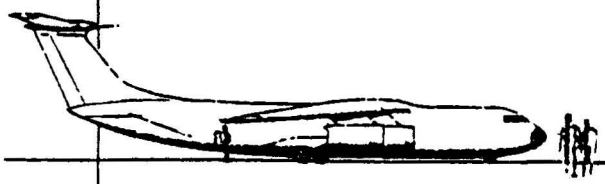


CRASH POSITION INDICATOR

GENERAL

The AN/URT-26 Crash Position Indicator (CPI), is an aircraft installed radio beacon which operates at the international distress frequency of 243 MHz. The radio beacon and battery power source are encapsulated in a polyurethane airfoil which is ejected from the aircraft upon actuation of one of five frangible (breakable) switches, a hydrostatic switch, or the DEPLOY switch on the CPI control panel.

AIRCRAFT INSTALLATION

The CPI is made up of six major components. They are as follows:

- CPI Tray
- Airfoil
- Frangible and Hydrostatic Switches
- Control Panel
- Battery Pack
- Beacon Battery Shutoff

CPI TRAY

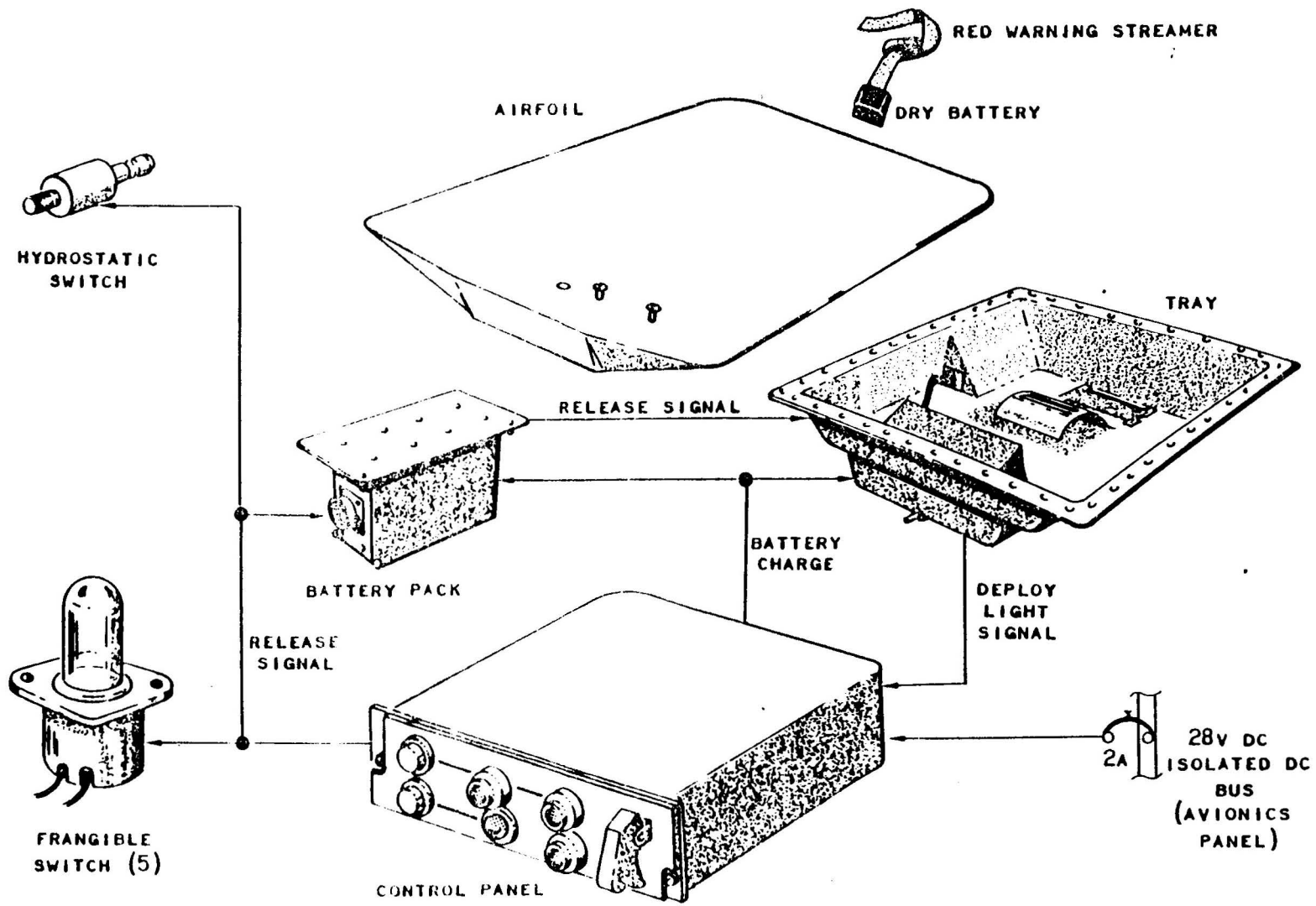
The CPI tray, (or mount) is located in the number four escape hatch directly above the left-hand jump door at FS1218. Installation of the CPI tray in the number four escape hatch does not obstruct exit in case of emergency. The tray houses the airfoil, airfoil release mechanism, and hydrostatic switch.

AIRFOIL

The airfoil contains the radio beacon, battery power source and provisions for a tape recording mechanism.

SWITCHES

Five frangible switches and one hydrostatic switch are located at strategic points on the aircraft. Two frangible switches are located on the forward side of the radome bulkhead, one in each wing tip and one in the aircraft lower fuselage at FS958. The hydrostatic switch is mounted on the inside of the airfoil tray and is set to close at six feet of seawater pressure. The frangible switches close whenever the glass housing of the switch is cracked or broken.



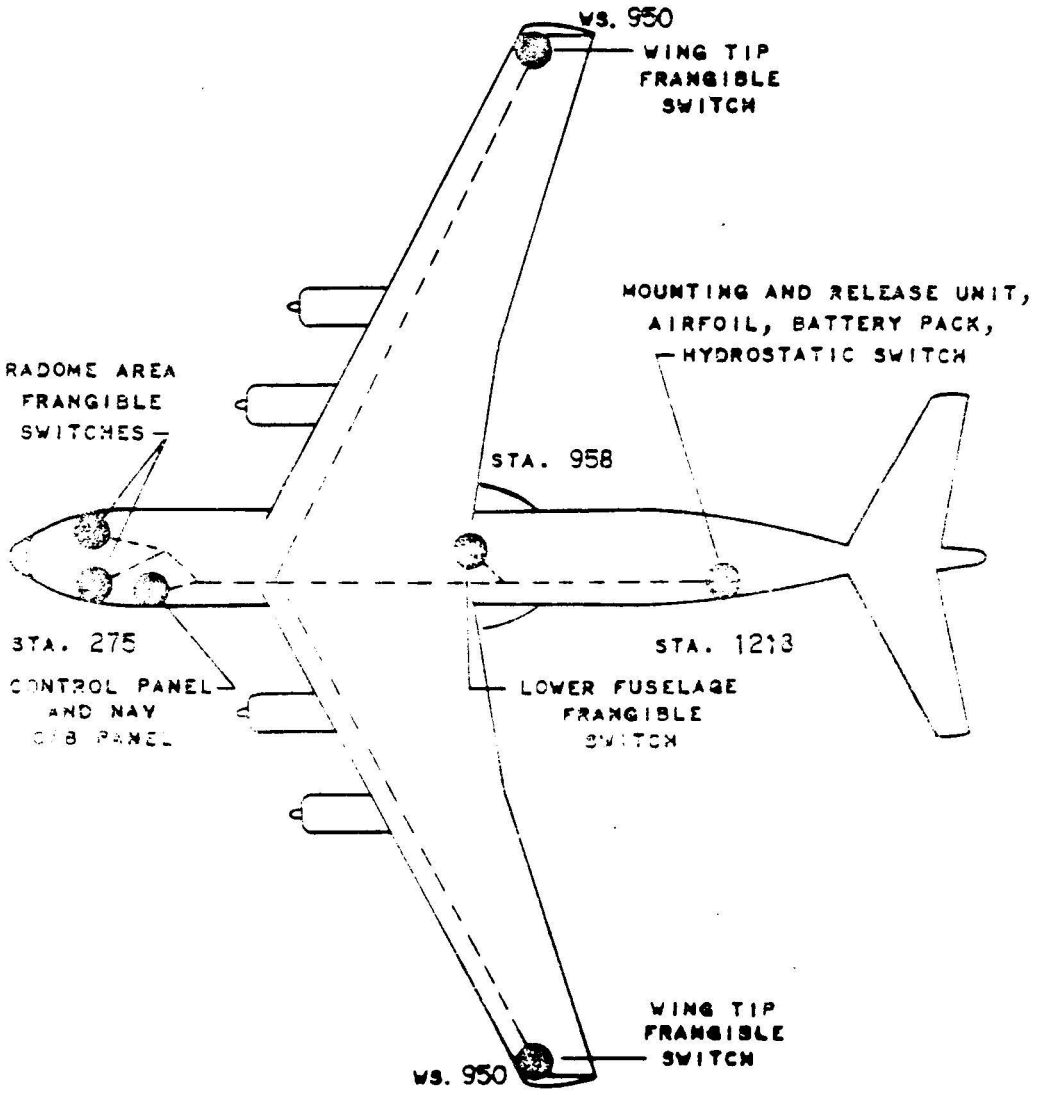
CPI AIRCRAFT INSTALLATION

CONTROL PANEL

The control panel is located in the upper left-hand portion of the navigator's control panel. This unit houses lights and switches for testing the battery charge and transmitter circuits. The airfoil can be manually deployed by actuating the DEPLOY switch.

BATTERY PACK

The battery pack is mounted on the aft side of the wing box adjacent to the CPI tray, and supplies power to the release mechanism.



AN/URT-26 CPI AIRCRAFT EQUIPMENT LOCATIONS

BEACON BATTERY SHUTOFF

The beacon battery shutoff unit is stowed near the battery pack, above the left-hand jump door. A two ampere circuit breaker is installed in the avionics circuit breaker panel.

The beacon battery shutoff unit is attached to the airfoil to prevent undesirable transmissions when the airfoil is removed from the aircraft.

SYSTEM OPERATION

The CPI is completely independent of other avionic equipment operation and will be ejected into the aircraft slip-stream automatically upon actuation of one of the switches.

To install the airfoil it is first necessary to reset the release mechanism. Resetting the release mechanism positions a retainer flange. When the latch, which holds the airfoil, is depressed, it will engage the retainer flange. With the latch mechanism in its raised position and while holding the retainer flange back against spring tension, momentarily press the SET switch. This passes a D-C signal thru an electromagnetic holding coil which creates a magnetic field positioning the retainer flange in its "locked" position. The system is now in its armed configuration.

Note: The "strength" of the latch made during airfoil installation is directly proportional to the current of the release unit battery pack at the time the SET switch is pressed. Charging the battery pack after latch will not increase the holding power of the latch.

When aircraft power is on the CPI control panel supplies a trickle charge to the airfoil beacon battery and the release unit battery pack. This function can be tested from the control panel by depressing the CHARGING TEST switch and observing that both the RELEASE and BEACON lights illuminate. Proper transmitter operation can be verified by depressing the XMIT TEST switch and listening for a short duration tone thru a headset connected to the headset jack on the control panel. Anytime aircraft power is on and the airfoil is not installed in its mount the DEPLOY light will be on.

FUNCTIONAL OPERATION

The airfoil is a self-contained unit requiring external power only to hold the radio beacon "off" while installed in the aircraft or undergoing tests. During static conditions (airfoil installed) the release unit battery pack (ABP-1) constantly supplies a voltage to the airfoil beacon holding it in the "off" condition. When the airfoil is ejected this voltage is removed and the 243 MHz, 250 mw radio beacon starts

AN/URT-26 CPI AIRFOIL

transmitting. The transmitter will continuously transmit a swept tone between 300 and 1000 Hz at the carrier frequency of 243 MHz.

The airfoil is held in by an electromagnetic holding coil which receives its magnetizing voltage from the APB-1 during "SET".

Note: Repeated or prolonged use of the SET switch can run-down the release unit battery pack. It should be pressed very briefly.

Under static conditions the 5.2 volts, DC from the APB-1 is routed through the normally-open contacts of the five fragible switches, the hydrostatic switch and the navigator's DEPLOY switch. Closure of any one of these switches will supply power from the APB-1 to trigger a Silicon Controlled Rectifier (SCR) in the release mechanism circuit. When the SCR fires, voltage from the SCR passes thru the electromagnetic coil in the reverse direction, de-magnitizing the coil and releasing the airfoil.

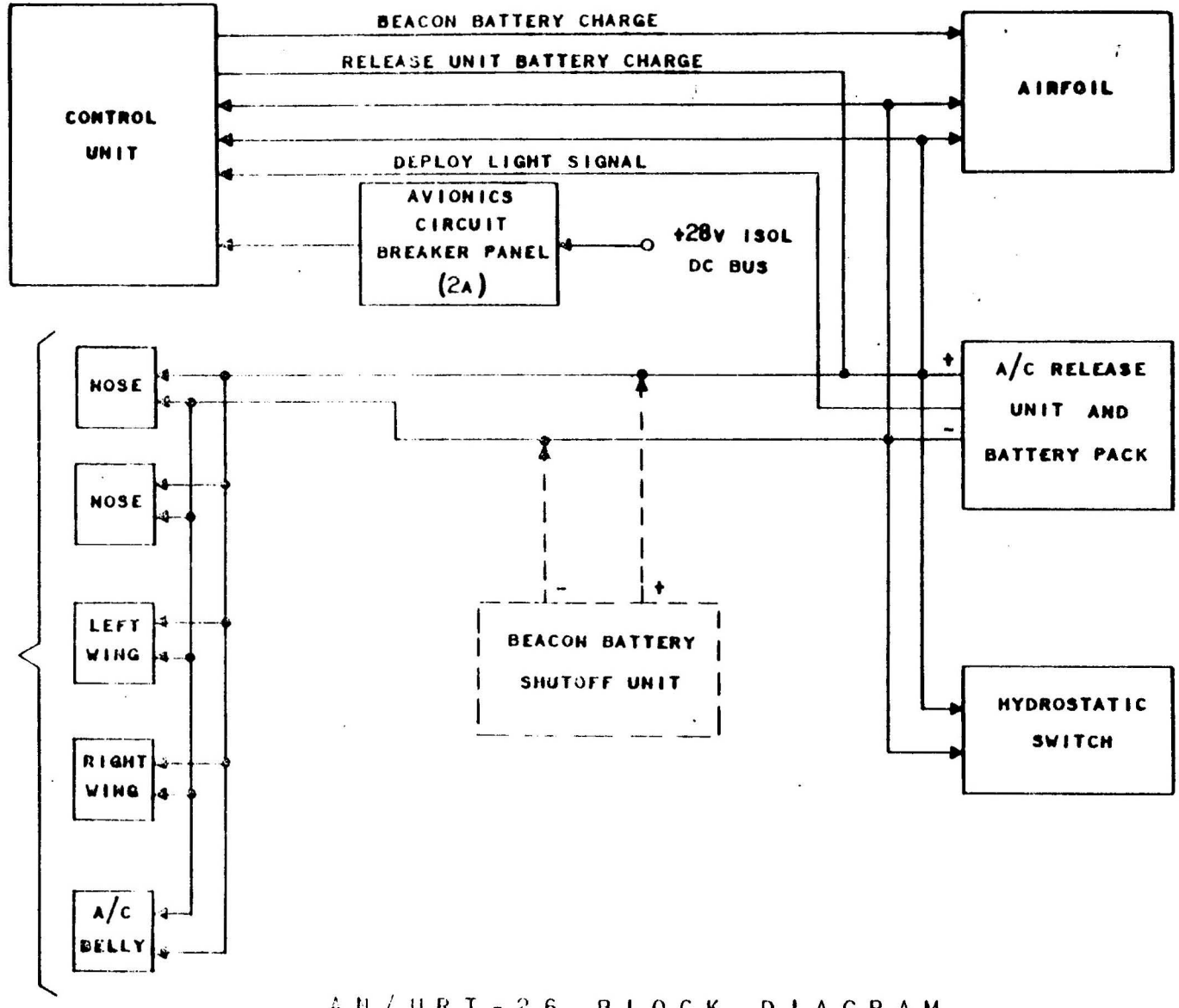
The leaf spring in the tray provides enough thrust to eject the airfoil clear of the aircraft without the aid of the aircraft slip-stream.

SPECIFICATIONS

CHARACTERISTIC	SPECIFICATION
Operational altitude	0 to 50,000 feet
Range (at 10,000 ft. and working with AN/ARA-25, AM-3259/ARC, and AN/ARC-34)	
ADF	50 nautical miles
Tone	80 nautical miles
Antenna radiation pattern	Omnidirectional
Transmitter frequency	243.0 MHz $\pm$0.003 percent
Power output (unmodulated)	250 milliwatts minimum
Type of transmission	AM
Modulation	Chopped carrier

SPECIFICATIONS (continued)

CHARACTERISTIC	SPECIFICATION
Modulating Frequencies	
High	1000 Hz +30 -10 percent
Low	300 Hz +10 -20 percent
Sweep rate	2 to 3 Hz
Power	
Airfoil and release unit	Battery operated
Storage battery charging voltage	28 volts, DC
Battery Life	
Airfoil	
Storage	Rechargeable
With transmitter on	48 hours at 0° C
Beacon Shut Off	
Storage	2 years
Use	3 months



AN/URT-26 BLOCK DIAGRAM