

Space Shuttle Emergency Annunciator Panel

Version 211106.01

The following is the emergency annunciator panel used on the space simulator. This, coupled with data received from the shuttle monitoring systems and computer alerts, is used to determine shuttle anomalies.

O ₂ PRESS	H ₂ PRESS	SMOKE / FIRE	LANDING SYS	FUEL CELL TEMP
CABIN ATM	H ₂ /O ₂ HEATER TEMP	MAIN BUS VOLTAGE	AC VOLTAGE	AC O/U LOAD
FREON LOOP	AV BAY / CABIN AIR	IMU	RCS FWD	RCS JET
H ₂ O LOOP	SRB LEFT	MAIN ENGINE LEFT	RCS LEFT	RCS RIGHT
PAYLOAD BAY	SRB RIGHT	MAIN ENGINE CNTR	OMS LEFT	OMS RIGHT
PAYLOAD	GPC	MAIN ENGINE RGHT	NAV SYSTEM	OMS TVC
ALARM	APU TEMP	APU SPEED	H ₂ O SPRAY BOILER	HYD PRESS

SYSTEM SUMMARY 1

CTD	HYD	1	2	3	FREON LOOP	1	2	
	PRESSURE	3064	3065	3060	EVAP OUT T	38	38	
	ACCUM PRES	2616	2624	2624	FREON FLOW	2193	2190	
PG	CIRC PUMP P	264	266	266	PL HX FLOW	290	286	
	CIRC PUMP T	64	66	66	AFT CP FLOW	279	278	
	PUMP TEMP	94	92	90	RAD IN TEMP	97	96	
	PUMP BODY T	61	47	47	RAD OUT TEMP	38	38	
	PUMP LEAK P	14	14	14	ACCUM QTY	27	27	
	RSVR PRESS	65	66	66				
	RSVR TEMP	58	64	66	H ₂ O LOOP	1	2	
	B/U PRESS	64	64	64	PUMP OUT P	64	62	
	WV TEMP	114	111	107	PUMP OUT T	64	63	
	HX IN T	75	75	75	PUMP PRESS	30	38	
ENT	HX OUT T	59	54	54	ICH FLOW	564	777	
	CAB HX IN T	42	38	39	ICH OUT T	41	38	
GO	RADIATORS	FOR L	FOR R	AFT L	AFT R			
	LINE IN T	1	2	3	4			
	LINE OUT T	1	2	3	4			

SYSTEM SUMMARY 2

PRV	CTD	TEMP SNSR	1	2	3	EVAP TEMP	DUCT	NOZZLE	PRV
		FLIGHT DECK	75	77	76	H/LD MBD	64	63	
		MD DECK	79	81	76	H/LD OUTBD	250	250	
		LOWER DECK	74	73	71	TOPPING FWD	63	62	
		AV BAY 1	97	97	83	TOPPING AFT	25	25	
		AV BAY 2	97	97	83	TOPPING LEFT	1271	1271	
		AV BAY 3	97	97	83	TOPPING RIGHT	426	423	
		YLD BAY AFT	200	200	200	EVAP FOLN T	A	B	
		YLD BAY FWD	200	200	200	FWD	80	80	
		SP LAB FWD	99	100	98	MD 1	80	80	
		SP LAB AFT	98	99	100	MD 2	79	75	
		FUEL CELLS	1	2	3	AFT FOLN T	75	79	
		AMPS	61.5	61.5	61.5	TOPPING	75	79	
		VOLTS	32	32	32	ACCUM FOLN T	75	79	
		H ₂ O PROD	80	84	83	H/LD	75	79	
		CABIN AIR	%						
		N ₂	79						
		O ₂	21						
		CO ₂	0.04						

DEPT. OF DEFENSE
FLIGHTS ONLY

PRV

SEL

MNU

PRV

SEL

MNU

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Schematic

O2 PRESS	H ₂ PRESS	SMOKE / FIRE	LANDING SYS	FUEL CELL TEMP
CABIN ATM	H ₂ /O ₂ HEATER TEMP	MAIN BUS VOLTAGE	AC VOLTAGE	AC O/U LOAD
FREON LOOP	AV BAY/CABIN AIR	IMU	RCS FWD	RCS JET
H ₂ O LOOP	SRB LEFT	MAIN ENGINE LEFT	RCS LEFT	RCS RIGHT
PAYLOAD BAY	SRB RIGHT	MAIN ENGINE CNTR	OMS LEFT	OMS RIGHT
PAYLOAD	GPC	MAIN ENGINE RIGHT	NAV SYSTEM	OMS TVC
ALARM	APU TEMP	APU SPEED	H ₂ O SPRAY BOILER	HYD PRESS

Annunciator Panel Warning Directory

AC O/U LOAD: O/U means Overload or Underload. Overload is indicated by an inverter 1, 2, or 3 phase A, B, or C output of 225 percent overload for 20 sec or 300 percent for 4 to 6 sec. Underload is indicated by an inverter 1, 2, or 3 phase A, B, or C output of 90 percent underload for 20 sec or 80 percent for 4 to 6 sec.

AC VOLTAGE: Indicates AC bus 1, 2, or 3 phase A, B, or C out of limits.

ALARM: Indicates detection of a **caution** or **emergency** condition in any of the Annunciator Panel systems. A **yellow** alarm indicates a caution condition, while a **red** alarm indicates an emergency condition.

APU SPEED: Indicates an APU 1, 2, or 3 speed greater than or less than a specified percentage of the designed speed.

APU TEMP: Indicates an APU 1, 2, or 3 exhaust gas temperature or lube oil temperature out of limits.

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AV BAY/CABIN AIR: Indicates out of limits condition on cabin fan DP, AV Bay 1, 2, or 3 air out temp, or cabin heat exchanger air temp.

CABIN ATM: Indicates either cabin pressure, PPO₂, O₂ flow rate, or N₂ flow rate out of limits.

FREON LOOP: Indicates a low Freon loop 1 or 2 flow rate or a temperature out of limits.

FUEL CELL TEMP: Indicates a fuel cell 1, 2, or 3 stack temperature out of limits.

GPC: Indicates General Purpose Computer 1, 2, 3, 4, or 5 has determined itself failed and issued a self-fail discrete alarm.

H₂ PRESS: Indicates either an H₂ Tank 1, 2, 3, or 4 pressure or the H₂ kit (Tank 5) pressure out of limits.

H₂/O₂ HEATER TEMP: Indicates an H₂ or O₂ Tank 1, 2, 3, or 4 heater temperature or an H₂ or O₂ kit (Tank 5) heater temperature out of limits.

H₂O LOOP: Indicates an out of limits condition on H₂O loop 1 or 2 pump out pressure.

H₂O SPRAY BOILER: Indicates a water spray boiler 1, 2 or 3 parameter is out of limits.

HYD PRESS: Indicates a hydraulics system 1, 2, or 3 supply pressure out of limits.

IMU: Indicates detection of an inertial measurement unit (IMU) failure or dilemma.

LANDING SYS: A failure in the Landing System Check process has been detected.

MAIN BUS VOLTAGE: Indicates main bus A, B, or C voltage is less than 10% or greater than 15% of the nominal voltage.

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MAIN ENGINE CNTR: Indicates detection of a center main engine pod fuel tank ullage pressure out of limits, or an engine abnormal (main engine fail to ignite, or early shutdown) condition.

MAIN ENGINE LEFT: Indicates detection of a left main engine pod fuel tank ullage pressure out of limits, or an engine abnormal (main engine fail to ignite, or early shutdown) condition.

MAIN ENGINE RIGHT: Indicates detection of a right main engine pod fuel tank ullage pressure out of limits, or an engine abnormal (main engine fail to ignite, or early shutdown) condition.

NAV SYSTEM: Indicates a failure or parameter out of limits error in the Navigation System components. These components may include: the Star Tracker, IMU, GPS, or Digital Auto Pilot. A NAV SYSTEM error may also indicate a malfunction in the GPCs.

O₂ PRESS: Indicates an O₂ tank 1, 2, 3, or 4 pressure or the O₂ kit (Tank 5) pressure out of limits.

OMS LEFT: Indicates detection of a left OMS pod oxidizer, fuel tank ullage pressure out of limits, or an engine abnormal (OMS engine fail to cutoff, fail to ignite, or early shutdown) condition.

OMS RIGHT: Indicates detection of a right OMS pod oxidizer, fuel tank ullage pressure out of limits, or an engine abnormal (OMS engine fail to ignite, or early shutdown) condition.

OMS TVC: Indicates detection of an OMS pitch or yaw gimbal failure. An OMS TVC failure may indicate a failure in the GPC. OMS TVC failure may precipitate a LEFT or RIGHT OMS failure.

PAYLOAD: Indicates detection of a payload object parameter input out of limits.

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PAYLOAD BAY: Indicates detection of payload bay doors, radiators or Ku Antenna movement parameters out of limits.

RCS FWD: Indicates detection of an out of limits condition on a forward RCS oxidizer tank ullage pressure, fuel tank ullage pressure, or forward oxidizer or fuel leak.

RCS JET: Indicates detection of an RCS jet failed on, failed off, or leaking.

RCS LEFT: Indicates detection of a left RCS oxidizer, fuel tank ullage pressure out of limits, or left oxidizer or fuel leak.

RCS RIGHT: Indicates detection of a right RCS oxidizer, fuel tank ullage pressure out of limits, or right oxidizer or fuel tank leak.

SMOKE / FIRE: Smoke and/or fire detector in the cabin, AV Bay, Payload Bay or Space Lab has activated.

SRB LEFT: Indicates detection of a left Solid Rocket Booster engine abnormal status (fail to ignite, or early shutdown) condition.

SRB RIGHT: Indicates detection of a right Solid Rocket Booster engine abnormal status (fail to ignite, or early shutdown) condition.