

UNCLASS
CF-105 SERVICE DATA

Section - 37
Date: Electrical System -

Signature: Power Supplies
Unit / Rank / Appointment: *ANPS*

CONFIDENTIAL

FILE IN VAULT

ANALYZED

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CF-105 SERVICE DATA

ELECTRICAL SYSTEM

Section 37.
POWER SUPPLIES

Classification cancelled / Changed to UNCLASS

By authority of AVES

Date 27 Sept 96

Signature [Signature]

Unit / Rank / Appointment AVES

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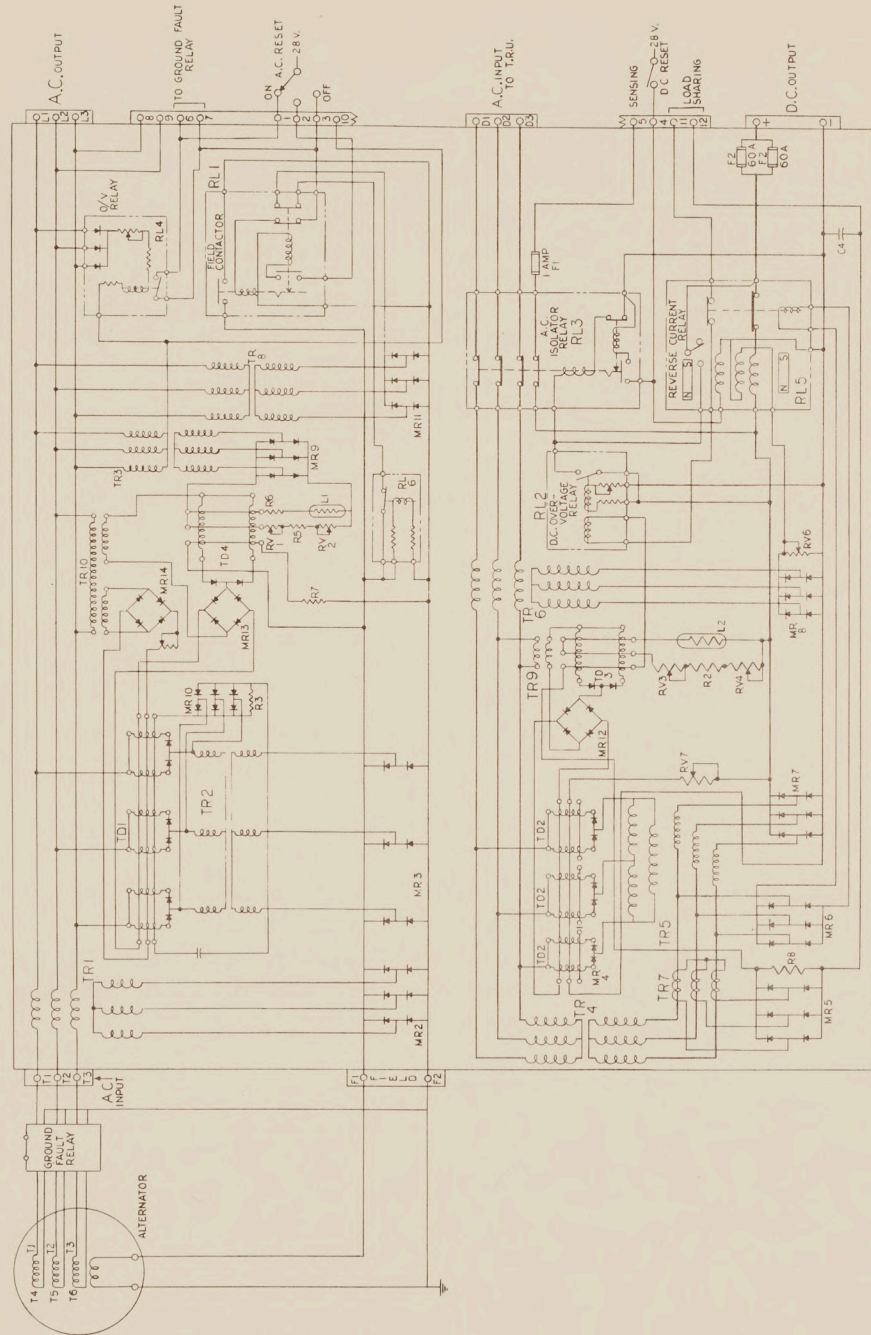
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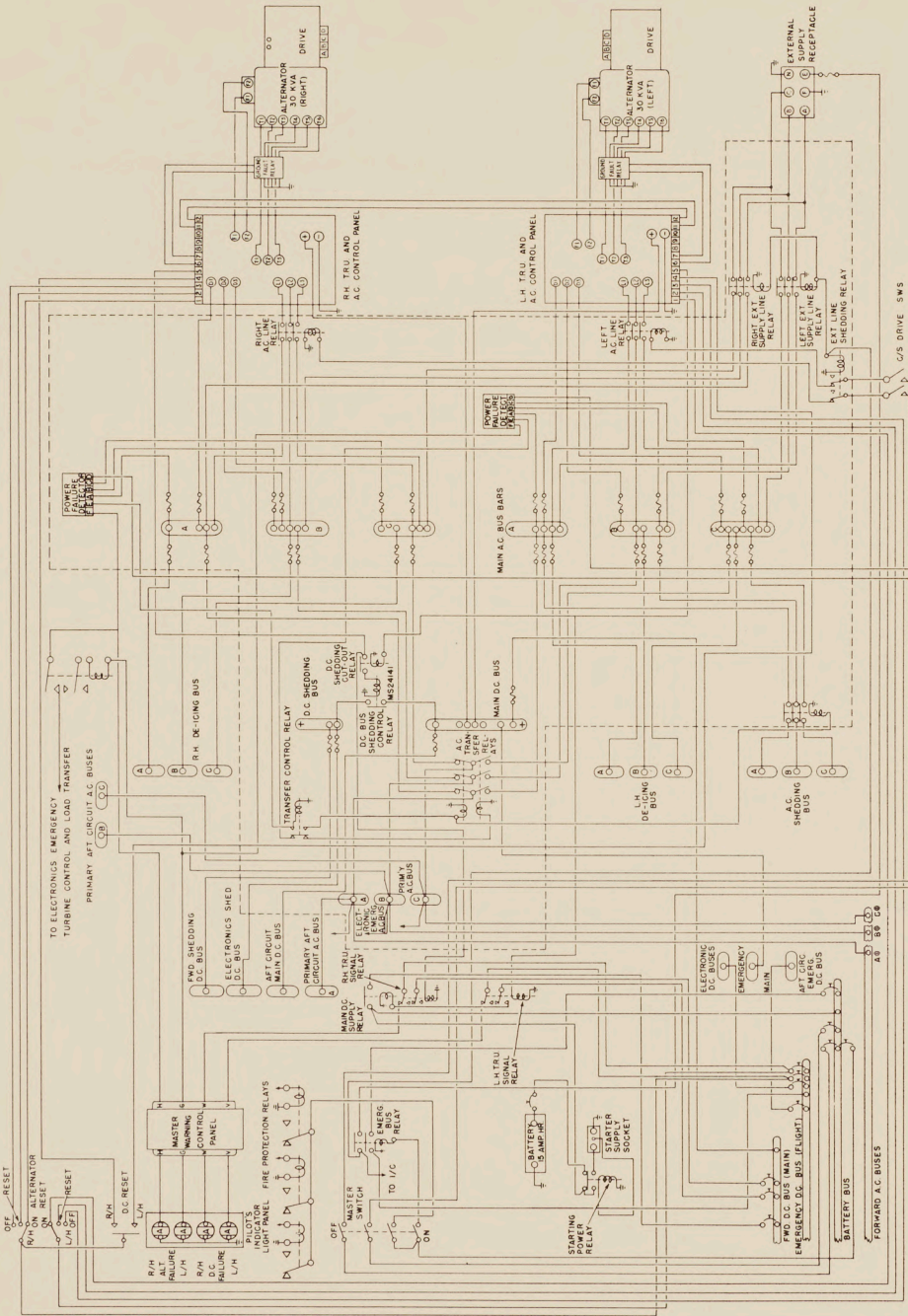
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C105-LD24-1

FIG. 1 A - C CONTROL AND TRANSFORMER - RECTIFIER UNIT SCHEMATIC

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C105-LD16-1

FIG. 2 A-C AND D-C SUPPLY SYSTEM SCHEMATIC

CF-105 SERVICE DATA
SYSTEM DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	AIRCRAFT EFFTY 25201	REF. NO. 11-1
<p>DESCRIPTION</p> <p>General</p> <p>1. Electrical power is supplied by two 30 KVA 120/208 volt 3-phase alternators mounted on mechanical hydraulic constant speed units, one in each engine nose bullet. The constant speed units maintain the output frequency of the alternators at 380 - 420 cps.</p> <p>2. In addition to supplying the aircraft a-c services, each alternator supplies a transformer-rectifier unit. The transformer-rectifier units operate in parallel and provide 27.5 volts d-c for the d-c services.</p> <p>3. In the event of a fault in one system, loads not essential for flight are shed and essential loads are transferred onto the serviceable system. In the event that both a-c or d-c systems fail, a battery supplies certain emergency services.</p> <p>A-C Supply</p> <p>4. The alternators operate two independent supply systems. Each system includes a control panel, fault detection circuits, fault control circuits and, in the front cockpit, a control switch and failure indicator light.</p> <p>5. The control panel for each system also incorporates a d-c supply transformer-rectifier unit. Both panels are mounted in one air conditioned cabinet and comprise the A-C Control and Transformer-Rectifier Unit located aft of the centre section bulkhead.</p> <p>6. The a-c portion of each control panel performs the following five functions:</p> <p>(1) Utilizes the initial output of the alternator to provide field excitation during output build-up.</p> <p>(2) Provides field excitation control, to maintain an average voltage output across the three phases, by means of a magnetic amplifier circuit.</p> <p>(3) Provides field excitation compatible with the load current, by means of a compounding control unit.</p> <p>(4) Permits the alternator to be isolated manually or, in case of failure, automatically by means of a field contactor or field shorting circuit. The field contactor is tripped manually when the alternator control switch in the front cockpit is selected to OFF, or automatically when a grounding fault develops in the alternator or an overvoltage condition develops in the alternator output phases.</p> <p>(5) Detects overvoltage in the output phases and effects the operation of the field contactor.</p>			
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7. The 3-phase output of each alternator is supplied via the control panel and a line relay to the corresponding left or right A, B and C phase bus-bars in the Main Power Panel. The line relays are energized by a supply from the battery via the ON position of the Master Electrical switch in the front cockpit.

8. Primary loads, i.e. loads essential for flight, are supplied from the primary a-c bus-bars which under normal conditions are supplied via a transfer relay from the right hand main a-c bus-bars. Secondary loads, i.e. loads not essential for flight, are connected to the a-c shedding bus-bars which are supplied via a shedding relay from the left hand main a-c bus-bars. If the right hand alternator fails, the failure will be detected by the fault detection circuit which will cause the fault control circuits to operate. The fault control circuits will trip the isolating circuit, shed the secondary load and transfer the primary load onto the left hand alternator. If the left hand alternator fails no action is taken by the fault control circuits.

9. If an alternator is isolated, its associated d-c supply transformer-rectifier is also isolated which causes the d-c load to be shed. If a transformer-rectifier fails, only the d-c load is shed.

10. The load shed by the fault control circuits is drawn by the following services:

- a-c: Tacan
X-Band Beacon
- d-c: Landing Lights
Taxi Light
Tacan d-c Supply

11. System fault detection consists of a ground fault relay and a power failure detector which detects failure of any phase. During normal operation of the system the failure detector completes the supply circuit for the transfer relay of the fault control circuit. In the event of a fault, the detector transfers the power supply from the transfer relay to the alternator failure indicator in the front cockpit. The ground fault relay functions to detect a grounding condition in the armature windings or output phases of the alternator. The relay is connected by means of rectifiers across each phase of the alternator. If a short develops, the rectifiers will conduct and energize the relay. This action trips the field contactor relay incorporated in the alternator.

12. System fault control circuits include a transfer control relay, an a-c transfer relay and an a-c shedding relay. The three relays operate in conjunction, when a fault is detected by the power failure detector.

13. Under normal conditions, the transfer control relay is energized by a power supply from the battery via the right hand alternator power failure detector. In the energized position, the transfer control relay completes a supply circuit to the a-c shedding relay coil and to the right hand coil of the a-c transfer relay. The a-c shedding relay serves as the line relay for the a-c shedding bus which is fed by the left hand alternator. The a-c transfer relay serves as the line relay for the primary a-c bus-bars which are fed by the right hand alternator.

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SYSTEM	SUB-SYSTEM	AIRCRAFT EFFTY	REF. NO.
ELECTRICAL (Cont'd)	POWER SUPPLIES	25201	11-1
<p>14. In the event of the left hand alternator phase failure indicator detecting a fault, the supply to the transfer control relay is interrupted. In the de-energized position the transfer control relay interrupts the supply to the a-c shedding relay coil and to the right hand coil of the a-c transfer relay, and completes a supply circuit from the left hand alternator phase failure indicator to the left hand coil of the transfer relay. This transfers the primary a-c bus-bar load to the left hand alternator and disconnects the a-c shedding bus load.</p> <p>15. An OFF-RESET-ON control switch for each system is located in the front cockpit. Selecting this switch to the OFF position trips the field contactor relay and permits the engines to be run without alternator generation. The field contactor is restored to normal operating condition by selecting the control switch to RESET. The ON position of the control switch completes the operating power supply to the ground fault relay and power failure detector.</p> <p>16. The indicator lights in the front cockpit provide a warning when the left hand or right hand alternator power failure indicator has operated due to a phase failure.</p> <p>D-C Supply</p> <p>17. The two transformer-rectifier units, incorporated in the a-c control panels, operate in parallel to provide d-c power requirements. The rectified d-c output of both units is supplied to the main d-c bus-bar in the Main Power Panel E28.</p> <p>18. Each transformer-rectifier unit draws its a-c input from the relevant left hand or right hand Main D-C bus. The maximum 3-phase line current drawn by each unit is 14 amperes. The maximum rectified output is 110 amperes at 27.5 volts.</p> <p>19. Prior to rectification, the a-c input is stepped-down by a 3-phase transformer to a value which would provide a rectified output of less than 27.5 volts d-c. This permits voltage regulation to be obtained by inserting a 3-phase booster transformer in series with the stepped-down a-c and controlling the degree of boost. The degree of boost is controlled by means of a magnetic amplifier circuit in the primary side of the boost transformer.</p> <p>20. An isolating circuit in each transformer-rectifier unit serves to disconnect the a-c input in the event of an overvoltage, reverse current or an abnormally high input current condition.</p> <p>21. The isolating circuit comprises an isolating relay and a reset relay. The isolating relay contains five sets of contacts. Four of these sets are normally closed and the other set is normally open. The normally closed contacts complete the 3-phase input supply and a rectified d-c supply to a shedding circuit and a signal relay circuit. The normally open contacts close when the relay is tripped and prepare a return circuit for the reset relay. The reset relay latches the isolating relay in the open position until a pulse is applied from the battery via the reset switch in the front cockpit.</p> <p>22. The operation of the shedding circuit relays and the transformer-rectifier signal relays are inter-related. The shedding circuit consists of a d-c shedding</p>			
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cut-out relay and a d-c shedding bus control relay. The left hand transformer-rectifier unit is connected to the coil of the cut-out relay and the right hand transformer-rectifier unit is connected to the contact of the cut-out relay. When both transformer-rectifier units are operating, the left hand unit energizes the cut-out relay so completing the circuit from the right hand unit to the coil of the shedding control relay. The control relay completes the line supply from the main d-c bus to the d-c shedding bus.

23. In the event of one unit failing, the supply to the coil or contact of the cut-out relay will be interrupted. Either condition will effect the de-energizing of the shedding control relay.

24. The shedding circuit supply from each unit is also supplied to the corresponding left hand or right hand signal relays. The signal relays, when energized, complete parallel circuits to the coil of the main d-c supply relay which, when energized, completes circuits to the battery and the battery bus. By this means the main d-c supply relay will remain energized if one unit fails. If both units fail the relay interrupts the circuit to prevent the main bus services drawing power from the battery. The signal relays in the de-energized position complete supply circuits from the battery bus to the generator failure indicators in the front cockpit.

Battery Supply

25. When one or both of the transformer-rectifier units are operating, the battery is charged from the Main D-C bus-bar. If both transformer-rectifier units fail, the battery is isolated from the Main D-C bus-bar, but will continue to supply services connected to the battery bus-bar and the emergency d-c bus-bar. If the Master switch is selected to OFF the battery will supply only those services connected to the battery bus-bar.

26. During engine starting the battery is isolated, to conserve its capacity, by a starting power relay. When power is supplied to the engine starting receptacle, this relay is energized which automatically isolates the battery and transfers the battery bus load onto the engine starting source.

27. The emergency d-c bus-bar supplies the following services:

- Engine starting control circuits
- Relight circuits
- Emergency fuel control circuits
- Landing gear indication
- Landing gear emergency up circuit
- External tank air shut-off valves and jettison solenoids
- Speed brake solenoid
- Turn and slip indicator
- Bail-out circuit
- Front and rear cockpit emergency light
- Master warning system

28. The following services demand power from both the emergency d-c bus and the battery bus:

- Fuel shut-off valves
- Fire protection system
- Canopy actuation

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SYSTEM	SUB-SYSTEM	AIRCRAFT EFF'TY	REF. NO.
ELECTRICAL (Cont'd)	POWER SUPPLIES	25201	11-1

29. The following services are supplied from the battery bus:

- Alternator supply line relays
- Power supply reset circuits

External Supply

30. An external supply receptacle permits an external source of 120/208 volts 3-phase a-c power and 27.5 volts d-c power to be connected to the aircraft. With the Master switch in the ON position the d-c supply is completed to the coils of the external line shedding relay and the external supply line relays. The line shedding relay isolates the line relays of the alternator system, thus eliminating the possibility of connecting the aircraft and external supplies to the Main A-C bus simultaneously.

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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Master Power Switch	REF. NO. 11-1-1
AVRO PART NO. 7660-K9	MANUFACTURER	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
FUNCTION Controls the line relays of the internal and external a-c power supply.			
LOCATION Front cockpit - RH console, Power and Starting Panel E16.			
ACCESS Mounted on the Power and Starting Panel E16.			MEN X MINUTES
REPLACEMENT PROCEDURE Mount switch on panel E16. Connect electrical wiring. Fasten four quick fasteners.			MEN X MINUTES

741-3413-2-5

<p>INSPECTION</p> <p>Operate the switch, check that the lever action is smooth and that the make and break is not sluggish or rough.</p>		<p>MEN X MINUTES</p>							
<p>FUNCTIONAL CHECKS</p>		<p>MEN X MINUTES</p>							
<p>GROUND HANDLING AND GROUND TEST EQUIPMENT</p>									
<p>SPECIAL TOOLS TO REMOVE OR SERVICE</p>									
<p>REMARKS</p>									
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COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Alternator Control and Reset Switch - LH and RH	REF. NO. 11-1-2
AVRO PART NO. CS-S-154	MANUFACTURER	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
<p>FUNCTION</p> <p style="text-align: center;">Alternator on-off control and isolating circuit reset. One switch for each system.</p>			
<p>LOCATION</p> <p style="text-align: center;">Front cockpit RH console on the oxygen Panel E22.</p>			
<p>ACCESS</p> <p style="text-align: center;">Mounted on the Oxygen Panel E22.</p>			MEN X MINUTES
<p>REPLACEMENT PROCEDURE</p> <p style="text-align: center;">Mount switch on panel E22. Connect electrical wiring to switches. Secure six panel mounting screws.</p>			MEN X MINUTES

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<p>INSPECTION</p> <p style="text-align: center;">Operate the switches, check that the lever action is smooth and that the make and break is not sluggish or rough.</p>	<p>MEN X MINUTES</p> <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>																				
<p>FUNCTIONAL CHECKS</p>	<p>MEN X MINUTES</p> <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>																				
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INSPECTION		MEN X MINUTES	
Operate the switch, check that the lever action is smooth and that the make and break is not sluggish or rough.			
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Master Warning Control Box - E140	REF. NO. 11-1-4
AVRO PART NO. 7-1152-12	MANUFACTURER M. J. Johnson	MAN'FR'S PART NO. W-1000	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE :		KNOWN-	ESTIMATED- 500 hours
FUNCTION Incorporates circuits which operate master warning lights in cockpit.			
LOCATION Nosewheel well. LH side. Sta. 166-66 - 176.00.			
ACCESS Nosewheel well, unobstructed .			MEN X MINUTES
REPLACEMENT PROCEDURE Fit four AN520-10-R screws. Connect two connectors.			MEN X MINUTES

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INSPECTION		MEN X MINUTES	
Check security of mounting. Check connectors are secure and properly fitted.			
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL		SUB-SYSTEM POWER SUPPLIES		COMPONENT Master Warning Panel - E15		REF. NO. 11-1-5	
AVRO PART NO. 7-1252-68		MANUFACTURER Avro Aircraft		MAN'FR'S PART NO.		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE :		KNOWN-		ESTIMATED-		500 hours	
FUNCTION Houses: Warning Lights Night & day switch) Press to test switch) For warning lights. Press to re-set switch)							
LOCATION Front cockpit - RH console, forward.							
ACCESS Incorporated in the RH console as a detachable panel.						MEN X MINUTES	
REPLACEMENT PROCEDURE Connect electrical wiring. Secure six quick fasteners.						MEN X MINUTES	

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INSPECTION Release panel and check wiring for security and damage. Check switches for serviceability.	MEN X MINUTES <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>		
FUNCTIONAL CHECKS	MEN X MINUTES <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>		
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Alternator. 208/115V A.C.	REF. NO. 11-1-6
AVRO PART NO. 7-1125-11	MANUFACTURER Lucas Rotax	MAN'FR'S PART NO. 60601	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 350 hours	
FUNCTION Primary source of electrical power.			
LOCATION Engine nose bullet.			
ACCESS Accessible by removing engine.			MEN X MINUTES
REPLACEMENT PROCEDURE Install alternator on constant speed unit. Attach nuts to constant speed unit attachment studs. Connect cables to Alternator. Install nose bullet fairing by securing six fasteners.			MEN X MINUTES

<p>INSPECTION</p> <p style="text-align: center;">At each normal engine change -</p> <p>Remove slip ring end covers: Inspect brushes for wear. Inspect slip ring for eccentricity and scoring. Check for dust, dirt, grime and grease. Check the insulation of the windings.</p>		<p>MEN X MINUTES</p>							
<p>FUNCTIONAL CHECKS</p>		<p>MEN X MINUTES</p>							
<p>GROUND HANDLING AND GROUND TEST EQUIPMENT</p> <p style="text-align: center;">500 volt Insulation Tester.</p>									
<p>SPECIAL TOOLS TO REMOVE OR SERVICE</p>									
<p>REMARKS</p>									
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COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT A-C Control and Transformer- Rectifier Unit LH and RH	REF. NO. 11-1-7
AVRO PART NO. 7-1156-17	MANUFACTURER Lucas Rotax	MAN'FR'S PART NO. 60900	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 350 hours	
<p>FUNCTION</p> <p style="margin-left: 40px;">Regulates a-c and d-c supplies. Rectifies 3 ϕ a-c to 27.5 \pm .5 volts d-c supply.</p>			
<p>LOCATION</p> <p style="margin-left: 40px;">Forward of Sta. 538.4. Inside fuselage.</p>			
<p>ACCESS</p> <p style="margin-left: 40px;">Accessible for inspection by releasing access panel RH (44 camlocs). To remove unit release left and right access panels (74 camlocs and four 3/16 bolts).</p>			MEN X MINUTES
<p>REPLACEMENT PROCEDURE</p> <p style="margin-left: 40px;">To install single unit: Insert unit in case. Install six screws. Connect external connections. Install access panels.</p>			MEN X MINUTES

INSPECTION Remove units, check security of equipment and wiring. Check for signs of overheating. Check insulation of transformers.	MEN X MINUTES <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>		
FUNCTIONAL CHECKS	MEN X MINUTES <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>		
GROUND HANDLING AND GROUND TEST EQUIPMENT 500 volt Insulation Tester.			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Main Power Panel E28 - Cabinet	REF. NO. 11-1-8
AVRO PART NO. 7-1156-36	MANUFACTURER Avro Aircraft	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
<p>FUNCTION</p> <p>Houses three trays which distribute a-c and d-c power to subsidiary centres of circuit supply. Also, facilitates the interconnection between the tray wiring and the aircraft wiring which is completed only when the relevant tray is inserted properly and securely.</p>			
<p>LOCATION</p> <p>Aft of bulkhead 485.</p>			
<p>ACCESS</p> <p>Remove access panel by unfastening 44 camloc fasteners.</p>			MEN X MINUTES
<p>REPLACEMENT PROCEDURE</p> <p>Install unit in mounting. Install four mounting bolts. Connect external wiring to panel. Install trays 1, 2 and 3.</p>			MEN X MINUTES

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INSPECTION With trays 1, 2 and 3 removed: Check security of mounting. Check wiring and associated plugs for security.		MEN X MINUTES	
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Tray 1. Main Power Panel E28.	REF. NO. 11-1-9
AVRO PART NO. 7-1156-37	MANUFACTURER Avro Aircraft	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
FUNCTION Distribution of a-c power from left hand alternator. Incorporates load shedding circuit relays.			
LOCATION In main power panel E28, aft of bulkhead 485.			
ACCESS Remove access panel by unfastening 44 camlocs.			MEN X MINUTES
REPLACEMENT PROCEDURE Slide tray into holder. Turn torque tube, located on front face of tray, in clockwise direction, until tray is securely locked. Secure four camloc fasteners.			MEN X MINUTES

141-1513-7-5

<p>INSPECTION</p> <p style="text-align: center;">Remove tray and check security of equipment and wiring. Inspect receptacle at rear of tray for signs of arcing.</p>	<p>MEN X MINUTES</p> <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>																				
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Tray 2 - Main Power Panel E28	REF. NO. 11-1-10
AVRO PART NO. 7-1156-38	MANUFACTURER Avro Aircraft	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
FUNCTION Distribution of a-c power from RH alternator.			
LOCATION In main power panel E28, aft of station 485.			
ACCESS Remove access panel by unfastening 44 camloc fasteners.			MEN X MINUTES
REPLACEMENT PROCEDURE Slide tray into holder. Turn torque tube, located on front face of tray in clockwise direction until tray is securely locked. Secure four camloc fasteners.			MEN X MINUTES

INSPECTION		MEN X MINUTES	
Remove tray, and check security of equipment and wiring. Inspect receptacle at rear of tray for signs of arcing.			
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Tray 3 - Main Power Panel E28	REF. NO. 11-1-11
AVRO PART NO. 7-1156-39	MANUFACTURER Avro Aircraft	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
FUNCTION Distribution of d-c power from transformer-rectifier units.			
LOCATION In main power panel E28 aft of bulkhead 485.			
ACCESS Remove access panel by unfastening 44 camloc fasteners.			MEN X MINUTES
REPLACEMENT PROCEDURE Slide tray into holder. Turn torque tube, located on front face of tray, in clockwise direction until tray is securely locked. Secure four camloc fasteners.			MEN X MINUTES

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INSPECTION Remove tray and check security of equipment and wiring. Inspect receptacle at rear of tray for signs of arcing.		MEN X MINUTES	
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Ground Fault Relays RH-E164. LH-E163	REF. NO. 11-1-12
AVRO PART NO. CS-R-123	MANUFACTURER Lucas Rotax	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
FUNCTION Trips the relevant LH or RH alternator isolating circuit in the event of a short circuit in the alternator armature windings or output phases.			
LOCATION Located in duct bay at station 532.			
ACCESS Remove access panel (17 camlocs).			MEN X MINUTES
REPLACEMENT PROCEDURE To install one unit: Fit four mounting screws. Connect three power wires from transformer-rectifier unit. Connect three wires to ground stud. Secure one electrical connector.			MEN X MINUTES

TM-3513-2-5

INSPECTION Visual check for security of mounting. Check that the electrical connector is fitted properly and securely.		MEN X MINUTES	
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL		SUB-SYSTEM POWER SUPPLIES		COMPONENT Power Failure Detector LH and RH		REF. NO. 11-1-13	
AVRO PART NO. 7-1156-11		MANUFACTURER Canadian Diaphlex		MAN'FR'S PART NO.		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE :		KNOWN-		ESTIMATED-		500 hours	
FUNCTION Trips the relevant alternator isolating circuit if a phase failure occurs.							
LOCATION Main power panel E28, aft face of bulkhead 485.							
ACCESS Remove access panel by unfastening 44 camloc fasteners.						MEN X MINUTES	
REPLACEMENT PROCEDURE Install detector in mounting. Fit four 8/32 inch mounting screws and nuts. Secure one electrical connector to detector. Refit tray in E28 panel						MEN X MINUTES	

INSPECTION		MEN X MINUTES							
FUNCTIONAL CHECKS		MEN X MINUTES							
GROUND HANDLING AND GROUND TEST EQUIPMENT									
SPECIAL TOOLS TO REMOVE OR SERVICE									
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Circuit Breaker Panel, E1	REF. NO. 11-1-14
AVRO PART NO. 7-1156-45	MANUFACTURER Avro Aircraft	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE : KNOWN-		ESTIMATED- 500 hours	
FUNCTION To house circuit control breakers and bus-bars.			
LOCATION Nosewheel well, forward of station 150.00.			
ACCESS Nosewheel well, unobstructed.			MEN X MINUTES
REPLACEMENT PROCEDURE Attach power wiring to bus-bars. Fasten six camloc fasteners holding panel to structure. Fit six screws to bottom edge of hinge. Secure four AN connectors to top face of panel.			MEN X MINUTES

INSPECTION Open panel and check security of connections to circuit breakers and bus-bars. Check for chafing of cables.	MEN X MINUTES <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>		
FUNCTIONAL CHECKS	MEN X MINUTES <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>		
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Aft Limiter Panel - E20	REF. NO. 11-1-15
AVRO PART NO. 7-1156-18	MANUFACTURER Avro Aircraft	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
FUNCTION Mounts current limiters for certain circuits.			
LOCATION Forward of RH speed brake.			
ACCESS Release hinged access panel fastened by 13 quick release fasteners.			MEN X MINUTES
REPLACEMENT PROCEDURE Install panel by fastening 11 camloc fasteners. Connect two AN connectors. Close hinged access panel (13 quick release fasteners).			MEN X MINUTES

INSPECTION Remove panel and check connections for security. Check limiters for discolouration.		MEN X MINUTES	
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Distribution Panel - E4	REF. NO. 11-1-16
AVRO PART NO. 7-1154-13	MANUFACTURER Avro Aircraft	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
FUNCTION Facilitates interconnection between circuits.			
LOCATION Forward face of bulkhead station 485.			
ACCESS Unobstructed in missile bay, bulkhead station 485, after missile package has been removed.			MEN X MINUTES
REPLACEMENT PROCEDURE Fit sixteen fixing bolts. Fit fuel contents circuit wiring to T-connectors. Connect ground circuits. Connect fin lights, brake valves and anti-skid control unit circuit wiring. Clip in four 12-way terminal blocks. Connect ten AN3102 connectors. Connect forty AN3106 connectors.			MEN X MINUTES

741-5813-21-0

<p>INSPECTION</p> <p>Check that the terminal blocks and fuel contents system T-connectors are secure. Check that the AN connectors are securely and properly fitted.</p>	MEN X MINUTES	
<p>FUNCTIONAL CHECKS</p>	MEN X MINUTES	
<p>GROUND HANDLING AND GROUND TEST EQUIPMENT</p>		
<p>SPECIAL TOOLS TO REMOVE OR SERVICE</p>		
<p>REMARKS</p>		
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SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT Relay Panel - E6	REF. NO. 11-1-17
AVRO PART NO. 7-1152-78	MANUFACTURER Avro Aircraft	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
FUNCTION To house relays of certain circuits.			
LOCATION Roof of nosewheel well, station 149 - 129.33.			
ACCESS Roof of nosewheel well, unobstructed.			MEN X MINUTES
REPLACEMENT PROCEDURE Fit eight mounting bolts. Connect external battery supply circuit wire. Connect ground circuit. Fit three AN connectors.			MEN X MINUTES

141-3413-2-5

INSPECTION Remove from aircraft and check relay connections. Check for dust, dirt, grime and grease.	MEN X MINUTES <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>																				
FUNCTIONAL CHECKS	MEN X MINUTES <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>																				
GROUND HANDLING AND GROUND TEST EQUIPMENT																					
SPECIAL TOOLS TO REMOVE OR SERVICE																					
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">ISSUE</td> <td style="width: 10%; text-align: center;">1</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>DATE</td> <td>28 Nov 56</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	ISSUE	1									DATE	28 Nov 56									
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL		SUB-SYSTEM POWER SUPPLIES		COMPONENT Instrument Transformer - 115 Volts A-C E261		REF. NO. 11-1-18	
AVRO PART NO. 7-1152-31		MANUFACTURER Canadian Atlas Transformers.		MAN'F'R'S PART NO.		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE:		KNOWN-		ESTIMATED-		500 hours	
FUNCTION Converts the supply from the alternator which is star wound to a delta winding supply. This is necessary for certain aircraft instruments.							
LOCATION Forward face of station 166.66. LH side of nosewheel well.							
ACCESS Nosewheel well, unobstructed.						MEN X MINUTES	
REPLACEMENT PROCEDURE Fit four fixing bolts. Connect seven AN connectors.						MEN X MINUTES	

741-3413-2-5

INSPECTION Check for security of mounting and connections. Check for dust, dirt, grime and grease. Check insulation of windings.		MEN X MINUTES	
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT 500 Volt Insulation Tester.			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL		SUB-SYSTEM POWER SUPPLIES		COMPONENT Battery 15 AH SAFT. VOLTABLOC		REF. NO. 11-1-19	
AVRO PART NO. 7-1152-11		MANUFACTURER Societe Des Accumulat- eurs Fixes et de Traction		MAN'FR'S PART NO. 20-V0 15		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE:		KNOWN-		ESTIMATED-		500 hours	
FUNCTION Supplies 24V D-C power for certain services in the event of the transformer-rectifier units failing.							
LOCATION Left hand side of nosewheel well.							
ACCESS Nosewheel well, unobstructed.						MEN X MINUTES	
REPLACEMENT PROCEDURE Lift battery into receptacle and slide forward. Refit bolt in angle bracket at bottom forward face of battery. Refit nut on stud at the rear of the battery. Refit two bolts on the angle plate, at the top of the battery. Refit air connections. Connect supply circuit wiring.						MEN X MINUTES	

TM-5813-2-5

<p>INSPECTION</p> <p>Check security of mounting, air connections for tightness. Ensure exit perforations are clear. Check terminals and connections for security and dust, dirt, grime and grease. Check voltage of each cell.</p>		<p>MEN X MINUTES</p>							
<p>FUNCTIONAL CHECKS</p>		<p>MEN X MINUTES</p>							
<p>GROUND HANDLING AND GROUND TEST EQUIPMENT</p> <p>Voltmeter, (discharge type).</p>									
<p>SPECIAL TOOLS TO REMOVE OR SERVICE</p>									
<p>REMARKS</p>									
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM POWER SUPPLIES	COMPONENT External Power Receptacle	REF. NO. 11-1-20
AVRO PART NO. CS-R-127	MANUFACTURER Albert & J.M. Anderson Mfg.	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN-		ESTIMATED- 500 hours	
FUNCTION Facilitates connection of external power supply to aircraft.			
LOCATION Underside of fuselage, stations 489.90 - 494.80.			
ACCESS Remove access panel (44 camlocs).			MEN X MINUTES
REPLACEMENT PROCEDURE Fit four fixing bolts. Connect six circuit connections. Fit terminal cover (four nuts).			MEN X MINUTES

NT-3413-2-5

INSPECTION		MEN X MINUTES	
<p>Check contacts for signs of arcing and pitting. Check for security of mounting and dust, dirt, grime and grease.</p>			
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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TW-3933-2-6

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