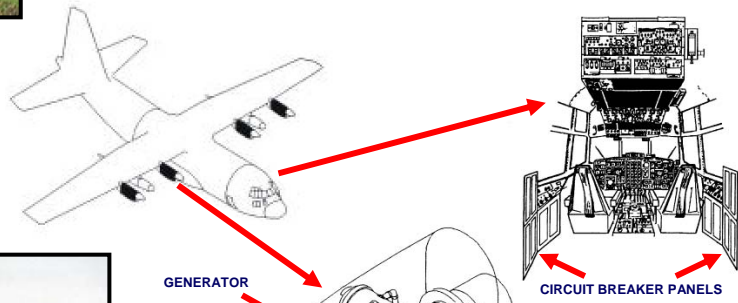




# MC-130P Combat Shadow Electrical Loads Analysis



GENERATOR

CIRCUIT BREAKER PANELS

- G1 - Ground Maintenance
  - G2 - Calibration
  - G3 - Loading/Preparation
  - G4 - Start-up/Warm-up
  - G5 - Taxi
  - G6 - Take-off/Climb
  - G7 - Cruise
  - G8 - Cruise Combat
  - G9 - Landing
  - G10 - Emergency
  - LH - Left Hand AC Bus
  - ESS - Essential AC Bus
  - Main - Main AC Bus
  - RH - Right Hand AC Bus
- Loads in units of KVA

## ELA Spreadsheet Alternating Current (AC) Continuous Load

LOAD COND	LH	LH+ESS	ESS	ESS+MAIN	MAIN	MAIN+RH	RH	RH+LH	LH+ESS+MAIN+RH
G-1	0.00	9.53	9.53	28.24	18.71	18.71	0.00	0.00	28.24
G-2	0.00	2.34	2.34	5.57	3.23	3.23	0.00	0.00	5.57
G-3	0.00	10.29	10.29	13.54	3.25	3.25	0.00	0.00	13.54
G-4	6.49	32.62	26.13	46.13	20.00	22.24	2.24	8.72	54.86
G-5	7.83	34.02	26.18	46.14	19.96	48.70	28.74	36.57	82.71
G-6	14.64	46.75	32.11	52.36	20.25	48.98	28.74	43.38	95.73
G-7	17.67	49.21	31.54	52.25	20.70	49.44	28.74	46.41	98.65
G-8	14.64	45.19	30.55	50.76	20.21	22.44	2.24	16.88	67.63
G-9	14.64	46.93	32.30	54.65	22.36	51.17	28.81	43.45	98.10

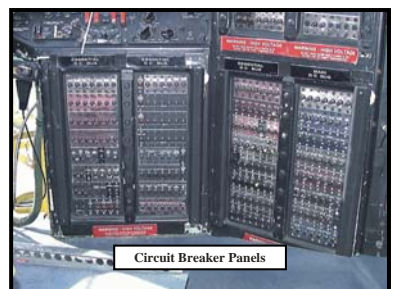


### Problem:

- MC-130P Combat Shadow requires more AC power.
- Electrical Loads Analysis (ELA) does not exist. Electrical growth capacity for future modifications is unknown.
- Each generator powers its own dedicated bus.
- MC-130P aircraft is equipped with 4 - 40 Kilo-Volt Ampere (KVA) 3-Phased Brushless Generators, Theoretical aircraft capacity of 160 KVA.
- If engine or electrical generator fails, one generator assumes load of 2 buses. Therefore, total design AC electrical loads should not exceed 80 KVA.

### Solution:

- Create Electrical Loads Analysis (Excel Spreadsheet) to meet MIL-E-7016 requirements.
- Verify individual electrical loads by conducting measurements on 13 aircraft.
- Verify load wiring connections are attached to proper buses per wiring drawings.
- No growth capacity exist, Recommend modifying aircraft to upgrade to 60/90 KVA Generators.

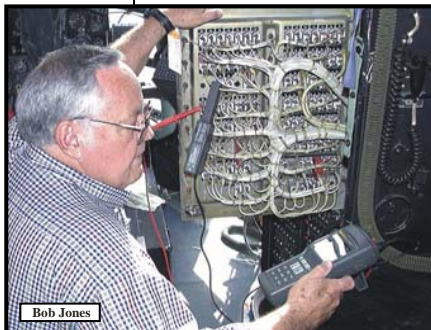


Circuit Breaker Panels



LUM Engineer: Pat Womack

## SSAI Team Measuring and Recording Load/Current Measurements



Bob Jones



Mo Alexander

Jay Breyer



Load Measurement Tools