



Ministry
of Defence

GENERATOR SET, DIESEL ENGINE DRIVEN, 2 kW, 230 V/110 V AC/28 V DC (Drumgrange Ltd)

6115-G-710-601 MAINTENANCE SCHEDULE

Issue No. 002

Amendment No. 004

June 2018

Sponsored for use in the
United Kingdom Ministry of Defence
and Armed Forces by DES LE OSP - OI

KN080

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Operational Infrastructure

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AMENDMENT RECORD

Amdt No.	Incorporated by (Signature)	Date
1	INCORPORATED	Oct 14
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4	INCORPORATED	Jun 18
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62		



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CONTENTS

PRELIMINARY MATERIAL	Page
Front cover.....	(i)
AMENDMENT RECORD.....	(iii)
CONTENTS (this list).....	(v)
PREFACE.....	(vi)
Introduction.....	(vi)
Related and associated publications.....	(vi)
Related publications.....	(vi)
Associated publications.....	(viii)
Hazardous substances.....	(viii)
WARNINGS AND CAUTIONS.....	(viii)
Warnings.....	(viii)
Cautions.....	(ix)
ABBREVIATIONS AND SYMBOLS.....	(x)
Abbreviations.....	(x)
Symbols.....	(xi)
FORM 10.....	Final leaf

MAINTENANCE SCHEDULE

Para

- 1 Introduction
- 5 Definitions
- 6 Warnings, Cautions and Maintenance Notes
- 7 Maintenance Intervals and Areas of Responsibility (WARNINGS) (CAUTIONS)

Table

	Page
1 Equipment Applicability.....	3
2 Fuels, Lubricants and Associated Products.....	3
3 Equipment Data.....	3
4 Action on Receipt.....	4
5 Out of Phase Maintenance.....	6
6 Operator Maintenance.....	7
7 Time/Usage Maintenance.....	11
8 Out of Use Maintenance.....	12



PREFACE

Sponsor: Operational Infrastructure (OI)

Project No.:

File Ref: DG Log (Land) ESS 13/8/18

Publication Authority: OI

INTRODUCTION

1 Service users should forward any comments on this publication using the procedures and templates provided on the Joint Asset Management and Engineering Solutions (JAMES) or Technical Documents On-Line (TDOL) portals. A Form 10 is also provided at the end of this publication; it may be copied and used for forwarding comments if JAMES or TDOL is not available.

2 AESPs are issued under UK MoD authority and where AESPs specify action is to be taken, the AESP will of itself be sufficient authority for such action and also for the demanding of the necessary stores, subject to the provisions of Para 3 below.

3 The subject matter of this publication may be affected by Defence Instructions and Notices (DIN), Standard Operating Procedures (SOP) or by local regulations. When any such Instruction, Order or Regulation contradicts any portion of this publication it is to be taken as the overriding authority.

RELATED AND ASSOCIATED PUBLICATIONS

Related publications

4 The Octad for the subject equipment consists of the publications shown below. All references are prefixed with the first eight digits of this publication. The availability of the publications can be checked on TDOL.

Category/Sub-category			Information Level			
			1 User/ Operator	2 Unit Maintenance	3 Field Maintenance	4 Base Maintenance
1	0	Purpose and Planning Information	101	*	*	*
	1	Equipment Support Policy Directive	111	*	*	*
2	0	Operating Information	201	*	*	*
	1	Aide-Mémoire	211	*	*	*
	2	Training Aids	*	*	*	*
3		Technical Description	201	302	*	*
4	1	Installation Instructions	*	*	*	*
	2	Preparation for Special Environments	*	*	*	*
5	1	Failure Diagnosis	201	522	*	*
	2	Maintenance Instructions	201	522	523	*
	3	Inspection Standards	*	522	*	*
	4	Calibration Procedures	*	*	*	*
6		Maintenance Schedule	601	*	*	*
7	1	Illustrated Parts Catalogue	711	*	*	*
	2	Commercial Parts List	*	*	*	*
	3	Complete Equipment Schedule, Production	*	*	*	*
	4	Complete Equipment Schedule, Service Edition (Simple Equipment)	741	*	*	*
	5	Complete Equipment Schedule, Service Edition (Complex Equipment)	*	*	*	*
8	1	Modification Instructions	*	812	*	*
	2	General Instructions, Special Technical Instructions and Servicing Instructions	*	*	*	*
	3	Service Engineered Modification Instructions (RAF only)	*	*	*	*

* Category/sub-category not published



Associated publications

5 The following associated publications should be read in conjunction with this category:

<u>Reference</u>	<u>Title</u>
AESP 6150-A-100-201	Earthing and Earthing Protection
JSP 515	Hazardous Stored Information System
SEI 14411	Safety Precautions for Electrical Equipment

HAZARDOUS SUBSTANCES

6 Before using any hazardous substance or material, the user must be conversant with the safety precautions and first aid instructions:

- 6.1 On the label of the container it was supplied in.
- 6.2 On the material Safety Data Sheet.
- 6.3 In local Safety Orders and Regulations.

WARNINGS AND CAUTIONS

WARNINGS

(1) **EARTHING. THE EARTH CABLE PROVIDED IS NOT TO BE LENGTHENED OR SHORTENED UNDER ANY CIRCUMSTANCES WITHOUT APPROVAL FROM THE DESIGN AUTHORITY.**

(2) **EARTHING. THE EQUIPMENT MUST BE PROPERLY EARTHED BEFORE ATTEMPTING TO OPERATE THE GENERATOR SET. WHEN USED WITH ANCILLARY EQUIPMENT, IT IS ESSENTIAL THAT THE EARTHING INSTRUCTIONS FOR THAT EQUIPMENT BE FOLLOWED. THE LFG EARTH SHOULD NOT BE REMOVED UNLESS SPECIFICALLY REQUIRED IN THE EARTHING INSTRUCTIONS FOR THE ANCILLARY EQUIPMENT.**

(3) **F54 DIESEL AND F34 AVTUR. DIESEL AND AVTUR FUELS ARE HIGHLY FLAMMABLE. WHEN REFUELLING:**

DO NOT RUN THE LFG

DO NOT SMOKE

AVOID ALL NAKED FLAMES

AVOID OVERFILLING THE FUEL TANK/JERRYCAN

WIPE UP ANY SPILT FUEL PRIOR TO STARTING THE LFG

(4) **GUARDS AND COVERS. DO NOT OPERATE THE GENERATOR WITH LOOSE OR MISSING COVERS OR GUARDS. DO NOT REMOVE ANY COVERS OR GUARDS UNTIL AT LEAST 10 MINUTES AFTER THE GENERATOR HAS STOPPED.**

(5) **JERRYCAN ADAPTOR. DO NOT OPERATE THE GENERATOR UNLESS A JERRYCAN IS CONNECTED VIA THE JERRYCAN ADAPTOR AND PIPES SUPPLIED WITH THE GENERATOR. FAILURE TO COMPLY MAY CAUSE THE LFG FUEL TANK TO COLLAPSE.**

(6) **NOISE HAZARD.** IF PERSONNEL ARE EXPOSED FOR PROLONGED PERIODS TO NOISE LEVELS IN EXCESS OF 80 DB(A), HEARING PROTECTION SHOULD BE PROVIDED AND WORN. THE LFG EMITS A MEASURED NOISE LEVEL OF BETWEEN 90 - 100 DB(A) THEREFORE HEARING PROTECTION MUST BE PROVIDED AND WORN WHEN WORKING WITHIN 1 METRE OF AN OPERATING LFG.

(7) **PERSONAL INJURY.** THE GENERATOR WEIGHS 76 KG NET AND 88 KG GROSS (INCLUDING FUEL AND CES). MANUAL HANDLING OF THE GENERATOR MUST BE IN ACCORDANCE WITH LOCAL MANUAL HANDLING ASSESSMENTS CARRIED OUT IN ACCORDANCE WITH JSP375. LOCAL MANUAL HANDLING ASSESSMENTS ARE ALSO TO BE CONDUCTED FOR THE ENGINE (38 KG) AND CONTROL BOX ASSEMBLY (32 KG).

(8) **PERSONAL INJURY.** THE LFG ALTERNATOR IS A PERMANENT MAGNET GENERATOR, CARE MUST BE TAKEN WHEN WORKING ON THE GENERATOR DUE TO THE HIGH STRENGTH OF THE MAGNETS WHICH COULD CAUSE PERSONAL INJURY.

(9) **SHOCK HAZARD.** DO NOT ATTEMPT TO SERVICE THE GENERATOR OR CARRY OUT ANY MAINTENANCE OR REPAIRS WHILST IT IS RUNNING.

(10) **SHOCK HAZARD.** LETHAL VOLTAGES ARE PRESENT IN THE GENERATOR EQUIPMENT. ENSURE THAT THE CIRCUIT BREAKERS ARE OPEN WHEN CONNECTING OR DISCONNECTING LOADS. CHECK THE RESIDUAL CURRENT DEVICE (RCD) OPERATION FOR EACH VOLTAGE SETTING. DO NOT CONNECT OR DISCONNECT LOADS WHILST THE GENERATOR IS RUNNING.

(11) **SKIN BURNS.** EXERCISE EXTREME CARE WHEN CARRYING OUT TASKS ADJACENT TO THE ENGINE AND ITS EXHAUST PIPE AS BOTH ITEMS CAN RETAIN HEAT FOR SEVERAL MINUTES AFTER SHUT DOWN. ALLOW SUFFICIENT TIME FOR THE EQUIPMENT TO COOL DOWN BEFORE CARRYING OUT ANY MAINTENANCE TASKS.

(12) **TOXIC FUMES.** EXHAUST GASES ARE TOXIC AND CAN QUICKLY REACH HARMFUL CONCENTRATIONS IF PRECAUTIONS ARE NOT FOLLOWED. THE EXHAUST GASES MUST ALWAYS BE VENTED TO FREE AIR. THIS CAN BE ACHIEVED EITHER BY POSITIONING THE LFG OUTDOORS OR BY USE OF THE EXHAUST EXTENSION WHICH SHOULD BE ROUTED SO AS TO TERMINATE IN FREE AIR. THE EXHAUST MUST NOT BE MUFFLED OR RESTRICTED IN ANY WAY AS THE RESULTING BACK PRESSURE COULD CAUSE ADDITIONAL LEAKS TO OCCUR OR DAMAGE THE ENGINE. EXTREME CARE MUST BE TAKEN TO ENSURE THAT EXHAUST GASES ARE VENTED SAFELY AWAY FROM ANY PERSONNEL WORKING IN THE VICINITY, WITH DUE CONSIDERATION GIVEN TO THE TOPOGRAPHY AND PREVAILING WIND CONDITIONS. HARMFUL CONCENTRATIONS CAN BE ODOURLESS AND NOT VISUALLY PERCEPTIBLE.

(13) **HEALTH HAZARD.** PERSONNEL MUST BE AWARE OF THE HAZARDS INVOLVED WITH PRODUCTS THAT CAN, IF NOT PROPERLY HANDLED, BE HAZARDOUS TO HEALTH. PERSONNEL MUST ADHERE TO THE INFORMATION DETAILED IN JSP 515 AND THE CURRENT SAFETY DATA SHEET. PERSONNEL MUST WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT WHEN REQUIRED.

CAUTIONS

(1) **EQUIPMENT AIRFLOW.** The generator should be operated in an open space with free air flow on all sides and at least 1 metre from other equipment and buildings. The surrounding area should be free of combustible material.



- (2) **EQUIPMENT DAMAGE.** Damage to the engine will occur if the generator is operated at very low loads for a prolonged period. A minimum running load of 500 W should always be applied. A 500 W load is displayed as approximately 25% when viewed on the % Load meter on the AC Control Panel. Additionally, if the generator is operated on a low load for a prolonged period, then a significantly higher load (approximately 70%) should be applied for a period of about 30 minutes before switching Off or for up to 1 hour until moisture condensate no longer emerges from the exhaust.
- (3) **EQUIPMENT DAMAGE.** During operation the engine and exhaust pipes can get very hot. Allow sufficient time for the equipment to cool down before carrying out tasks such as wrapping the LFG in plastic sheet during the preparation for transport.
- (4) **EQUIPMENT DAMAGE.** Operation of the AC Output Voltage Selector Switch (SW 1) when the generator is running under load will cause the inverter to trip out. Shut down must be carried out by the LFG operator to reset the inverter safety circuit.
- (5) **EQUIPMENT DAMAGE.** The engine must not be operated with the oil level below the specified minimum level.
- (6) **EQUIPMENT DAMAGE.** The fuel flow and return hoses provided are not to be lengthened or shortened under any circumstances without approval from the Design Authority.
- (7) **EQUIPMENT DAMAGE.** The Low Oil Pressure Switch does not automatically shut down the engine. It only provides a warning via the illumination of the LED and, secondarily, the loss of output to any connected loads. Shut down must be carried out manually by the LFG operator.
- (8) **ENVIRONMENTAL HAZARD.** It is illegal to pollute drains, sewers or the ground. Clean up all spilt fluids and/or lubricants. Used fluids and/or lubricants, filters and contaminated materials must be disposed of in accordance with local regulations. Use only authorized waste disposal sites.
- (9) **ENVIRONMENTAL HAZARD.** There is NO requirement to place the LFG on a drip tray prior to operation; the design is such that it is capable of operating without such addition. Any contaminants found on the floor after use should be cleaned up as per local regulations and also investigated as this may indicate an issue with the LFGs operation.

ABBREVIATIONS AND SYMBOLS

ABBREVIATIONS

7 The following abbreviations are used in this category:

AC	Alternating Current
AESP	Army Equipment Support Publication
AF	Army Form
Amdt	Amendment
BFPO	British Forces Post Office
BS	British Standard
Cat	Category
CES	Complete Equipment Schedule
dB(A)	decibel (A scale)
DC	Direct Current
DE&S	Defence Equipment and Support
DIN	Defence Instructions and Notices
EFR	Equipment Failure Report

e.g.	for example
EMER	Electrical and Mechanical Engineering Regulations
Eqpt	Equipment
ESM	Equipment Support Manager
ESPD	Equipment Support Policy Directive
FRACAS	Failure Reporting Analysis and Corrective Action System
IEE	Institution of Electrical Engineers
ISD	In-Service Date
JAMES	Joint Asset Management and Engineering Solutions
JSP	Joint Service Publication
kg	kilogramme
kW	kilowatt
lb ft	pound feet
LE	Land Equipment
LED	Light Emitting Diode
LFG	Lightweight Field Generator
LRU	Line Replaceable Unit
mm	millimetre
MoD	Ministry of Defence
NATO	North Atlantic Treaty Organisation
Nm	Newton metre
No.	Number
NSN	NATO Stock Number
OI	Operational Infrastructure
Para	Paragraph
PDS	Post Design Services
PT	Project Team
RAF	Royal Air Force
RCD	Residual Current Device
REME	Royal Electrical and Mechanical Engineers
RE	Royal Engineers
RLC	Royal Logistic Corps
RM	Royal Marines
RS	Royal Signals
SEI	Service Engineering Instruction
SME	Subject Matter Expert
SOP	Standard Operating Procedures
ST	Specialist Task
TDOL	Technical Documents On-Line
Tel	Telephone
UK	United Kingdom
V	Volt
W	Watt

SYMBOLS

8 The following symbols are used in this category:

°C	degrees Celsius
-	minus
±	plus or minus
%	percent



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MAINTENANCE SCHEDULE

INTRODUCTION

- 1 This Maintenance Schedule is the authority for carrying out all scheduled maintenance tasks on the subject equipment and takes precedence over any other conflicting publication.
- 2 The person on a unit or formation with delegated responsibility for the specified equipment, who is also competent and experienced in that role, is responsible for ensuring that the operations detailed in this Maintenance Schedule are properly carried out. The operations are only to be carried out by personnel who, through either professional trade training or an equipment specific formal training course, are appropriately qualified. The aforementioned responsible person may also order any operation to be carried out more frequently than specified, if conditions under which the equipment operated render it necessary.
- 3 Scheduled Maintenance is to be recorded in the appropriate equipment document in accordance with single service regulations.
- 4 Serial numbers left blank in the tables may be taken up by amendment action at a later date.

DEFINITIONS

- 5 As far as this document is concerned, the following definitions apply:
 - 5.1 Examine. Carry out a survey of the condition of an item without dismantling, unless specifically instructed to do so in the relevant task requirement. The condition of an item may be impaired by the following:
 - 5.1.1 Insecurity of attachment.
 - 5.1.2 Cracks or fractures.
 - 5.1.3 Corrosion, contamination or deterioration.
 - 5.1.4 Distortion.
 - 5.1.5 Loose or missing fasteners.
 - 5.1.6 Chafing, fraying, scoring or wear.
 - 5.1.7 Faulty or broken locking devices.
 - 5.1.8 Loose clips or packing, obstruction of, or leakage from pipelines.
 - 5.1.9 Discoloration due to overheating or leakage of fluids.
 - 5.1.10 Damage due to external sources.
 - 5.2 Check. Make a comparison of measurement of time, pressure, temperature, resistance, dimension or other quantity, with a known figure.
 - 5.3 Operate. As far as possible, ascertain that a component or system functions correctly without the use of test equipment or reference to measurement.
 - 5.4 Replenish. Refill a container to a predetermined level, pressure or quantity. This includes any necessary cleaning of orifices, examination of caps, covers, gaskets and washers, renewal of locking devices and clearing of vents.



-
- 5.5 Replace. Remove an item and then fit a new or reconditioned item.

WARNINGS, CAUTIONS AND MAINTENANCE NOTES

6 Before any maintenance task is carried out, the WARNINGS, CAUTIONS and Maintenance NOTES preceding the appropriate table must be read and understood.

MAINTENANCE INTERVALS AND AREAS OF RESPONSIBILITY

NOTE

The information contained in the Tables is equipment specific and should reflect the manufacturer's recommendations and equipment usage.

7 Table 4 - Action on Receipt. The maintenance detailed in Table 4 covers the action taken when the equipment arrives on a unit. These operations will normally be of a once only nature, e.g. the recording of lifting equipment with the appropriate test authority, actions that are necessary to be undertaken before the equipment is put into service or actions that are only required during the running in period. The maintenance detailed in Table 4 maintenance must be carried out by appropriately trained personnel, as described in Para 2.

8 Table 5 - Out of Phase Maintenance. The maintenance tasks detailed in Table 5 covers tasks that do not fall into line with the time/usage interval requirements of Table 6 or 7. The maintenance detailed in Table 5 maintenance must be carried out by appropriately trained personnel, as described in Para 2.

9 Table 6 - Operator Maintenance. The maintenance tasks detailed in Table 6, Maintenance Intervals A, B, C and D are to be carried out by appropriately trained personnel, as described in Para 2, as follows:

- 9.1 A - Daily before use (only on days used).
- 9.2 B - Daily after use (after the equipment has been operated).
- 9.3 C - Every 12 operating hours.

10 Table 7 - Time/Usage Maintenance. The maintenance detailed in Table 7, Maintenance Interval 1st, A, B, C and D must be carried out by appropriately trained personnel, as detailed in Para 2, at the following intervals:

- 10.1 1st - For new or replacement engines - after the 1st 25 operating hours.
- 10.2 A - Every 250 hours or 12 months, whichever occurs first.
- 10.3 B - Every 500 hours or 12 months (Mandated Equipment Inspection), whichever occurs first.
- 10.4 C - Every 1000 hours or 24 months, whichever occurs first.
- 10.5 D - Contains the Area Maintenance indicator which may be used, at the discretion of the responsible person identified at Para 2, to carry out Area Maintenance at the appropriate time/usage intervals.

11 Table 8 - Out of Use Maintenance. The Out of Use Maintenance in Table 8 is to be carried out in accordance with joint service regulations.

TABLE 1 EQUIPMENT APPLICABILITY

Serial (1)	Equipment Identification No. (2)	Designation (3)	Contract Numbers (4)
	6115-99-908-6784	GENERATOR SET, DIESEL ENGINE DRIVEN, 2 kW, 230 V / 110 V AC, 28 V DC. (Drumgrange Ltd)	BFI C1/59

TABLE 2 FUELS, LUBRICANTS AND ASSOCIATED PRODUCTS
NOTES

(1) The products listed below are to be used on this equipment. Alternative products must not be used without the approval of an appropriate equipment support manager.

(2) Oil changes at the -15 °C point shall only be made on the advice of the responsible person identified at Para 2.

(3) The capacities listed are to be used as a guide only. A physical check is to be carried out to ensure that all fluid levels are correct. This check should be carried out with the equipment unladen and standing on level ground whenever possible.

Serial (1)	Assembly (2)	Product		Capacity	
		Above -15°C (3)	Below -15°C (4)	Litres (5)	Pints (6)
	Fuel, general purpose	Either AVTUR F34 or Dieso F54		-	-
	Engine Oil	OMD 90 or OX 90	OMD 55	0.9	-

TABLE 3 EQUIPMENT DATA

Serial (1)	Item (2)	Detail (3)
	Air Filter Housing: Air Filter Housing fastener torque	23 Nm (17 lb ft)
	Engine Oil Drain Plug: Engine oil drain plug torque	50 Nm (37 lb ft)
	Valves: Valve tappet clearance (cold)	0.10 mm (0.004 inches)



TABLE 4 ACTION ON RECEIPT

12 The following WARNINGS and CAUTIONS must be read and understood before commencing these tasks.

WARNINGS

(1) EARTHING. THE EARTH CABLE PROVIDED IS NOT TO BE LENGTHENED OR SHORTENED UNDER ANY CIRCUMSTANCES WITHOUT APPROVAL FROM THE DESIGN AUTHORITY.

(2) EARTHING. THE EQUIPMENT MUST BE PROPERLY EARTHED BEFORE ATTEMPTING TO OPERATE THE GENERATOR SET. WHEN USED WITH ANCILLARY EQUIPMENT, IT IS ESSENTIAL THAT THE EARTHING INSTRUCTIONS FOR THAT EQUIPMENT BE FOLLOWED. THE LFG EARTH SHOULD NOT BE REMOVED UNLESS SPECIFICALLY REQUIRED IN THE EARTHING INSTRUCTIONS FOR THE ANCILLARY EQUIPMENT.

(3) F54 DIESEL AND F34 AVTUR. DIESEL AND AVTUR FUELS ARE HIGHLY FLAMMABLE. WHEN REFUELLING:

DO NOT RUN THE LFG

DO NOT SMOKE AVOID ALL NAKED FLAMES

AVOID OVERFILLING THE FUEL TANK/JERRYCAN

WIPE UP ANY SPILT FUEL PRIOR TO STARTING THE LFG

(4) GUARDS AND COVERS. DO NOT OPERATE THE GENERATOR WITH LOOSE OR MISSING COVERS OR GUARDS. DO NOT REMOVE ANY COVERS OR GUARDS UNTIL AT LEAST 10 MINUTES AFTER THE GENERATOR HAS STOPPED.

(5) JERRYCAN ADAPTOR. DO NOT OPERATE THE GENERATOR UNLESS A JERRYCAN IS CONNECTED VIA THE JERRYCAN ADAPTOR AND PIPES SUPPLIED WITH THE GENERATOR. FAILURE TO COMPLY MAY CAUSE THE LFG FUEL TANK TO COLLAPSE.

(6) NOISE HAZARD. IF PERSONNEL ARE EXPOSED FOR PROLONGED PERIODS TO NOISE LEVELS IN EXCESS OF 80 DB(A), HEARING PROTECTION SHOULD BE PROVIDED AND WORN. THE LFG EMITS A MEASURED NOISE LEVEL OF BETWEEN 90 - 100 DB(A) THEREFORE HEARING PROTECTION MUST BE PROVIDED AND WORN WHEN WORKING WITHIN 1 METRE OF AN OPERATING LFG.

(7) PERSONAL INJURY. THE GENERATOR WEIGHS 76 KG NET AND 88 KG GROSS (INCLUDING FUEL AND CES). MANUAL HANDLING OF THE GENERATOR MUST BE IN ACCORDANCE WITH LOCAL MANUAL HANDLING ASSESSMENTS CARRIED OUT IN ACCORDANCE WITH JSP375. LOCAL MANUAL HANDLING ASSESSMENTS ARE ALSO TO BE CONDUCTED FOR THE ENGINE (38 KG) AND CONTROL BOX ASSEMBLY (32 KG).

(8) PERSONAL INJURY. THE LFG ALTERNATOR IS A PERMANENT MAGNET GENERATOR, CARE MUST BE TAKEN WHEN WORKING ON THE GENERATOR DUE TO THE HIGH STRENGTH OF THE MAGNETS WHICH COULD CAUSE PERSONAL INJURY.

(9) SHOCK HAZARD. DO NOT ATTEMPT TO SERVICE THE GENERATOR OR CARRY OUT ANY MAINTENANCE OR REPAIRS WHILST IT IS RUNNING.

(10) **SHOCK HAZARD. LETHAL VOLTAGES ARE PRESENT IN THE GENERATOR EQUIPMENT. ENSURE THAT THE CIRCUIT BREAKERS ARE OPEN WHEN CONNECTING OR DISCONNECTING LOADS. CHECK THE RESIDUAL CURRENT DEVICE (RCD) OPERATION FOR EACH VOLTAGE SETTING. DO NOT CONNECT OR DISCONNECT LOADS WHILST THE GENERATOR IS RUNNING.**

(11) **SKIN BURNS. EXERCISE EXTREME CARE WHEN CARRYING OUT TASKS ADJACENT TO THE ENGINE AND ITS EXHAUST PIPE AS BOTH ITEMS CAN RETAIN HEAT FOR SEVERAL MINUTES AFTER SHUT DOWN. ALLOW SUFFICIENT TIME FOR THE EQUIPMENT TO COOL DOWN BEFORE CARRYING OUT ANY MAINTENANCE TASKS.**

(12) **TOXIC FUMES. EXHAUST GASES ARE TOXIC AND CAN QUICKLY REACH HARMFUL CONCENTRATIONS IF PRECAUTIONS ARE NOT FOLLOWED. THE EXHAUST GASES MUST ALWAYS BE VENTED TO FREE AIR. THIS CAN BE ACHIEVED EITHER BY POSITIONING THE LFG OUTDOORS OR BY USE OF THE EXHAUST EXTENSION WHICH SHOULD BE ROUTED SO AS TO TERMINATE IN FREE AIR. THE EXHAUST MUST NOT BE MUFFLED OR RESTRICTED IN ANY WAY AS THE RESULTING BACK PRESSURE COULD CAUSE ADDITIONAL LEAKS TO OCCUR OR DAMAGE THE ENGINE. EXTREME CARE MUST BE TAKEN TO ENSURE THAT EXHAUST GASES ARE VENTED SAFELY AWAY FROM ANY PERSONNEL WORKING IN THE VICINITY, WITH DUE CONSIDERATION GIVEN TO THE TOPOGRAPHY AND PREVAILING WIND CONDITIONS. HARMFUL CONCENTRATIONS CAN BE ODOURLESS AND NOT VISUALLY PERCEPTIBLE.**

(13) **HEALTH HAZARD. PERSONNEL MUST BE AWARE OF THE HAZARDS INVOLVED WITH PRODUCTS THAT CAN, IF NOT PROPERLY HANDLES, BE HAZARDOUS TO HEALTH. PERSONNEL MUST ADHERE TO THE INFORMATION DETAILED IN JSP 515 AND THE CURRENT SAFETY DATA SHEET. PERSONNEL MUST WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT WHEN REQUIRED.**

CAUTIONS

(1) **EQUIPMENT AIRFLOW.** The generator should be operated in an open space with free air flow on all sides and at least 1 metre from other equipment and buildings. The surrounding area should be free of combustible material.

(2) **EQUIPMENT DAMAGE.** Damage to the engine will occur if the generator is operated at very low loads for a prolonged period. A minimum running load of 500 W should always be applied. A 500 W load is displayed as approximately 25% when viewed on the % Load meter on the AC Control Panel. Additionally, if the generator is operated on a low load for a prolonged period, then a significantly higher load (approximately 70%) should be applied for a period of about 30 minutes before switching Off or for up to 1 hour until moisture condensate no longer emerges from the exhaust.

(3) **EQUIPMENT DAMAGE.** During operation the engine and exhaust pipes can get very hot. Allow sufficient time for the equipment to cool down before carrying out tasks such as wrapping the LFG in plastic sheet during the preparation for transport.

(4) **EQUIPMENT DAMAGE.** During operation the engine and exhaust pipes can get very hot. Allow sufficient time for the equipment to cool down before carrying out tasks such as wrapping the LFG in plastic sheet during the preparation for transport.

(5) **EQUIPMENT DAMAGE.** The engine must not be operated with the oil level below the specified minimum level.

(6) **EQUIPMENT DAMAGE.** The fuel flow and return hoses provided are not to be lengthened or shortened under any circumstances without approval from the Design Authority.



(7) **EQUIPMENT DAMAGE.** The Low Oil Pressure Switch does not automatically shut down the engine. It only provides a warning via the illumination of the LED and, secondarily, the loss of output to any connected loads. Shut down must be carried out manually by the LFG operator.

(8) **ENVIRONMENTAL HAZARD.** It is illegal to pollute drains, sewers or the ground. Clean up all spilt fluids and/or lubricants. Used fluids and/or lubricants, filters and contaminated materials must be disposed of in accordance with local regulations. Use only authorized waste disposal sites.

(9) **ENVIRONMENTAL HAZARD.** There is NO requirement to place the LFG on a drip tray prior to operation; the design is such that it is capable of operating without such addition. Any contaminants found on the floor after use should be cleaned up as per local regulations and also investigated as this may indicate an issue with the LFGs operation.

Serial (1)	Operation (2)
	Check
1	Equipment for damage
2	Tools and equipment against Complete Equipment Schedule (CES)
	Remove
3	Preservation, sealing and packaging where applicable
	Refit
4	Any components removed to aid transit
	Clean
5	Equipment, tools and attachments
	Read
6	Operator/User Handbook (AESP 6115-G-710-201) and learn position and function of all controls
	Report
7	Any defect or damage
	Service
8	Carry out Column (2) tasks of Table 6

TABLE 5 OUT OF PHASE MAINTENANCE

13 The following WARNING and CAUTIONS must be read and understood before commencing these maintenance tasks.

WARNINGS

(1) **PERSONAL INJURY. THE GENERATOR WEIGHS 76 KG NET AND 88 KG GROSS (INCLUDING FUEL AND CES). MANUAL HANDLING OF THE GENERATOR MUST BE IN ACCORDANCE WITH LOCAL MANUAL HANDLING ASSESSMENTS CARRIED OUT IN ACCORDANCE WITH JSP375. LOCAL MANUAL HANDLING ASSESSMENTS ARE ALSO TO BE CONDUCTED FOR THE ENGINE (38 KG) AND CONTROL BOX ASSEMBLY (32 KG).**

(2) **PERSONAL INJURY. THE LFG ALTERNATOR IS A PERMANENT MAGNET GENERATOR, CARE MUST BE TAKEN WHEN WORKING ON THE GENERATOR DUE TO THE HIGH STRENGTH OF THE MAGNETS WHICH COULD CAUSE PERSONAL INJURY.**

(3) SHOCK HAZARD. DO NOT ATTEMPT TO SERVICE THE GENERATOR OR CARRY OUT ANY MAINTENANCE OR REPAIRS WHILST IT IS RUNNING.

(4) HEALTH HAZARD. PERSONNEL MUST BE AWARE OF THE HAZARDS INVOLVED WITH PRODUCTS THAT CAN, IF NOT PROPERLY HANDLES, BE HAZARDOUS TO HEALTH. PERSONNEL MUST ADHERE TO THE INFORMATION DETAILED IN JSP 515 AND THE CURRENT SAFETY DATA SHEET. PERSONNEL MUST WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT WHEN REQUIRED.

CAUTION

ENVIRONMENTAL HAZARD. It is illegal to pollute drains, sewers or the ground. Clean up all spilt fluids and/or lubricants. Used fluids and/or lubricants, filters and contaminated materials must be disposed of in accordance with local regulations. Use only authorized waste disposal sites.

MAINTENANCE NOTES

(1) Maintenance tasks bearing the trade task indicators (ST) (Specialist Task) must only be completed by an appropriately qualified person, as defined in Para 2. These tasks are not to be completed by a driver/operator.

(2) The engineering authority for the unit is to deem a person competent (e.g. a class 2 or above technical trade group person) to undertake the RCD test using BS 7671 Institution of Electrical Engineers (IEE) test equipment.

Serial (1)	Action (2)	Interval (3)
1	Renew engine oil filter strainer	On condition (Checked and cleaned every 1000 hrs and replaced only if damaged)
2	Replace Fuel Hoses	8 Years replace following NSNs: Circular pulse pump hose kit: 4720-99-153-8763 Square pulse pump hose kit: 4720-99-911-2739
3	Carry out RCD tests. Refer to Cat 522 (ST). (See Maintenance Notes (1) and (2))	After Level 3/4 repair of generator electrical system
4	Electrical tests. Refer to Cat 522 (ST). (See Maintenance Note (1))	After Level 3/4 repair of generator electrical system and at 12 monthly intervals

TABLE 6 OPERATOR MAINTENANCE

14 The following WARNINGS and CAUTIONS must be read and understood before commencing these tasks.

WARNINGS

(1) EARTHING. THE EARTH CABLE PROVIDED IS NOT TO BE LENGTHENED OR SHORTENED UNDER ANY CIRCUMSTANCES WITHOUT APPROVAL FROM THE DESIGN AUTHORITY.



(2) EARTHING. THE EQUIPMENT MUST BE PROPERLY EARTHED BEFORE ATTEMPTING TO OPERATE THE GENERATOR SET. WHEN USED WITH ANCILLARY EQUIPMENT, IT IS ESSENTIAL THAT THE EARTHING INSTRUCTIONS FOR THAT EQUIPMENT BE FOLLOWED. THE LFG EARTH SHOULD NOT BE REMOVED UNLESS SPECIFICALLY REQUIRED IN THE EARTHING INSTRUCTIONS FOR THE ANCILLARY EQUIPMENT.

(3) F54 DIESO AND F34 AVTUR. DIESEL AND AVTUR FUELS ARE HIGHLY FLAMMABLE. WHEN REFUELLING:

DO NOT RUN THE LFG

DO NOT SMOKE AVOID ALL NAKED FLAMES

AVOID OVERFILLING THE FUEL TANK/JERRYCAN

WIPE UP ANY SPILT FUEL PRIOR TO STARTING THE LFG

(4) GUARDS AND COVERS. DO NOT OPERATE THE GENERATOR WITH LOOSE OR MISSING COVERS OR GUARDS. DO NOT REMOVE ANY COVERS OR GUARDS UNTIL AT LEAST 10 MINUTES AFTER THE GENERATOR HAS STOPPED.

(5) JERRYCAN ADAPTOR. DO NOT OPERATE THE GENERATOR UNLESS A JERRYCAN IS CONNECTED VIA THE JERRYCAN ADAPTOR AND PIPES SUPPLIED WITH THE GENERATOR. FAILURE TO COMPLY MAY CAUSE THE LFG FUEL TANK TO COLLAPSE.

(6) NOISE HAZARD. IF PERSONNEL ARE EXPOSED FOR PROLONGED PERIODS TO NOISE LEVELS IN EXCESS OF 80 DB(A), HEARING PROTECTION SHOULD BE PROVIDED AND WORN. THE LFG EMITS A MEASURED NOISE LEVEL OF BETWEEN 90 - 100 DB(A) THEREFORE HEARING PROTECTION MUST BE PROVIDED AND WORN WHEN WORKING WITHIN 1 METRE OF AN OPERATING LFG.

(7) PERSONAL INJURY. THE GENERATOR WEIGHS 76 KG NET AND 88 KG GROSS (INCLUDING FUEL AND CES). MANUAL HANDLING OF THE GENERATOR MUST BE IN ACCORDANCE WITH LOCAL MANUAL HANDLING ASSESSMENTS CARRIED OUT IN ACCORDANCE WITH JSP375. LOCAL MANUAL HANDLING ASSESSMENTS ARE ALSO TO BE CONDUCTED FOR THE ENGINE (38 KG) AND CONTROL BOX ASSEMBLY (32 KG).

(8) PERSONAL INJURY. THE LFG ALTERNATOR IS A PERMANENT MAGNET GENERATOR, CARE MUST BE TAKEN WHEN WORKING ON THE GENERATOR DUE TO THE HIGH STRENGTH OF THE MAGNETS WHICH COULD CAUSE PERSONAL INJURY.

(9) SHOCK HAZARD. DO NOT ATTEMPT TO SERVICE THE GENERATOR OR CARRY OUT ANY MAINTENANCE OR REPAIRS WHILST IT IS RUNNING.

(10) SHOCK HAZARD. LETHAL VOLTAGES ARE PRESENT IN THE GENERATOR EQUIPMENT. ENSURE THAT THE CIRCUIT BREAKERS ARE OPEN WHEN CONNECTING OR DISCONNECTING LOADS. CHECK THE RESIDUAL CURRENT DEVICE (RCD) OPERATION FOR EACH VOLTAGE SETTING. DO NOT CONNECT OR DISCONNECT LOADS WHILST THE GENERATOR IS RUNNING.

(11) SKIN BURNS. EXERCISE EXTREME CARE WHEN CARRYING OUT TASKS ADJACENT TO THE ENGINE AND ITS EXHAUST PIPE AS BOTH ITEMS CAN RETAIN HEAT FOR SEVERAL MINUTES AFTER SHUT DOWN. ALLOW SUFFICIENT TIME FOR THE EQUIPMENT TO COOL DOWN BEFORE CARRYING OUT ANY MAINTENANCE TASKS.

(12) **TOXIC FUMES. EXHAUST GASES ARE TOXIC AND CAN QUICKLY REACH HARMFUL CONCENTRATIONS IF PRECAUTIONS ARE NOT FOLLOWED. THE EXHAUST GASES MUST ALWAYS BE VENTED TO FREE AIR. THIS CAN BE ACHIEVED EITHER BY POSITIONING THE LFG OUTDOORS OR BY USE OF THE EXHAUST EXTENSION WHICH SHOULD BE ROUTED SO AS TO TERMINATE IN FREE AIR. THE EXHAUST MUST NOT BE MUFFLED OR RESTRICTED IN ANY WAY AS THE RESULTING BACK PRESSURE COULD CAUSE ADDITIONAL LEAKS TO OCCUR OR DAMAGE THE ENGINE. EXTREME CARE MUST BE TAKEN TO ENSURE THAT EXHAUST GASES ARE VENTED SAFELY AWAY FROM ANY PERSONNEL WORKING IN THE VICINITY, WITH DUE CONSIDERATION GIVEN TO THE TOPOGRAPHY AND PREVAILING WIND CONDITIONS. HARMFUL CONCENTRATIONS CAN BE ODOURLESS AND NOT VISUALLY PERCEPTIBLE.**

(13) **HEALTH HAZARD. PERSONNEL MUST BE AWARE OF THE HAZARDS INVOLVED WITH PRODUCTS THAT CAN, IF NOT PROPERLY HANDLES, BE HAZARDOUS TO HEALTH. PERSONNEL MUST ADHERE TO THE INFORMATION DETAILED IN JSP 515 AND THE CURRENT SAFETY DATA SHEET. PERSONNEL MUST WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT WHEN REQUIRED.**

CAUTIONS

(1) **EQUIPMENT AIRFLOW.** The generator should be operated in an open space with free air flow on all sides and at least 1 metre from other equipment and buildings. The surrounding area should be free of combustible material.

(2) **EQUIPMENT DAMAGE.** Damage to the engine will occur if the generator is operated at very low loads for a prolonged period. A minimum running load of 500 W should always be applied. A 500 W load is displayed as approximately 25% when viewed on the % Load meter on the AC Control Panel. Additionally, if the generator is operated on a low load for a prolonged period, then a significantly higher load (approximately 70%) should be applied for a period of about 30 minutes before switching Off or for up to 1 hour until moisture condensate no longer emerges from the exhaust.

(3) **EQUIPMENT DAMAGE.** During operation the engine and exhaust pipes can get very hot. Allow sufficient time for the equipment to cool down before carrying out tasks such as wrapping the LFG in plastic sheet during the preparation for transport.

(4) **EQUIPMENT DAMAGE.** During operation the engine and exhaust pipes can get very hot. Allow sufficient time for the equipment to cool down before carrying out tasks such as wrapping the LFG in plastic sheet during the preparation for transport.

(5) **EQUIPMENT DAMAGE.** The engine must not be operated with the oil level below the specified minimum level.

(6) **EQUIPMENT DAMAGE.** The fuel flow and return hoses provided are not to be lengthened or shortened under any circumstances without approval from the Design Authority.

(7) **EQUIPMENT DAMAGE.** The Low Oil Pressure Switch does not automatically shut down the engine. It only provides a warning via the illumination of the LED and, secondarily, the loss of output to any connected loads. Shut down must be carried out manually by the LFG operator.

(8) **ENVIRONMENTAL HAZARD.** It is illegal to pollute drains, sewers or the ground. Clean up all spilt fluids and/or lubricants. Used fluids and/or lubricants, filters and contaminated materials must be disposed of in accordance with local regulations. Use only authorized waste disposal sites.



(9) ENVIRONMENTAL HAZARD. There is NO requirement to place the LFG on a drip tray prior to operation; the design is such that it is capable of operating without such addition. Any contaminants found on the floor after use should be cleaned up as per local regulations and also investigated as this may indicate an issue with the LFGs operation.

MAINTENANCE NOTES

(1) Maintenance interval C tasks may be carried out at any convenient break in LFG operation within the specified time frame.

(2) Maintenance tasks bearing the trade task indicators (ST) (Specialist Task) must only be completed by an appropriately qualified person, as defined in Para 2. These tasks are not to be completed by a driver/operator.

Serial (1)	Task (2)	Fig/Item No. (3)	Product (4)	Maintenance Interval		
				A (5)	B (6)	C (7)
	Before starting the engine					
1	Remove the Acoustic Cover		OMD 90 or OX 90			
2	Check/top up engine oil level			X		X
3	Check physical condition of Acoustic Cover, Top Cover, Louvre Cover and Tubular Frame			X	X	
4	Check Recoil Starter Pull Cord for signs of wear			X	X	
5	Ensure the engine Fuel Tank Cap is undamaged and securely fitted			X	X	
6	Check serviceability of Cables, Connectors and Hoses			X	X	
7	Ensure all Labels and Warning Notices are clean and legible			X	X	
8	Check Fuel Tank Drain Pipe for fuel contamination (water presence), drain off water if present			X	X	
9	Refit the Acoustic Cover			X		
	Start the engine. Refer to Cat 201					
10	Check for oil and fuel leaks, removing Acoustic Cover if necessary					
11	Check meters/indicators are functioning correctly				X	
12	Listen for any unusual engine noises				X	
13	Carry out Earth Leakage Unit Test. Refer to Cat 201			X	X	

(continued)

TABLE 6 OPERATOR MAINTENANCE (continued)

Serial (1)	Task (2)	Fig/Item No. (3)	Product (4)	Maintenance Interval		
				A (5)	B (6)	C (7)
14	Check air inlet and outlet vents are clear of obstructions At conclusion of work/day					X
15	Shut down LFG				X	
16	Check for damage/faults				X	
17	Ensure equipment is ready for use				X	
18	Check the earth rod and lead is clean, free of paint and has serviceable termination studs and contacts			X	X	
19	Ensure all relevant entries are made in equipment documents In harsh, dusty, or dirty environments				X	
20	Remove the Acoustic Cover and Air Filter Cover. Check engine Air filter for damage and contamination. Replace Air Filter if necessary. Replace the Air Filter and Acoustic Cover NOTE The periodicity should be adjusted in response to the results of the initial series of checks					X

TABLE 7 TIME/USAGE MAINTENANCE

15 The following WARNINGS and CAUTIONS must be read and understood before commencing these tasks.

WARNINGS

(1) **PERSONAL INJURY. THE GENERATOR WEIGHS 76 KG NET AND 88 KG GROSS (INCLUDING FUEL AND CES). MANUAL HANDLING OF THE GENERATOR MUST BE IN ACCORDANCE WITH LOCAL MANUAL HANDLING ASSESSMENTS CARRIED OUT IN ACCORDANCE WITH JSP375. LOCAL MANUAL HANDLING ASSESSMENTS ARE ALSO TO BE CONDUCTED FOR THE ENGINE (38 KG) AND CONTROL BOX ASSEMBLY (32 KG).**

(2) **SHOCK HAZARD. DO NOT ATTEMPT TO SERVICE THE GENERATOR OR CARRY OUT ANY MAINTENANCE OR REPAIRS WHILST IT IS RUNNING.**

(3) **SKIN BURNS. EXERCISE EXTREME CARE WHEN CARRYING OUT TASKS ADJACENT TO THE ENGINE AND ITS EXHAUST PIPE AS BOTH ITEMS CAN RETAIN HEAT FOR SEVERAL MINUTES AFTER SHUT DOWN. ALLOW SUFFICIENT TIME FOR THE EQUIPMENT TO COOL DOWN BEFORE CARRYING OUT ANY MAINTENANCE TASKS.**



CAUTIONS

- (1) **EQUIPMENT DAMAGE.** The fuel flow and return hoses provided are not to be lengthened or shortened under any circumstances without approval from the Design Authority.
- (2) **EQUIPMENT DAMAGE.** The Engine must not be operated with the oil level below the specified minimum level.
- (3) **SERVICING.** Do not attempt to service the generator or carry out any repairs while it is running. During servicing, follow health and safety executive recommendations regarding the handling and disposal of contaminated oil products.

MAINTENANCE NOTES

- (1) Maintenance tasks bearing the trade task indicators (ST) (Specialist Task) must only be completed by an appropriately qualified person, as defined in Para 2. These tasks are not to be completed by a driver/operator.
- (2) The engineering authority for the unit is to deem a person competent (e.g. a class 2 or above technical trade group person) to undertake the RCD test using BS 7671 Institution of Electrical Engineers (IEE) test equipment.

Serial (1)	Task (2)	Fig/ Item No. (3)	Product (4)	Maintenance Interval				
				1st (5)	A (6)	B (7)	C (8)	D (9)
1	Renew/Replace: Replace engine oil		OMD 90 or OX 90	X	X	X	X	
2	Replace air filter cartridge					X	X	
3	Replace engine fuel tank fuel filter					X	X	
	Clean							
4	Clean engine oil filter strainer (replace only if damaged)			X			X	
5	Clean cooling area/vents				X	X	X	
	Check/Adjust							
6	Check all screw connections for security of attachment			X	X	X	X	
7	Check/Adjust valve clearances			X	X	X	X	
	Inspect							
8	Check all output voltages are correct (ST) (See Maintenance Note (1))			X	X	X	X	
	Test							
9	Carry out RCD tests. Refer to Cat 522 (ST) (See Maintenance Notes (1) and (2))					X		

TABLE 8 OUT OF USE MAINTENANCE

16 The following WARNINGS and CAUTIONS must be read and understood before commencing these tasks.

WARNINGS

(1) **EARTHING. THE EARTH CABLE PROVIDED IS NOT TO BE LENGTHENED OR SHORTENED UNDER ANY CIRCUMSTANCES WITHOUT APPROVAL FROM THE DESIGN AUTHORITY.**

(2) **EARTHING. THE EQUIPMENT MUST BE PROPERLY EARTHED BEFORE ATTEMPTING TO OPERATE THE GENERATOR SET. WHEN USED WITH ANCILLARY EQUIPMENT, IT IS ESSENTIAL THAT THE EARTHING INSTRUCTIONS FOR THAT EQUIPMENT BE FOLLOWED. THE LFG EARTH SHOULD NOT BE REMOVED UNLESS SPECIFICALLY REQUIRED IN THE EARTHING INSTRUCTIONS FOR THE ANCILLARY EQUIPMENT.**

(3) **F54 DIESEL AND F34 AVTUR. DIESEL AND AVTUR FUELS ARE HIGHLY FLAMMABLE. WHEN REFUELLING:**

DO NOT RUN THE LFG

DO NOT SMOKE AVOID ALL NAKED FLAMES

AVOID OVERFILLING THE FUEL TANK/JERRYCAN

WIPE UP ANY SPILT FUEL PRIOR TO STARTING THE LFG

(4) **GUARDS AND COVERS. DO NOT OPERATE THE GENERATOR WITH LOOSE OR MISSING COVERS OR GUARDS. DO NOT REMOVE ANY COVERS OR GUARDS UNTIL AT LEAST 10 MINUTES AFTER THE GENERATOR HAS STOPPED.**

(5) **JERRYCAN ADAPTOR. DO NOT OPERATE THE GENERATOR UNLESS A JERRYCAN IS CONNECTED VIA THE JERRYCAN ADAPTOR AND PIPES SUPPLIED WITH THE GENERATOR. FAILURE TO COMPLY MAY CAUSE THE LFG FUEL TANK TO COLLAPSE.**

(6) **NOISE HAZARD. IF PERSONNEL ARE EXPOSED FOR PROLONGED PERIODS TO NOISE LEVELS IN EXCESS OF 80 DB(A), HEARING PROTECTION SHOULD BE PROVIDED AND WORN. THE LFG EMITS A MEASURED NOISE LEVEL OF BETWEEN 90 - 100 DB(A) THEREFORE HEARING PROTECTION MUST BE PROVIDED AND WORN WHEN WORKING WITHIN 1 METRE OF AN OPERATING LFG.**

(7) **PERSONAL INJURY. THE GENERATOR WEIGHS 76 KG NET AND 88 KG GROSS (INCLUDING FUEL AND CES). MANUAL HANDLING OF THE GENERATOR MUST BE IN ACCORDANCE WITH LOCAL MANUAL HANDLING ASSESSMENTS CARRIED OUT IN ACCORDANCE WITH JSP375. LOCAL MANUAL HANDLING ASSESSMENTS ARE ALSO TO BE CONDUCTED FOR THE ENGINE (38 KG) AND CONTROL BOX ASSEMBLY (32 KG).**

(8) **PERSONAL INJURY. THE LFG ALTERNATOR IS A PERMANENT MAGNET GENERATOR, CARE MUST BE TAKEN WHEN WORKING ON THE GENERATOR DUE TO THE HIGH STRENGTH OF THE MAGNETS WHICH COULD CAUSE PERSONAL INJURY.**

(9) **SHOCK HAZARD. DO NOT ATTEMPT TO SERVICE THE GENERATOR OR CARRY OUT ANY MAINTENANCE OR REPAIRS WHILST IT IS RUNNING.**



(10) **SHOCK HAZARD. LETHAL VOLTAGES ARE PRESENT IN THE GENERATOR EQUIPMENT. ENSURE THAT THE CIRCUIT BREAKERS ARE OPEN WHEN CONNECTING OR DISCONNECTING LOADS. CHECK THE RESIDUAL CURRENT DEVICE (RCD) OPERATION FOR EACH VOLTAGE SETTING. DO NOT CONNECT OR DISCONNECT LOADS WHILST THE GENERATOR IS RUNNING.**

(11) **SKIN BURNS. EXERCISE EXTREME CARE WHEN CARRYING OUT TASKS ADJACENT TO THE ENGINE AND ITS EXHAUST PIPE AS BOTH ITEMS CAN RETAIN HEAT FOR SEVERAL MINUTES AFTER SHUT DOWN. ALLOW SUFFICIENT TIME FOR THE EQUIPMENT TO COOL DOWN BEFORE CARRYING OUT ANY MAINTENANCE TASKS.**

(12) **TOXIC FUMES. EXHAUST GASES ARE TOXIC AND CAN QUICKLY REACH HARMFUL CONCENTRATIONS IF PRECAUTIONS ARE NOT FOLLOWED. THE EXHAUST GASES MUST ALWAYS BE VENTED TO FREE AIR. THIS CAN BE ACHIEVED EITHER BY POSITIONING THE LFG OUTDOORS OR BY USE OF THE EXHAUST EXTENSION WHICH SHOULD BE ROUTED SO AS TO TERMINATE IN FREE AIR. THE EXHAUST MUST NOT BE MUFFLED OR RESTRICTED IN ANY WAY AS THE RESULTING BACK PRESSURE COULD CAUSE ADDITIONAL LEAKS TO OCCUR OR DAMAGE THE ENGINE. EXTREME CARE MUST BE TAKEN TO ENSURE THAT EXHAUST GASES ARE VENTED SAFELY AWAY FROM ANY PERSONNEL WORKING IN THE VICINITY, WITH DUE CONSIDERATION GIVEN TO THE TOPOGRAPHY AND PREVAILING WIND CONDITIONS. HARMFUL CONCENTRATIONS CAN BE ODOURLESS AND NOT VISUALLY PERCEPTIBLE.**

(13) **HEALTH HAZARD. PERSONNEL MUST BE AWARE OF THE HAZARDS INVOLVED WITH PRODUCTS THAT CAN, IF NOT PROPERLY HANDLES, BE HAZARDOUS TO HEALTH. PERSONNEL MUST ADHERE TO THE INFORMATION DETAILED IN JSP 515 AND THE CURRENT SAFETY DATA SHEET. PERSONNEL MUST WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT WHEN REQUIRED.**

CAUTIONS

(1) **EQUIPMENT AIRFLOW.** The generator should be operated in an open space with free air flow on all sides and at least 1 metre from other equipment and buildings. The surrounding area should be free of combustible material.

(2) **EQUIPMENT DAMAGE.** Damage to the engine will occur if the generator is operated at very low loads for a prolonged period. A minimum running load of 500 W should always be applied. A 500 W load is displayed as approximately 25% when viewed on the % Load meter on the AC Control Panel. Additionally, if the generator is operated on a low load for a prolonged period, then a significantly higher load (approximately 70%) should be applied for a period of about 30 minutes before switching Off or for up to 1 hour until moisture condensate no longer emerges from the exhaust.

(3) **EQUIPMENT DAMAGE.** During operation the engine and exhaust pipes can get very hot. Allow sufficient time for the equipment to cool down before carrying out tasks such as wrapping the LFG in plastic sheet during the preparation for transport.

(4) **EQUIPMENT DAMAGE.** Operation of the AC Output Voltage Selector Switch (SW 1) when the generator is running under load will cause the inverter to trip out. Shut down must be carried out by the LFG operator to reset the inverter safety circuit.

(5) **EQUIPMENT DAMAGE.** The engine must not be operated with the oil level below the specified minimum level.

(6) **EQUIPMENT DAMAGE.** The fuel flow and return hoses provided are not to be lengthened or shortened under any circumstances without approval from the Design Authority.

(7) **EQUIPMENT DAMAGE.** The Low Oil Pressure Switch does not automatically shut down the engine. It only provides a warning via the illumination of the LED and, secondarily, the loss of output to any connected loads. Shut down must be carried out manually by the LFG operator.

(8) **ENVIRONMENTAL HAZARD.** It is illegal to pollute drains, sewers or the ground. Clean up all spilt fluids and/or lubricants. Used fluids and/or lubricants, filters and contaminated materials must be disposed of in accordance with local regulations. Use only authorized waste disposal sites.

(9) **ENVIRONMENTAL HAZARD.** There is NO requirement to place the LFG on a drip tray prior to operation; the design is such that it is capable of operating without such addition. Any contaminants found on the floor after use should be cleaned up as per local regulations and also investigated as this may indicate an issue with the LFGs operation.

TABLE 8 OUT OF USE MAINTENANCE (continued)

Serial (1)	Operation (2)	Fig/ Item No. (3)	Product (4)
1	<p>Equipments are to be stored, where possible, under cover. If equipments have to be stored in the open they should not be placed under overhanging trees or structures. The equipment should be sealed in heavy duty plastic sheeting.</p> <p>Periodic maintenance, if circumstances permit, is to coincide with inspection at the following intervals:</p> <p style="padding-left: 40px;">6 months - open storage</p> <p style="padding-left: 40px;">12 months - covered storage</p> <p>Prior to equipment entering storage:</p> <p>1 The Generator is to be fully inspected and necessary repairs completed.</p> <p>2 The Generator is to be thoroughly cleaned, signs of rust removed and coats of primer and finishing paints applied to surfaces as necessary.</p> <p>3 Items liable to rust are to be smeared with a coating of oil or grease.</p> <p>Annual whilst equipment in storage</p> <p>4 During storage equipments are to be visually inspected annually or more frequently if considered necessary, for signs of deterioration due to age or storage conditions.</p> <p>5 Annually during storage, or more frequently if considered necessary, carry out Table 6 Operator Maintenance Checks and run the engine to full working temperature.</p> <p>NOTE</p> <p style="padding-left: 40px;">The engine should be rotated at least 5 times by hand, with the Engine Speed Control Lever at stop, prior to start up, to allow the engine lubricating oil to circulate.</p>		



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ARMY EQUIPMENT AND SUPPORT PUBLICATION (AESP) AND ELECTRICAL AND MECHANICAL ENGINEERING REGULATIONS (EMER) - FORM 10

*AESP/EMER NUMBER:		*IS THIS SAFETY RELATED?	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
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Send Form 10 via the Email or Post address. However email is preferred.		Tel	
Email:		Post to	Form 10 Cell FRACAS BFPO 794
(To email this form send as a copy to the email address above)			

ORIGINATORS DETAILS			
*Address			*Name
			Rank / Grade
			*Phone
			*Senders Reference
			*Date Raised
* E-Mail		Eqpt Asset Code (if applicable)	

AESP/EMER DETAILS							
*Full Title of AESP/EMER (Not the AESP/EMER Number)							
*Edition	*Amendment	*Chapter	*Page	*Paragraph	Figure	Instruction	Other
*Comments: If additional information is to be supplied, please e-mail with the Form 10 as separate attachments.							

FORM 10 CELL USE			
*Date Received		*Form 10 Reference	
*Date Sent to PT / SME		Problem Report	

PROJECT TEAM / SME RESPONSE TO COMMENTS:			
Project Team (PT) / SME		*Sponsors Name	
*Phone		Rank / Grade	
*Email		*Date Received	
*The following action is to be carried out:	Mark:		Mark:
Issue a revised/amended AESP/EMER:		Under investigation:	
Incorporate comment(s) in future amendments:		No action required:	
Remarks:			
SPONSOR/PT FINAL CLOSURE STEPS	Mark:	Form 10 Cell notified of Date action taken	Date:
Form 10 Originator notified of the action taken:			

**ARMY EQUIPMENT AND SUPPORT PUBLICATION (AESP) AND ELECTRICAL AND
MECHANICAL ENGINEERING REGULATIONS (EMER) - FORM 10**

Form 10 Guidance

Form 10 can be found within the AESP or, as a template, from the JAMES Portal (Hot Topic – Forms) & TDOL (FORM10).

Originator responsibility is to enter the following details marked *:

- In the **AESP/EMER Number**: cell enter the full document number e.g. AESP 1256-I-400-711.
- Is this **Safety Related?** – select Yes or No as appropriate.
- Originator Details:
 - Full address Inc Post Code or BFPO NO.
 - Originator email address
 - Senders Reference – that must be unique.
- AESP Details shall enter the following details:
 - The Full Title of AESP/EMER should not include the AESP/EMER Number
 - Enter details in all other mandatory fields marked *.
 - Additional information relating to the Comments (AESP copies, additional text details or photographs) should be attached to the Email at the same time.
- Originator makes up the Form 10 & Sends to Form 10 cell via
 - Post to **Form 10 Cell, FRACAS, BFPO 794** address.
 - Email to [REDACTED]
 - **Any AESP that holds a Security marking higher than 'Restricted' should be securely circulated.**

FORM 10 CELL responsibilities:

The Form 10 Cell enters:

- Date Received
- Form 10 Reference
- Date sent to Sponsor
- Register all Form 10 details in the MOSS Form 10 Tracker.

Sponsor Responsibility

The Sponsor will:

- Enter their name, email address & phone contact details.
- Enter Date Received
- Enter Details in the non-mandatory field as & when required.
- Acknowledge receipt of Form 10, within 5 working days, by email to Form 10 Cell.
- Assess the contents of comments and details received.
- Mark the relevant Action box and fill out the Remarks field.
- Enter date when the Form 10 is returned to Form 10 Cell.
- Email copy of completed Form 10, within 6 weeks, to the Form 10 Cell and Originator.

Form 10 Cell on receipt will:

- Record final stage of the Form 10 into the MOSS Form 10 Tracker.
- Close off the Form 10 and archive.