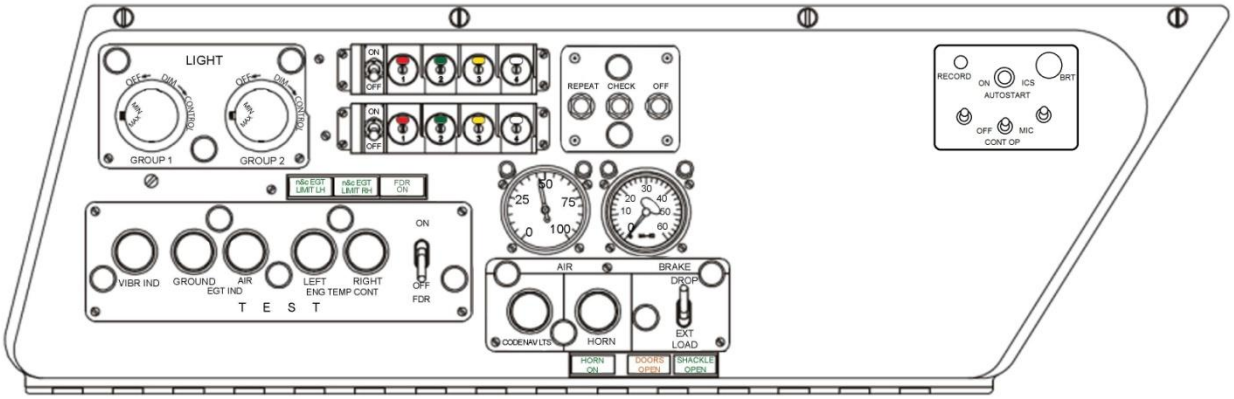


Figure 13 : Left Side Console Diagram

Figure14 : Left Side Console Photograph Center

Figure 15 : Left Side Console Photograph (Center and Right Hand Side)

Figure 16: Left Side Console Photograph (Left Hand Side and Center)

3.6 Left Triangular Panel

3.6.1 Description

The Left Triangular Panel (Figure 17) is installed to the upper left of the left pilot station. It contains the switches for the Dome Light, Fan, Gyro Horizon, Erect Switch, AAU-32 Barometric Altimeter, SPU-52 Pitch Limit System, Information Reporting, Pitot Heater Test and Windshield Wiper. There are two informational lights, one is to remind the pilot to switch on the Information Reporting System (IRS) and the other is to show a successful Pitot Heater Test. The console panel can be opened to gain access to the electrical components, and wiring. The panel is NVIS compatible per MIL-STD-3009, Type II Class B.

3.6.2 Components

• W/S WIPER Switch	• AAU-32 LEFT Switch
• Dome Light ADAPT Switch	• PITCH LIM SYS Switch (OFF/ON)

• Fan Switch	• INF REP Switch
• Gyro HOR Switch	• PITOT HEATER TEST Switch
• ERECT Switch	• HEATER OK (AMBER)
• SWITCH INF REPORT ON (AMBER)	

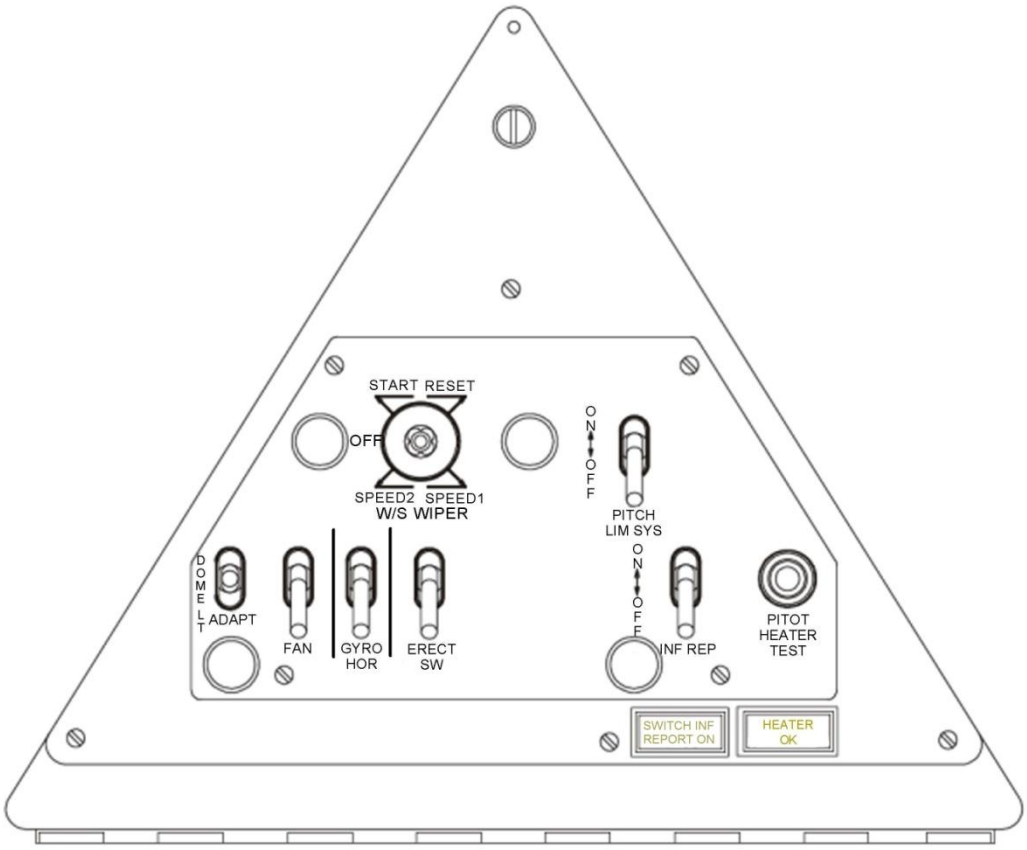


Figure 17: Left Triangular Panel Diagram

Figure18: Left Triangular Panel Photograph (Entire Panel)

3.7 Left Overhead Console

3.7.1 Description

The Left Overhead Console (Figure 19) is installed to the front upper area of the left pilot station. It contains the Monitoring and Control for the Anti-Icing System. The console panel can be opened to gain access to the indicator, electrical components, and wiring. The console is NVIS compatible per MIL-STD-3009, Type II Class B.

3.7.2 Components

• General Switch (MAIN/AUTO)	• Heating Switch (OFF/ON)
• Main Heating Switch (WS)	• Main Heating Switch (ENG DUST PR RIGHT)
• Icing (RED)	• Anti-Ice ON (GREEN)
• R ENG ANTI-ICE (GREEN)	• L ENG ANTI-ICE (GREEN)
• R DUST PROT FWD (GREEN)	• L DUST PROT FWD (GREEN)
• R DUST PROT REAR (GREEN)	• L DUST PROT REAR (GREEN)

• CO-121 NORMAL (GREEN)	• SECTION 1 (GREEN)
• SECTION 2 (GREEN)	• SECTION 4 (GREEN)
• SECTION 3 (GREEN)	• LOAD CURRENT Rotary Switch

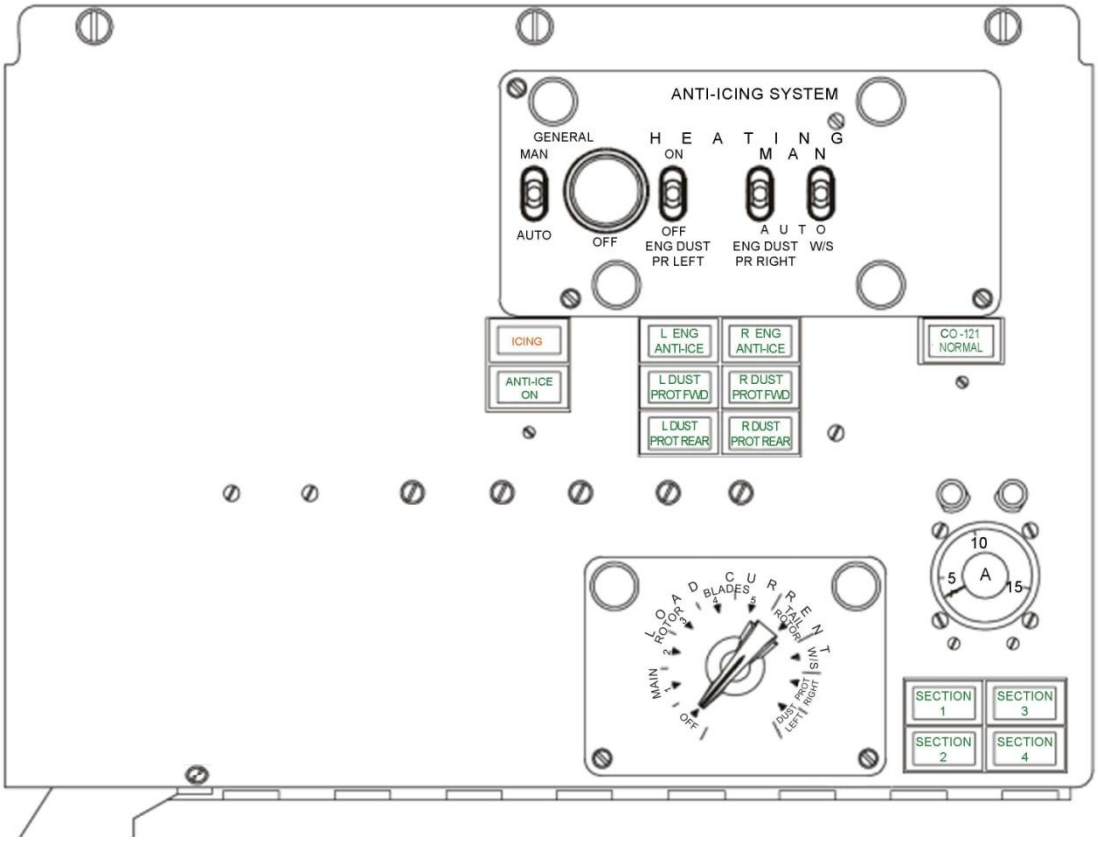


Figure 19: Left Overhead Console Diagram

ANTI–ICING
SYSTEM
GENERAL
MAN
OFF
HEATING
ON
OFF
ENG
LEFT
ENG
RIGHT
MAN
AUTO
W/S
L. ENG ANTI-ICE
R. ENG ANTI-ICE
ANTI-ICE ON
L. DUST PROT FWD
R. DUST PROT FWD
L. DUST PROT REAR
R. DUST PROT REAR
CURRENT
LOAD
BLADES
MAIN ROTOR
TAIL ROTOR
W/S
DUST PROT LEFT
DUST PROT RIGHT
OFF
SECTION 1
SECTION 3
SECTION 2
SECTION 4
A

Figure 20: Left Overhead Console Top Photograph

Figure 21: Left Overhead Console Bottom Photograph

3.8 Center Overhead Console

3.8.1 Description

The Center Overhead Console (Figure 22:) is installed in the overhead panels of the cockpit in the center area. It contains the Fire Extinguishing System, Hydraulic System, Fuel Pumps, Fuel Valves, Engine Start Switches and APU. The console panel can be opened to gain access to the instrument fittings, electrical components, and wiring. The panel is NVIS compatible per MIL-STD-3009, Type II Class B.

3.8.2 Components

• L ENG FIRE (RED)	• R ENG FIRE (RED)
• COMBUST HTR FIRE (RED)	• APU GEAR FIRE (RED)
• MAIN DISCH (4)(AMBER)	• Test Selector
• ALTN DISCH (4) (AMBER)	• SENSOR TEST (AMBER)
• FIRE DET TEST light (RED)	• MAIN DISCH push buttons
• FIRE EXT/TEST switch	• FIRE WARN OFF button
• SQUIB TEST switch	• MAX LIM SPEED (RED)
• FIRE warning lights (RED)	• AUTO COUNT ON (GREEN)
• AUX DISCH (AMBER)	• OIL PRESS NORMAL (GREEN)
• AUX DISCH buttons	• STARTER ON (GREEN)
• SERVICE INOP (AMBER)	• RIGHT INOP light (AMBER)
• LEFT INOP (AMBER)	• RIGHT CLOSED (AMBER)
• LEFT CLOSED (AMBER)	• SERVICE TANK PUMP ON (GREEN)
• MAIN SYS ON (GREEN)	• AUX SYS ON (AMBER)
• NORMAL SPEED (GREEN)	• LEFT ON (GREEN)
• SHUT OFF VALVE LEFT Switch	• TANK's PUMPS (Service) Switch
• RIGHT ON (GREEN)	• AUTO COUNT ON (GREEN)
• SHUT OFF VALVE RIGHT Switch	• TANK's PUMPS (Left) Switch
• REFUEL CHECK Switch	• TANK's PUMPS (Right) Switch
• FUEL SYSTEM BYPASS Switch	• HYD SYSTEM MAIN Switch
• APU EGT Indicator	• APU Air Press Indicator
• HYD SYSTEM TEMP Indicator (Left)	• HYD SYSTEM TEMP Indicator (Right)

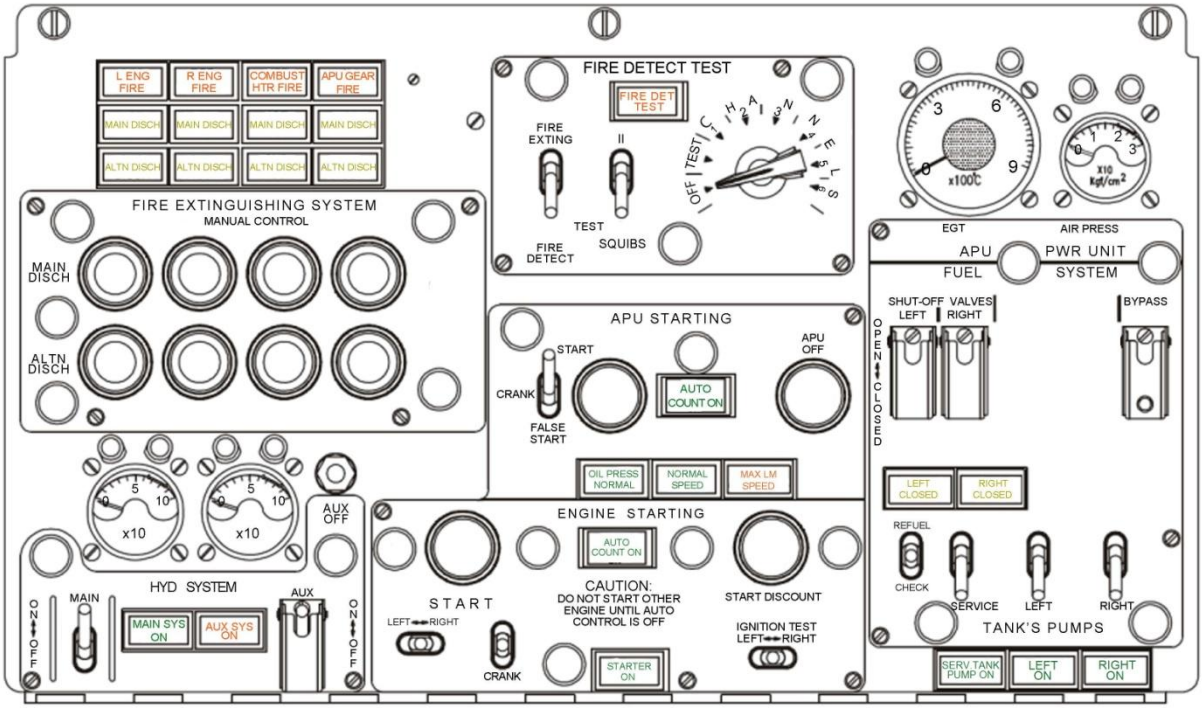


Figure 22: Center Overhead Console Diagram

Figure 23: Center Overhead Console Photograph (Center and Right Hand Side)

Figure 24: Center Overhead Console Photograph (Left Hand Side)

3.9 Right Overhead Console

3.9.1 Description

The Right Overhead Console (Figure 25) is installed at the right pilot station upper front area. It contains the KO-50 Combustion Heater with informational lights and temperature selector thermostat. It also has the GMK-1A Compass System Control Panel which operates two indicators; one indicator is behind the left pilot station and the other indicator УГР-4УК is on the pilot instrument panel. The panel can be opened to gain access to the electrical components, and wiring. The console is NVIS compatible per MIL-STD-3009, Type II Class B.

3.9.2 components

• HEATER (AMBER)	• KO-50 Mast “T” Rotary Switch
• IGNITION (AMBER)	• Gyro Control Switch
• COMBUST HTR ON (GREEN)	• Priming Switch MED/FULL/
• Combustor Start Switch (Push-button)	• Fan (OFF/ON)

• Combustor Heater Switch (MAN/AUTO)	• Automatic Direction Finder (ADF) Control Head

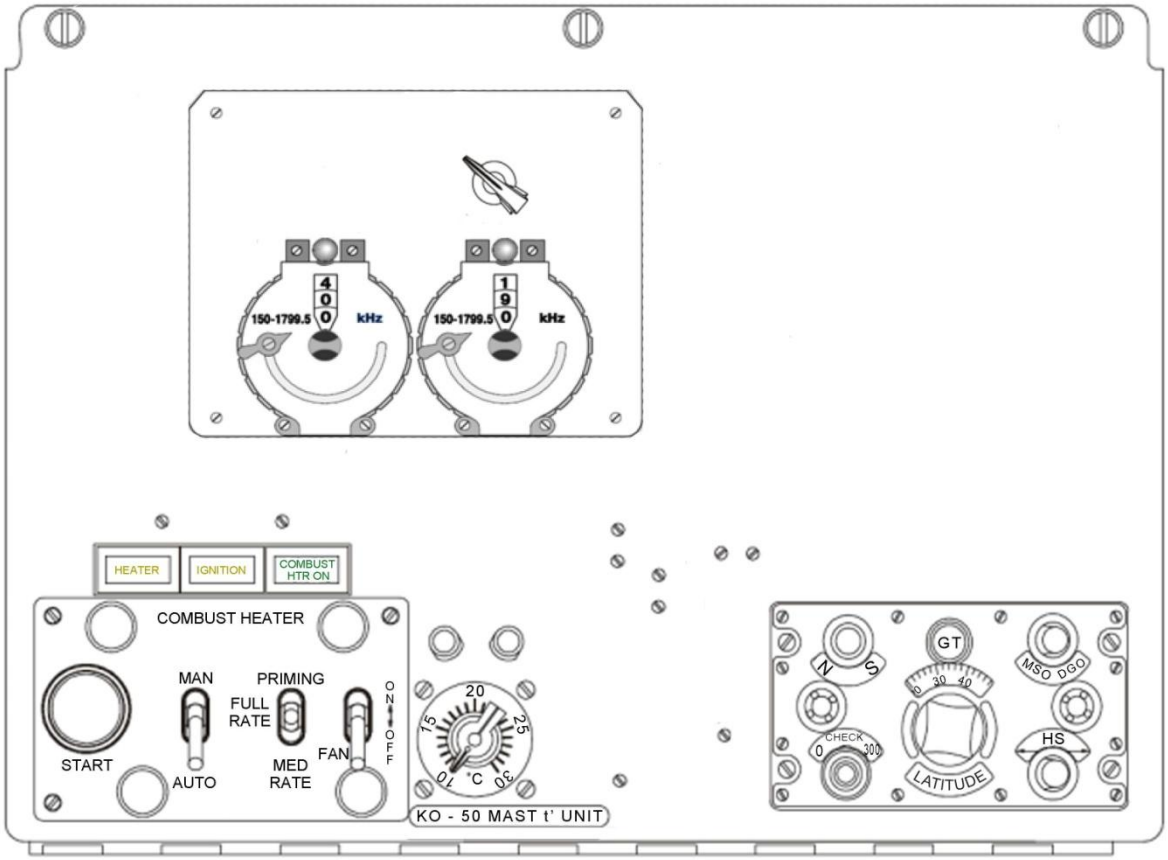


Figure 25: Right Overhead Console Diagram

Figure 26: Right Overhead Console Photograph (Console with Right Hand Side Inset)

3.10 Right Triangular Panel

3.10.1 Description

The Right Triangular Panel (Figure 27) is installed in the upper area of the right pilot station. It contains the switches for the Dome Light, Fan, Gyro Horizon, , Compass System (COMP SYS), Pitot Heater Test and Windshield Wiper. There is one informational light to show a successful Pitot Heater Test. The console panel can be opened to gain access to the electrical components, and wiring. The panel is NVIS compatible per MIL-STD-3009, Type II Class B.

3.10.2 Components

• W/S WIPER Switch	• COMP SYS switch

• DOME LIGHT ADAPT Switch	• COMM RADIO Switch
• Fan Switch	• Gyro HOR Switch
• Mike Switch	• VHF ADF Interlock
• 5.5VAC Light Switch	• Doppler switch
• HEATER OK (GREEN)	• PITOT HEATER TEST Switch

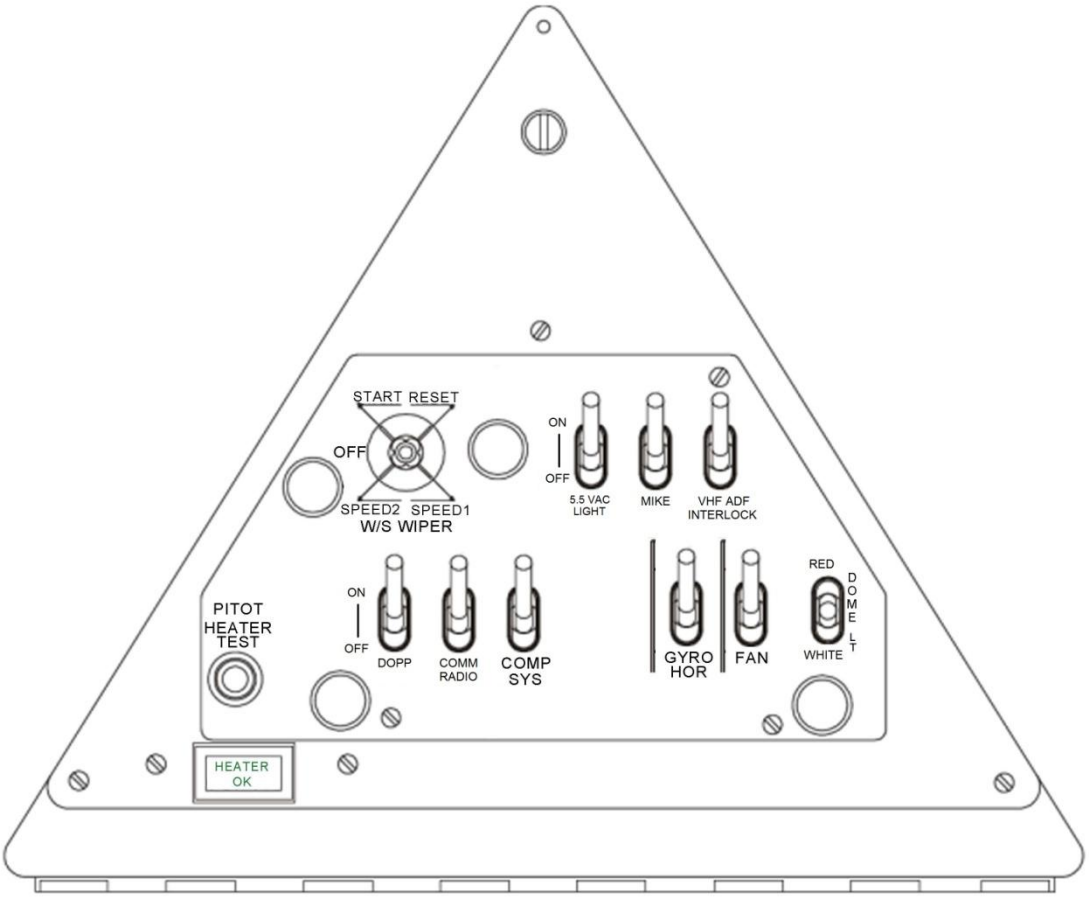


Figure 27: Right Triangular Console Diagram

Figure 28: Right Triangular Console Photograph

3.11 Right Side Console

3.11.1 Description

The Right Side Console (Figure 29) is installed at the right upper area of the right pilot station. It contains the Group 1 and 2 lighting rheostats, APU Generator load indicator, the D C power switches, informational lights and lighting switches, Dust Protectors and Pitot Heating. The console panel can be opened to gain access to the indicator, electrical components, and wiring. The console is NVIS compatible per MIL-STD-3009, Type II Class B.

3.11.2 Components

• Dimmer Switches Group1 ,Group 2 Rotary	• Voltage Control Rotary Switch
• APU GEN LOAD Indicator	• Load Selector Rotary Switch
• BATTERY Switch I	• BATTERY Switch 2
• STBY GEN Switch	• R DUST PROT ON switch & annun (GREEN
• L DUST PROT ON Switch & annun (GREEN)	• SWITCH RECT 1 and annunciator (AMBER)
• SWITCH RECT 2 and annunciator(AMBER)	• SWITCH RECT 3 and annunciator (AMBER)
• EXT PWR ON (AMBER)	• EQUIP TEST (RED)
• Annunciator Day/Night Switch	• FLASH Switch
• Batt Switch	• Clock Switch
• Pitot Heating Right Switch	• Pitot Heating Left Switch
• Anti Coll Light Switch	• Blade Tip Light Switch
• Bright/Dim Nav Lights Switch 1	• Bright/Dim Nav Lights Switch 1
• Lighting Stby Switch	• Lighting General Switch

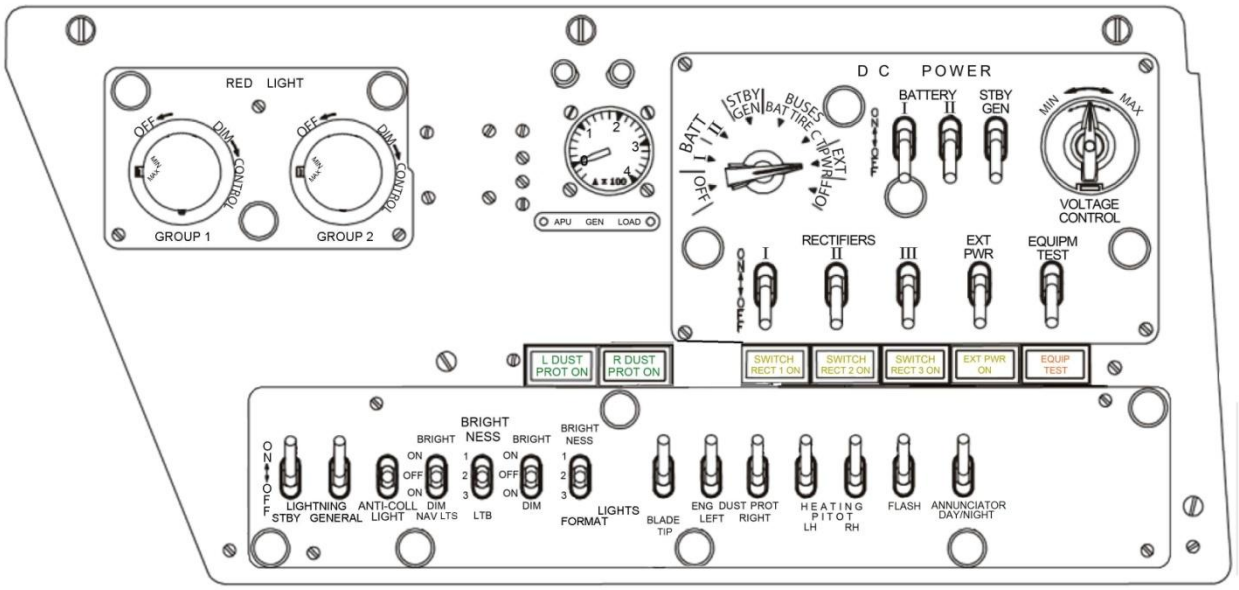


Figure 49: Right Side Console Diagram

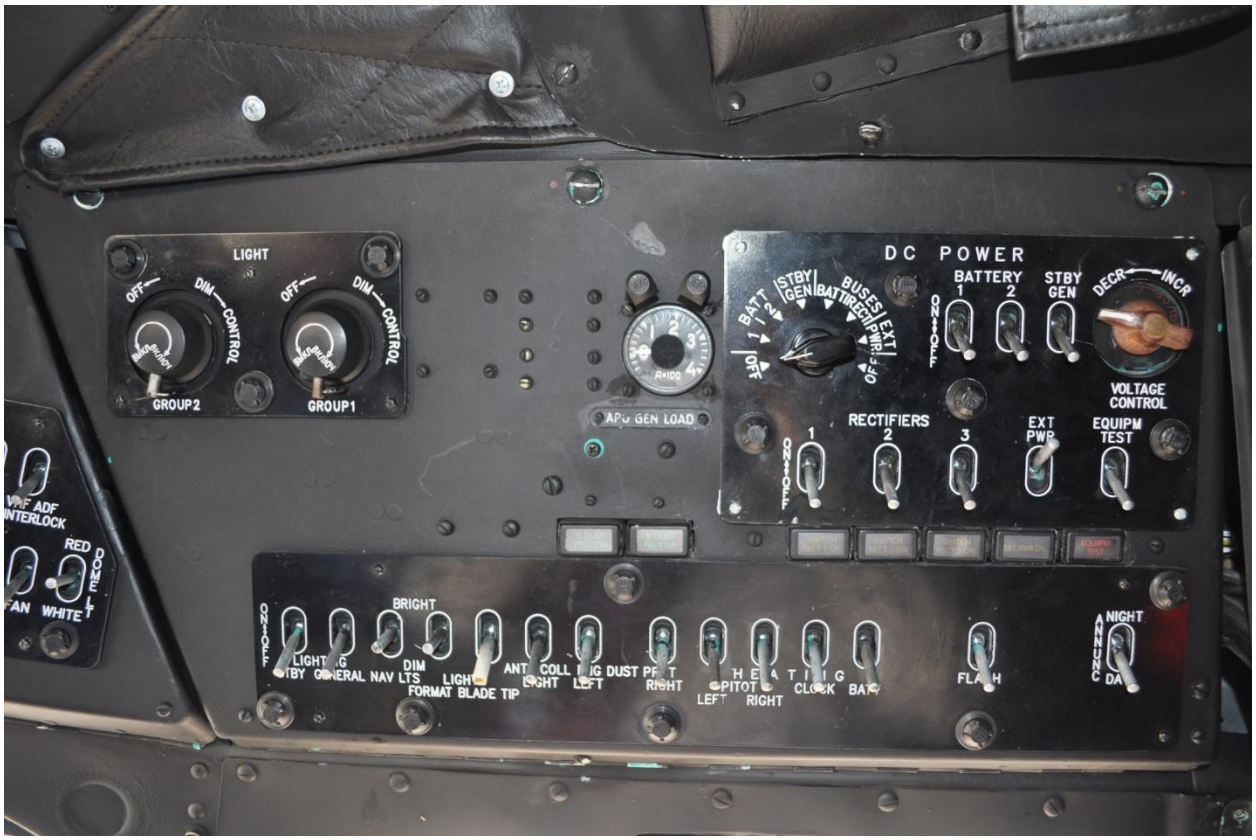


Figure 30: Right Side Console Photograph

3.12 Left Overhead Circuit Breaker Panel

3.12.1 Description

The Left Overhead Circuit Breaker Panel (Figure 31) is installed in the overhead panels of the left pilot station. It contains the circuit breakers for the ICS and the GNS 430 as indicated in figure 31. The overhead panel can be opened to gain access to the electrical components, and wiring. The panel is NVIS compatible per MIL-STD-3009, Type II Class B.

3.12.2 Components

• ICS Left Circuit Breaker	• ICS Right Circuit Breaker
• GNS 430 COMM	• GNS 430 NAV

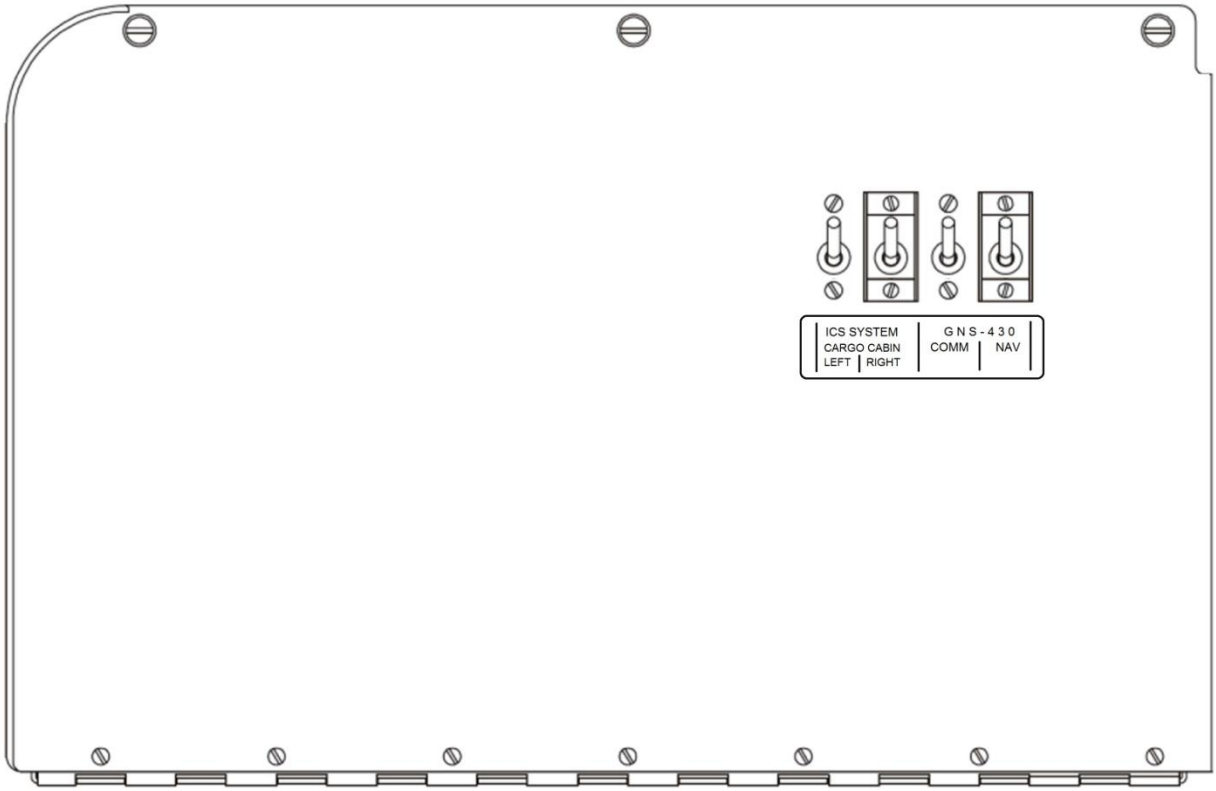


Figure 31: Left Overhead Circuit Breaker Panel Diagram

Figure 32: Left Overhead Circuit Breaker Panel Photograph

3.13 Right Overhead Circuit Breaker Panel

3.13.1 Description

The Right Overhead Circuit Breaker Panel (Figure 33) is installed in the overhead panels of the right pilot station. It contains the majority of the cockpit circuit breakers for Starting, Fuel System, Autopilot, Instruments, Fire Extinguishing System, Radios, Lights, Anti-Icing, Environmental Systems and ELT. The circuit breaker panel can be opened to gain access to the electrical components, and wiring. The panel is NVIS compatible per MIL-STD-3009, Type II Class B.

3.13.2 Components

• APU START Circuit Breaker	• Fuel Tank Pump Left Circuit Breaker
• APU IGNIT Circuit Breaker	• Fuel Tank Pump Right Circuit Breaker
• ENGINE START Circuit Breaker	• Clock Circuit Breaker
• ENGINE IGNIT Circuit Breaker	• Pitch Limit System Circuit Breaker
• CONTROL SPEED Circuit Breaker	• Fire Warning Circuit Breaker
• EHSI PILOT Circuit Breaker	• Fire Extinguishing Main Circuit Breaker
• EHSI COPILOT Circuit Breaker	• Fire Extinguishing Disch Circuit Breaker
• ELT Circuit Breaker	• System Aux Circuit Breaker
• Turn Indicator Circuit Breaker	• System Disch Circuit Breaker
• Autopilot Main Circuit Breaker	• Radio ADF VHF Circuit Breaker
• FRICT Circuit Circuit Breaker	• Altimeter Circuit Breaker
• Solenoid Clutches Circuit Breaker	• Command Main Circuit Breaker
• HYD SYSTEM MAIN Circuit Breaker	• RS Standby Circuit Breaker
• HYD SYSTEM AUX Circuit Breaker	• Left Cont Circuit Breaker
• Intercom System Pilot Circuit Breaker	• Left Light Circuit Breaker
• Intercom System CoPilot Circuit Breaker	• Right Cont Circuit Breaker
• Intercom System Flight Eng Circuit Breaker	• Right Light Circuit Breaker
• Transponder Circuit Breaker	• Nav LTS Circuit Breaker
• BYPASS VALVE Circuit Breaker	• Form LTS Circuit Breaker
• SHUTOFF LEFT Circuit Breaker	• Lamp Test Flash Circuit Breaker
• SHUTOFF RIGHT Circuit Breaker	• Shackle Control Main Circuit Breaker
• Fuel Quantity Indicator Circuit Breaker	• Shacke Control Aux Circuit Breaker
• Fuel Tank Pump Service Circuit Breaker	• Anti Icing Control Circuit Breaker
• Anti Icing Part Left Circuit Breaker	• Anti Icing Sep Right Circuit Breaker
• SO-121 Circuit Breaker	• Wind SCR Circuit Breaker
• Wiper Left Circuit Breaker	• Wiper Right Circuit Breaker
• Flare Horn Circuit Breaker	• Comb Heater Circuit Breaker

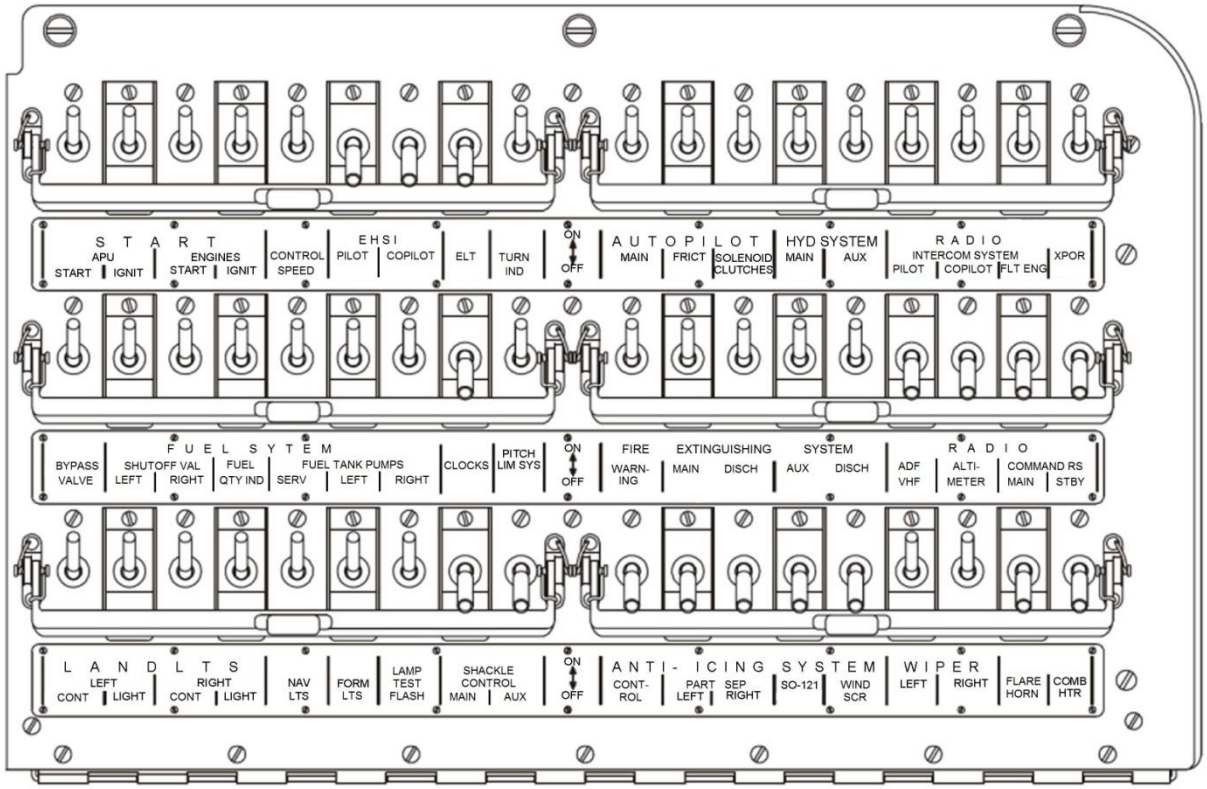


Figure 33: Right Overhead Circuit Breaker Panel Diagram

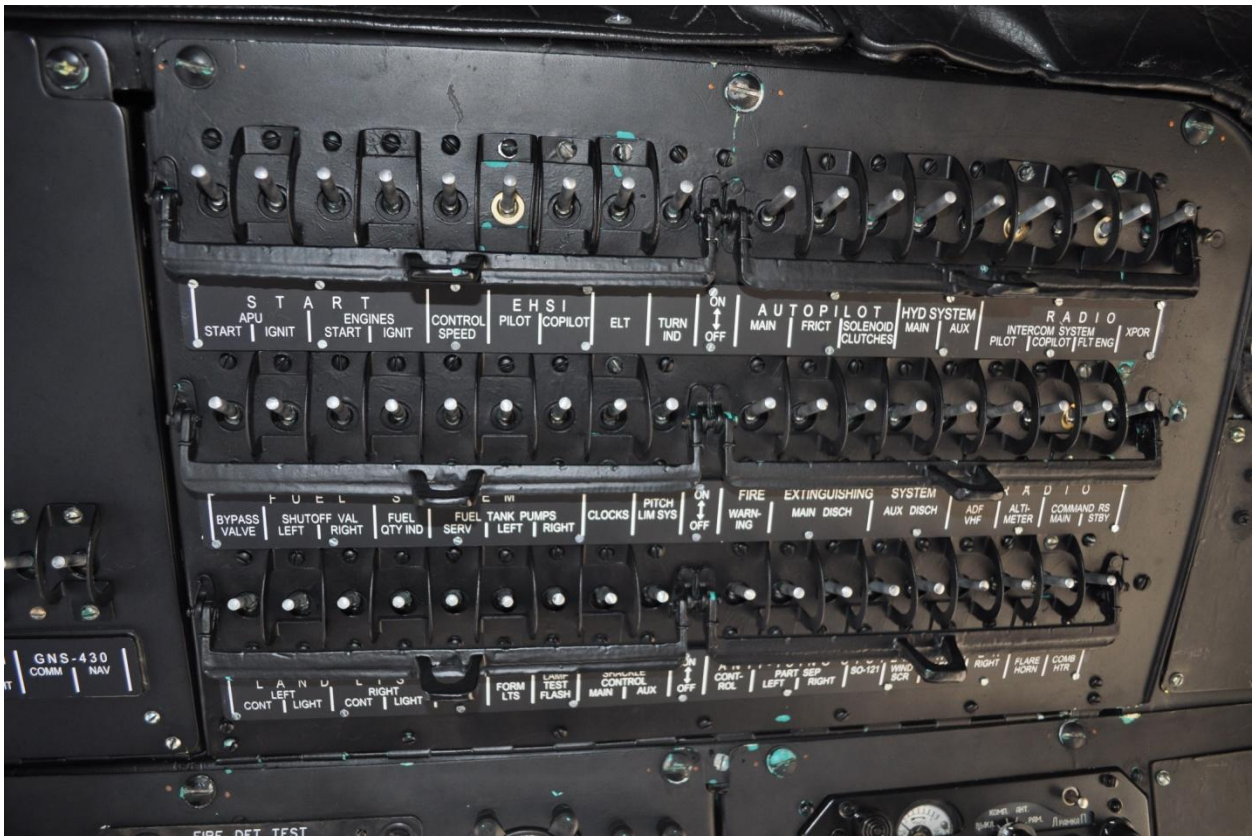


Figure 34: Right Overhead Circuit Breaker Panel Photograph (Left Hand Side)

Figure35: Right Overhead Circuit Breaker Panel Photograph

4.0 OTHER AVIONICS COMPONENTS

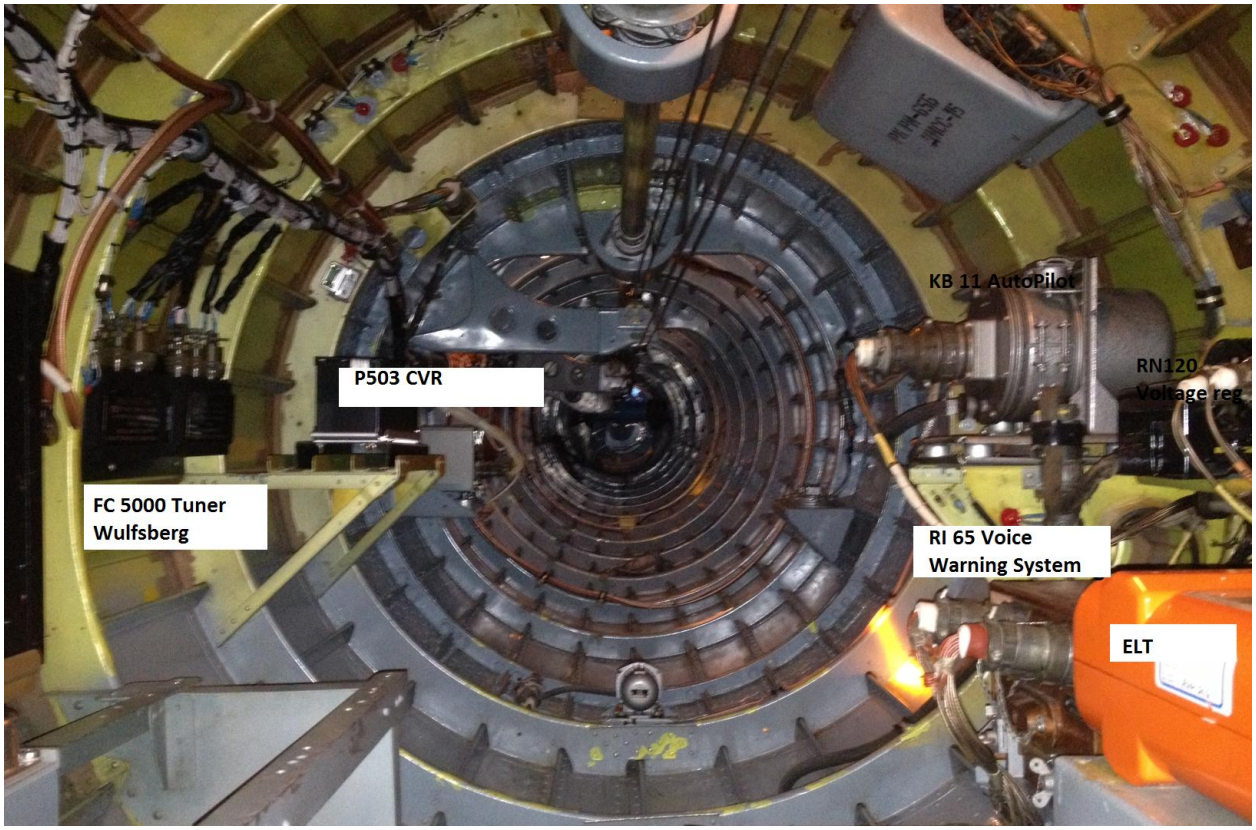


Figure 36: Tail Boom Photograph

4.1 Cockpit Voice Recorder (CVR)

4.1.1 Description

The P-503B voice recorder is intended for magnetic recording of sound signals, supplied to headphones of crew members from internal and external communication lines. The voice recorder has two modes, continuous and auto start. Documentation of information recorded by the voice recorder is used for objective evaluation of actions of crew and ground communication points.

Recording unit is installed under the tail boom between the frames No.56 and No.66, on the plate, enclosed in housing. Control panel is installed on the left side panel of pilot's overhead console.
Voice recorder P503B power is supplied from battery bus 27V through fuse of PM-2.

4.1.2 Components

- Recording Unit

- Control Panel
- Shock mount

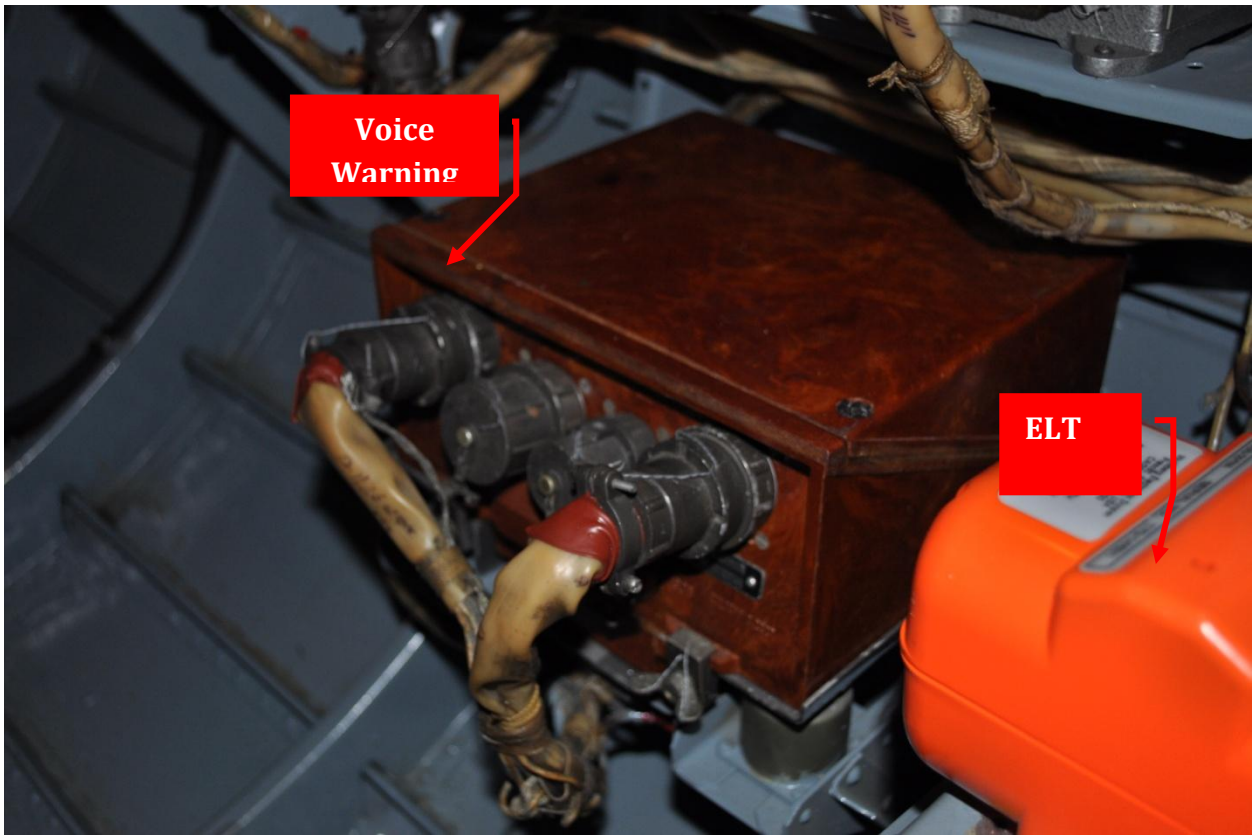


Figure 37: Cockpit Voice Warning Location in Tail Boom Photograph

4.2 Flight Data Recorder (FDR)

4.2.1 Description

The SARPP-12D1M Flight Data Recorder shall be designed to record the flight parameters of the helicopter under normal and emergency conditions, and to store the recorded data for analysis in the event of a crash or other incident. The flight data recorder shall be located in the tail boom. It shall be encased in a crash-worthy container.

The unit shall record flight and instrument events in digital format. The flight data recording system is powered by the Battery Bus through a fuse in the main fuse panel.

The system continuously records the helicopter's barometric altitude, indicated airspeed, the position (tilt and height) of the main rotor swash plate, the main rotor RPM, and the helicopter pitch and roll angles.

The system also records at least nine event-driven parameters. The trigger events include low fuel emergency, failure of any fuel boost pump, engine emergency power engagement, detection of a fire in any deck compartment, main hydraulic system failure, backup hydraulic system failure, loss of oil pressure in the main transmission, engagement of engine and particle separator anti-ice system (right engine only), and engagement of rotor deice system.

All data is provided to the recorder via sensors, pressure switches, and/or transducers installed in the monitored systems.
To view flight recorder data remove the cassette from the recorder unit. Open the housing locks on the tail boom by removing two screws, lower the plate, and by holding it by hand, to level of belt stretch. Set the handle on the cassette to the upper position and turn the cassette on its axis. Separate the cassette from the recorder catch. Remove the cassette and send for developing.

4.2.2 Components

- K15-51D1M recorder unit
- UsS-4-2M signal conditioning unit
- 1186A signal distributor
- DB-15MB altitude transmitter
- DAC indicated air speed sensor
- MU-615A angular displacement transmitter

Figure 38: Flight Data Recorder

4.3 Floor Microphones

4.3.1 Description

Floor Microphones (Figure 39) need to be installed in order for ease in communication between pilot/copilot and cabin.

4.3.2 Components

• Pilot Foot Switch	• Copilot Foot Switch

Figure 39: Pilot's Foot Switch Photograph

Figure 40: Co-Pilot's Foot Switch

4.40 Internal Communication System (ICS) Cobham NAT N301A (7 points)

4.41 Description

The modification is to add 7 ICS boxes within the Cockpit and Cabin of the aircraft and is used with headsets.

- Using the Single -User Audio Controller, **P/N N301A-078**
- 7 stations total: Pilot, Copilot, Flight Engineer, and four in the cabin. Reference Figure 41 through Figure 44, for ALL station locations
- Floor-mounted push-to-talk switches for pilot (Figure 39) and FE (Figure 40) stations

- Transmit/receive capability for all communication radios, at all stations
- Microphone Switch Positions
- ICS = Internal Communication

The audio controller N301A is designed for voice communication between helicopter flight personnel, between the helicopter and other aircraft or ground stations, as well as for listening to signals of the GNS-430W navigation receiver, voice alert system, and altitude alert signal from the radio altimeter, sending signals of establishment of communication by the pilot-in-command to the flight data recorder system.

The audio controller includes seven interphone control boxes. Three interphone control boxes are installed in the flight compartment (on an additional mount of the central pedestal), the other four – in the cargo compartment (two on each side).

Electric power supply of the audio controller: + 27V DC.

To power up the unit , switch on circuit breakers ICS PILOT, COPILOT, FLT ENG on the right-side CB panel, and ICS CARGO CABIN LEFT, RIGHT on the left-side CB panel.

Selection of radio in flight depends on position of switches on the interphone control box. Signal sources are assigned as follows:

- **COM1** = UHF/VHF#1 (Wulfsberg RT-5000 #1)
- **COM2** = UHF/VHF#2 (Wulfsberg RT-5000 #2)
- **COM3** = HF Yadro-1A or KARAT-24
- **COM4** = VHF (Garmin GNS 430W)
- **COM5** = Not Assigned
- **NAV1** = Garmin GNS-430W and VOR/ILS
- **NAV2** = OEM Automatic Direction Finding Receiver (ARK-9)
- **NAV3** = Not Assigned
- **NAV4** = Not Assigned
- **NAV5** = Not Assigned
- **AUX** = Not Assigned

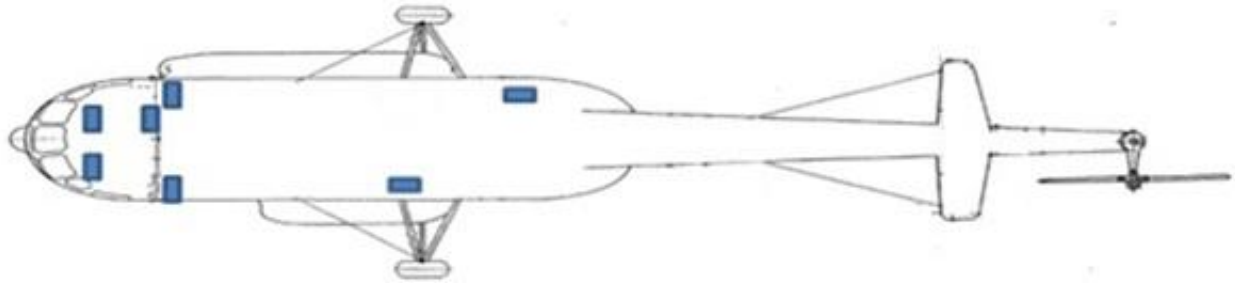


Figure 41: ICS Boxes Location Diagram

4.4.2 Components

7 N301A-078 Control Heads 3 in the cockpit and 4 in the cabin

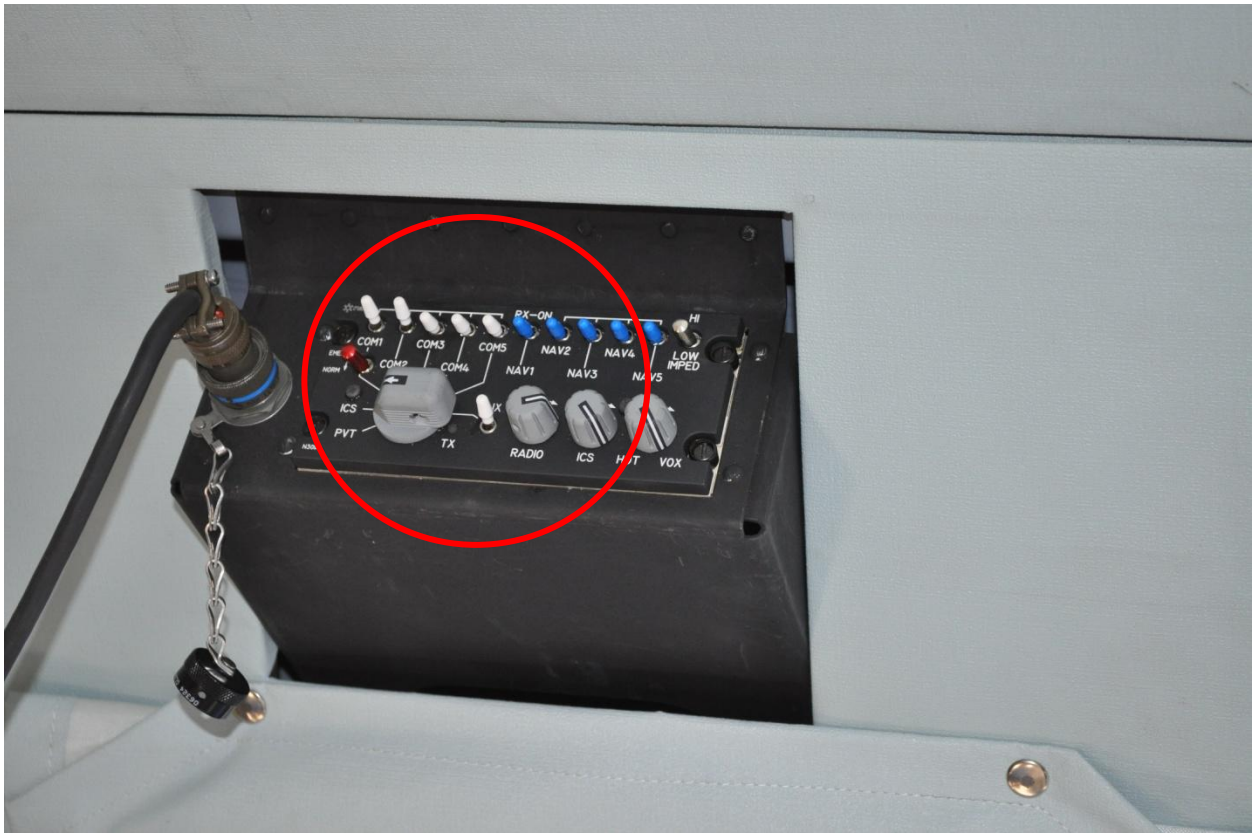


Figure 42: FWD Left Hand ICS Location

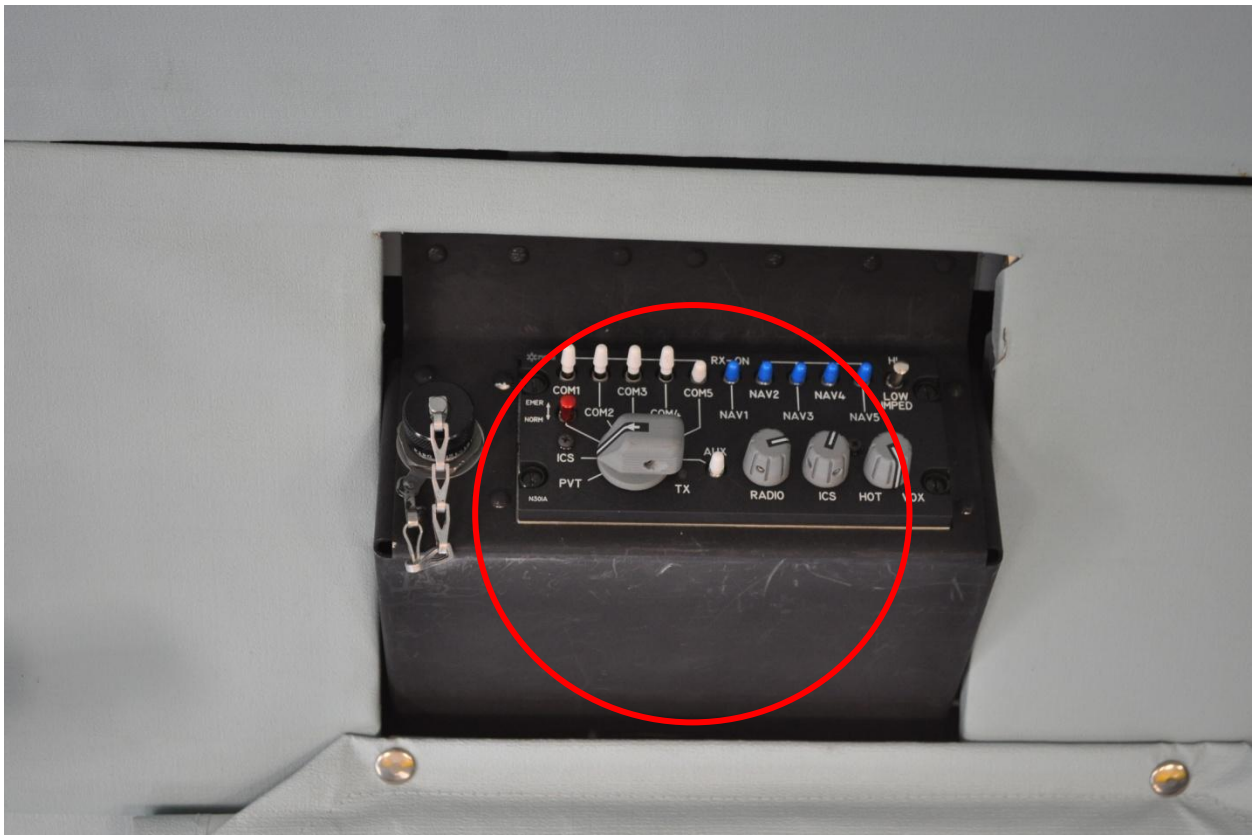


Figure 43: FWD Right hand Location

Figure 44: ICS Cabin Installations Looking AFT

Figure 45: ICS Cabin Installation

5.0 USAACE Cockpit Parts List

ALL COMPONETS TO BE INSTALLED IN THE COCKPIT NEED TO BE NVIS COMPATIBLE.

PART NUMBER	OEM	DESCRIPTION	U/M	QTY per Aircraft	SUPPLIER
TRANSPONDER					
050-03451-0000	Bendix/King	KT76C w/ install kit	EA	1	SE AEROSPACE
066-01164-0101	Bendix/King	KT-76C Control Head(NVG)	EA	1	SE AEROSPACE
006-18110-0000	Bendix/King	Pilot Guide	EA	1	SE AEROSPACE
CI-105	Bendix/King	Fin Antenna	EA	1	SE AEROSPACE
030-005-0000	Bendix King	Connector(CI105,CI109)	EA	4	SE AEROSPACE
MS21044-C08	Bendix King	8-32 Fiber Lockout CRES	EA	5	SE AEROSPACE
DIGITAL ENCODING ALTIMETER					
AAU-32/A -3	Kollsman	Indicator (NVG)	EA	2	AERO SONIC
MS3116F-16-26S	Kollsman	AAU-32/A Mating Connector	EA	2	AERO SONIC
MS27404-6	Kollsman	Hose to Straight NSN 4730-00-278-5686	EA	2	AERO SONIC
M83798/3-6	Kollsman	Hose to 90 deg NSN-4730-00-720-1166	EA	2	AERO SONIC
AIR SPEED INDICATOR					
S-15-KAW	Aero Sonic	Indicator (NVG)	EA	2	CARP INDUSTRIES

MS27404-04	Aero Sonic	Hose to Straight NSN 4730-00-497-4281	EA	2	CARP INDUSTRIES
M83798/3-4	Aero Sonic	Hose to 90 NSN 4730-00-618-8862	EA	2	CARP INDUSTRIES
GPS EQUIPMENT					
010-00412-01	Garmin	GNS 430W(NVG)	EA	1	SE AEROSPACE
010-10201-21	Garmin	SD CARD - AMERICAS DATABASE	EA	1	Included in Kit
013-00235-00	Garmin	GA35 Antenna GPS	EA	1	AERO DYNAMIX
CI-205-3	Garmin	Nav VOR/LOC ANTENNA	EA	1	AERO DYNAMIX
CI-109	Comant	VHF Antenna rod	EA	1	EDMO
CI-5120	Comant	Dual Use Splitter	EA	1	EDMO
000-79875 RFX	Comant	Connector Alt TNC-S58P	EA	1	EDMO
KI-825 EHSI INDICATOR					
066-01179-0303	HONEYWELL	KI-825 Indicator (NVG)	EA	2	HONEYWELL
050-03639-0000	HONEYWELL	KI-825 Install kit	EA	2	HONEYWELL
RADAR ALTIMETER					
066-01153-0202	Bendix/King	KRA 405B Radar Altimeter	EA	1	HONEYWELL
050-03365-0000	Bendix/King	KRA-405B Install Kit	EA	1	HONEYWELL
066-03044-0004	Bendix/King	KNI 416 Indicator (NVG)	EA	2	HONEYWELL
050-01401-0002	Bendix/King	KNI 416 Install kit	EA	2	HONEYWELL
071-01501-0000	Bendix/King	KA-54A Antenna	EA	2	HONEYWELL
050-02960-0000	Bendix/King	KA-54A Install Kit	EA	2	HONEYWELL
VHF/UHF RADIO EQUIPMENT					

31300-1202-1210	Wulfsberg	C-5000 Control Head (NVG)	EA	2	WULFSBERG
400-015525-5111	Wulfsberg	RT-5000 Radio Transceiver	EA	2	WULFSBERG
300-316605-01	Wulfsberg	RT-5000 Mounting Kit	EA	2	WULFSBERG
246-044540-01	Wulfsberg	RT-5000 Shock Mounts	EA	8	WULFSBERG
129-215344-01	Wulfsberg	Connector, C-5000 System Inter	EA	2	WULFSBERG
129-217474-01	Wulfsberg	Connector, C-5000 SERIAL RT INTER	EA	4	WULFSBERG
129-216657-01	Wulfsberg	Connector, RT-5000 TRANSCEIVER	EA	2	WULFSBERG
129-217321-01	Wulfsberg	Connector, FC-550, FC-50 (J1)	EA	2	WULFSBERG
129-217324-01	Wulfsberg	Connector, FC-550, FC-50 (J2)	EA	2	WULFSBERG
129-214346-01	Wulfsberg	Connector, FC-550, FC-50 (J3)	EA	2	WULFSBERG
129-217323-01	Wulfsberg	Connector, AT-550, AT-50, AT-51	EA	2	WULFSBERG
129-049115-01	Wulfsberg	Connector, N, Straight (RG-393)	EA	4	WULFSBERG
129-041397-01	Wulfsberg	Connector, TNC, Straight (RG-393)	EA	4	WULFSBERG
153-040047-01	Wulfsberg	FC-5000 Antenna Tuner	EA	2	WULFSBERG
121-040130-01	Wulfsberg	AT-560 Antenna	EA	2	WULFSBERG
129-2156-000	Wulfsberg	KVL Data Port	EA	2	WULFSBERG

064-01072-0101	Honeywell Primus	KPA 1052 Power Amplifier	EA	1	SE AEROSPACE
050-03629-0000	Honeywell Primus	KPA 1052 Install Kit	EA	1	SE AEROSPACE
ICS SYSTEM					
N301A-078	Cobham	NAT 301A Control Head (NVG)	EA	7	WULFSBERG
N301-IKC	Cobham	NAT 301A Install Kit	EA	7	WULFSBERG
M8805/55-002	Eaton	M8805 Foot Switch	EA	3	AVIATRIX
A2005914628-10	ARINC	Audio Junction Box	EA	1	ARINC
A2005918010-03	ARINC	W410-03 Pilot ICS Cable Assy	EA	1	ARINC
A2005918015-03	ARINC	W415-03 Co-Pilot ICS Cable Assy	EA	1	ARINC
A2005918020-05	AEI	W420-05 ICS Portable Comm Cords	EA	5	ARINC
M10544U79/U	ARINC	ICS Comm Cords Mating Connector	EA	5	ARINC
D38999/26WE35PN	ARINC	Junction Box Mating Connector	EA	1	ARINC
D38999/26WE35PA	ARINC	Junction Box Mating Connector	EA	1	ARINC
D38999/26WE35PB	ARINC	Junction Box Mating Connector	EA	1	ARINC
D38999/26WD35PN	ARINC	Junction Box Mating Connector	EA	1	ARINC
D38999/26WD3	ARINC	Junction Box Mating	EA	1	ARINC

5PA		Connector			
D38999/26WD35PB	ARINC	Junction Box Mating Connector	EA	1	ARINC
D38999/26WD35PC	ARINC	Junction Box Mating Connector	EA	1	ARINC
D38999/26WD35PD	ARINC	Junction Box Mating Connector	EA	1	ARINC
D38999/26WD35PE	ARINC	Junction Box Mating Connector	EA	1	ARINC
M85049/39S17W	ARINC	Junction Box Backshells	EA	3	ARINC
M85049/39S15W	ARINC	Junction Box Backshells	EA	3	ARINC
MS3109-04BU	ARINC	Junction Box Shrink Boot	EA	4	ARINC
MS27488-22	ARINC	Junction Box Shearing plugs	EA	9	ARINC
MS3109-03BU	ARINC	Junction Box shrink Boot	EA	6	ARINC
EMERCENCY LOCATOR TRANSMITTER					
455-5016	ARTEX	C406-1HM ELT w/ install kit	EA	1	EDMO
455-9703	ARTEX	Remote Switch (NVG)	EA	1	EDMO
110-338	ARTEX	406 Rod Antenna	EA	1	Included in Kit
130-4004	ARTEX	Buzzer	EA	1	Included in Kit
453-6500	ARTEX	ELT TO NAV INTERFACE	EA	1	ARTEX
DIGITAL CLOCK					
M880A-S	Davtron	Indicator (NVG)	EA	2	EDMO

AIR DATA CONVERTER					
LUN1794.5	DevCom	LUN 1794.5 Synchro/Resolver	EA	1	STV GROUP
Vertical Speed (Rate of Climb) Indicator					
ВРФ-6МПБ	Утес	Vertical Speed Indicator	EA	2	Simplex
ПВД-6М	Утес	Connector Pitot/static tube	EA	2	Simplex
Additional Turn Indicator Right Side Instrument panel					
ЭУП-53К	СЭЗ им Орджоникидзе	Yaw Roll Indicator ЭУП-53К	EA	1	Simplex
	СЭЗ им Орджоникидзе	Electrical Connector	EA	1	Simplex

6.0 NIGHT VISION IMAGING SYSTEM (NVIS) SPECIFICATIONS

6.1 NVIS Compatible Cockpit Specifications

6.1.1 Description

The Contractor shall modify interior and exterior Mi-17-1V/Mi-8MTV-1 aircraft lighting IAW MIL-STD-3009. This task relates to both interior Type II Class B lighting and exterior NVIS friendly lighting.

6.1.2 Components

ETS NVIS Parts Kit Part Number 400720-200		
P/N	**DESCRIPTION**	**QTY PER A/C**
Left Side Hand Console		
400554-828	Post Light Cap Assembly	16
400703-300	NVIS Filtered Lamp Assembly	6
400703-600	Lamp NVIS Yellow B Filtered Lamp Assembly	32
400703-700	Lamp NVIS UK RED B Filtered Lamp Assembly	8
400720-200	Annunciator Legend	20
Center Console		
400554-1027	Post Light Assembly EPR gauge	1
400554-828	Post light Cap Assembly	18
500500C-2	NVIS Lamp holder NVIS Green A	2
400703-600	Lamp NVIS Yellow B Filtered Lamp Assembly	2
400703-700	Lamp NVIS UK RED B Filtered Lamp Assembly	2
400703-300	Lamp NVIS Green A Filtered Lamp Assembly	5
400726-150	NVIS Green A Autopilot	3
400726-250	NVIS Red Autopilot	2
400720-200	Annunciator Legend	2
Right Hand Console		
400554-828	Post light Cap Assembly	13
400703-300	Lamp NVIS Green A Filtered Lamp Assembly on Gyro	4
Left Side Console		
500500C-2	NVIS Lamp holder NVIS Green A	14
400554-828	Post light Cap Assembly	4
400703-600	Lamp NVIS Yellow B Filtered Lamp Assembly	2
400726-150	NVIS Green A Flight Data Recorder	1

400703-300	Lamp NVIS Green A Filtered Lamp Assembly	8
400703-700	Lamp NVIS UK RED B Filtered Lamp Assembly	2
400720-200	Annunciator Legend	6
Left Triangular Overhead Console		
500500C-2	NVIS Lamp holder NVIS Green A	4
400703-600	Lamp NVIS Yellow B Filtered Lamp Assembly	2
400703-300	Lamp NVIS Green A Filtered Lamp Assembly	2
400720-200	Annunciator Legend	2
Left Overhead Panel		
500500C-2	NVIS Lamp holder NVIS Green A	8
400703-700	Lamp NVIS UK RED B Filtered Lamp Assembly	2
400703-300	Lamp NVIS Green A Filtered Lamp Assembly	24
400554-828	Post light Cap Assembly	2
400720-200	Annunciator Legend	13
Center Overhead Console		
500500C-2	NVIS Lamp holder NVIS Green A	21
400703-700	Lamp NVIS UK RED B Filtered Lamp Assembly	14
400703-300	Lamp NVIS Green A Filtered Lamp Assembly	18
400554-828	Post light Cap Assembly	8
400703-600	Lamp NVIS Yellow B Filtered Lamp Assembly	20
400720-200	Annunciator Legend	26
Right Overhead Console		
500500C-2	NVIS Lamp holder NVIS Green A	12
400703-300	Lamp NVIS Green A Filtered Lamp Assembly	2
400703-600	Lamp NVIS Yellow B Filtered Lamp Assembly	4
400720-200	Annunciator Legend	3
Right Overhead Triangle Console		
500500C-2	NVIS Lamp holder NVIS Green A	4
400703-300	Lamp NVIS Green A Filtered Lamp Assembly	2
400720-200	Annunciator Legend	1
Right Side Console		
500500C-2	NVIS Lamp holder NVIS Green A	13
400554-828	Post light Cap Assembly	2
400703-600	Lamp NVIS Yellow B Filtered Lamp Assembly	2
400703-300	Lamp NVIS Green A Filtered Lamp Assembly	10
400703-700	Lamp NVIS UK RED B Filtered Lamp Assembly	2
400720-200	Annunciator Legend	7
Right Rear Console		
500500C-2	NVIS Lamp Holder NVIS Green A	5
400554-828	Post light Cap Assembly	18
400703-600	Lamp NVIS Yellow B Filtered Lamp Assembly	4

400703-700	Lamp NVIS UK RED B Filtered Lamp Assembly	4
400720-200	Annunciator Legend	4
Right Overhead Circuit Breaker Panel		
400703-300	Lamp NVIS Green A Filtered Lamp Assembly	10
400925-562	NVIS Lighted Circuit Breaker Panel #1	1
400925-563	NVIS Lighted Circuit Breaker Panel #2	1
400925-564	NVIS Lighted Circuit Breaker Panel #3	1
400925-565	NVIS Lighted Circuit Breaker Panel #4	1
Over Head Panel		
400300-428	Floodlight with Hood	1
410727-200	Dome Light	2
Cargo Bay Installation		
400905-228	LED Array NVIS Green A	1
400554-828	Post light Cap Assembly	7
400726-150	NVIS Green A Cap Assembly	2
500500C-2	NVIS Lamp Holder NVIS Green A	4
410727-100	Dome Light Assembly	11
Exterior Lighting		
410706-0004	Tail Light Lamp NVIS White	1
410720-250	Formation Light Dimming Box	1
410720-0003	Formation Light Gasket	2
410720-251	Formation Light	3
410720-231	Anti Collision Beacon NVIS RED	1
400721-0062	Gasket	4
400779-100	Covert Search Light Modification	1
No Part Number Available	Blade Tip - NVIS LED Assy	5
No Part Number Available	Blade Tip - Ext Light Controller	1
410720-228	Position Light NVIS Green A	1
410720-227	Position Light NVIS Red B	1
400720-250	Position Dimming Box	1
4100721-110	Annunciator Tank Assembly	4
No Part Number Available	Taxi Light	1
No Part Number Available	Map Light Filter	2

	Annunciators	
400901-2100	CARGO DOORS OPEN	1
400901-2100	ICING	2
400901-2100	L ENG FIRE	1
400901-2100	R ENG FIRE	1
400901-2100	COMBUST HTR FIRE	1
400901-2100	APU GEAR FIRE	1
400901-2100	AUX SYS ON	1
400901-2100	GEN 1 FAIL	1
400901-2100	GEN 2 FAIL	1
400901-2100	FIRE	1
400901-2100	300 L FUEL RSV	1
400901-2100	SHUTDOWN L ENGINE	1
400901-2100	SHUTDOWN R ENGINE	1
400901-2100	BATT	1
400901-2100	MAX LIM SPEED	1
400901-2100	EQUIPM TEST	1
400901-2100	FIRE DET TEST	1
400901-2100	L ENG ANTI-ICE	1
400901-2100	R ENG ANTI-ICE	1
400901-2100	L DUST PROT ON	1
400901-2100	R DUST PROT ON	1
400901-2100	COMBUST HTR ON	1
400901-2100	ANTIE ICE ON	1
400901-2100	L DUST PROT FWD	1
400901-2100	R DUST PROT FWD	1
400901-2100	L DUST PROT REAR	1
400901-2100	R DUST PROT REAR	1
400901-2100	MAIN SYS ON	1
400901-2100	FDR ON	1
400901-2100	n&c EGT LIMIT,LH	1
400901-2100	n&c EGT LIMIT,RH	1
400901-2100	SECTION 1	1
400901-2100	SECTION 2	1
400901-2100	SECTION 3	1
400901-2100	SECTION 4	1
400901-2100	AUTO CONT. ON	1
400901-2100	OIL PRESS NORMAL	1
400901-2100	NORMAL SPEED	1
400901-2100	STARTER ON	1

400901-2100	HORN ON	1
400901-2100	L. ENG HI. VIBR	1
400901-2100	R. ENG HI. VIBR	1
400901-2100	CHIPS IN L ENG	1
400901-2100	CHIPS IN R ENG	1
400901-2100	FUEL FLTR CLOG L. ENG	2
400901-2100	FUEL FLTR CLOG R. ENG	1
400901-2100	FREE TURB OVERSP L ENG	1
400901-2100	FREE TURB OVERSP R ENG	1
400901-2100	LOW Poil L ENG	1
400901-2100	LOW Poil R ENG	1
400901-2100	EEC OFF L ENG	1
400901-2100	EEC OFF R ENG	1
400901-2100	OEI L ENG	1
400901-2100	OEI R ENG	1
400901-2100	CHIPS IN MAIN G/B	1
400901-2100	CHIPS IN INTERIM G/B	1
400901-2100	CHIPS IN TAIL G/B	1
400901-2100	LEFT ON	1
400901-2100	RIGHT ON	1
400901-2100	SERV. TANK PUMP ON	1
400901-2100	MAIN DISCH	1
400901-2100	ALTN DISCH	1
400901-2100	LEFT CLOSED	1
400901-2100	RIGHT CLOSED	1
400901-2100	CROSS-FEED OFF	1
400901-2100	HEATER	1
400901-2100	IGNITION	1
400901-2100	SWITCH RECT 1 ON	2
400901-2100	SWITCH RECT 2 ON	1
400901-2100	SWITCH RECT 3 ON	1
400901-2100	NO-500 INV ON	1
400901-2100	EXT. PWR ON	1
400901-2100	SWITCH INF REPORT ON	1
400901-2100	R. TEMP CONT. ON	2
400901-2100	L. TEMP CONT. ON	4
400901-2100	HEATER OK	4
400901-2100	CO-121 NORMAL	
400901-2100	DOPP FAIL	

7.0 DOCUMENTATION REQUIREMENTS

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