Galaxy Aerospace maintenance . repair . overhaul	Audit Report	
	Report No.	IAR-2024/15
	Area / Scope	GAM-AMO/Workshop
	Date of audit	11 Mar 2024

A	AUDIT DETAILS	
1.	Audit Type / Category	Tick where applicable ☐ Scheduled ☐ Vendor ☐ Surveillance ☐ Product ☒ Variation to approval Specify: To include True Blue Power Lithium-ion battery into GAM Workshop Capability List.
2.	Audit Reference	1. CAD 8601 Maintenance Organisation Approval (CAAM Part 145) Iss 01 Rev 00 dated 01 May 2021; 2. GAM/CAAM/MOE Iss 3 Rev 2, dated 14 November 2023; 3. Workshop Management Procedure Iss 2 Rev 1, dated 03 July 2023; and 4. Draft Workshop Capability Procedure GAM/WCP/Part 2.1.6 Amendment - Initial dated 09 Feb 2024.
3.	Auditor(s)	1. Omar bin Ahmad (Lead Auditor) 2. Muhammad Izzuddin bin Ibeharim
4.	Auditee(s)	1. Mior Mohd Adib bin Mior Sallehhuddin 2. Nur Amira Mohd Safari
5.	Location	GAM Operation Center, No 11-14, Helicopter Centre, Malaysian International Aerospace Centre, Sultan Abdul Aziz Shah Airport, 47200, Subang, Selangor Darul Ehsan, Malaysia
B	AUDIT SUMMARY	
1.	**General Information**	

The audit was carried out to evaluate the compliance and adequacy of procedure (readiness) of the workshop operation for the addition of True Blue Power lithium-ion battery into the Workshop Capability List. The workshop battery variation was requested for external interested clients or Galaxy Aerospace future maintenance contract.

The requested PN for each True Blue Power lithium-ion battery as per table below

Item	Battery Model	Battery Part Number
1	TB14	6430014-2
2		6430014-21
3	TB17	6430017-1
4		6430017-2
5		6430017-3
6		6430017-4
7	TB28-12V	6430014-1
8		6430014-11

9	Gen5 TB20	6430020-1
10	Gen5 TB30	6430030-1
11		6430030-2
12	Gen5 TB40	6430040-1
13		6430040-2

Table 1 – List of PN for True Blue Power Lithium-ion battery

MOC Ref. No.: GAM/MOC/24/0013 was raised and refers during the audit.

The audit was carried out with reference to the Capability Evaluation Checklist, and the draft Workshop Capability Procedure.

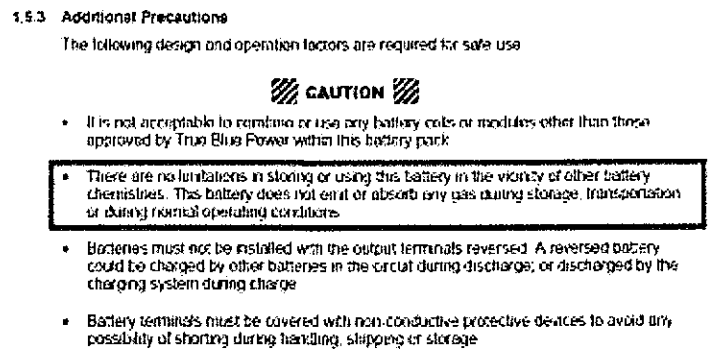
Review of the supporting documents, key personnel interviews, and workplace observations comprise the audit technique.

The scope of audit area covers:

(a) Facilities requirements;
(b) Personnel requirements;
(c) Maintenance Data / Documentation; and
(d) Tools and Equipments

2. **Facilities**

(a) The scope of work for the True Blue Power lithium-ion battery is for the battery charging and capacity check.
(b) Current GAM Approved Lead Acid Battery was proposed for the maintenance of True Blue Power battery.
(c) True Blue Power manual Section 1.5.3 has specified that *there are no limitations in storing or using the battery in the vicinity of other battery chemistries.*



1.5.3 Additional Precautions

The following design and operation factors are required for safe use

CAUTION

- It is not acceptable to combine or use any battery cells or modules other than those approved by True Blue Power within this battery pack
- There are no limitations in storing or using this battery in the vicinity of other battery chemistries. This battery does not emit or absorb any gas during storage, transportation or during normal operating conditions
- Batteries must not be installed with the output terminals reversed. A reversed battery could be charged by other batteries in the circuit during discharge, or discharged by the charging system during charge
- Battery terminals must be covered with non-conductive protective devices to avoid any possibility of shorting during handling, shipping or storage

Figure 1 – Extracted page from TB14 & TB28-12V manual

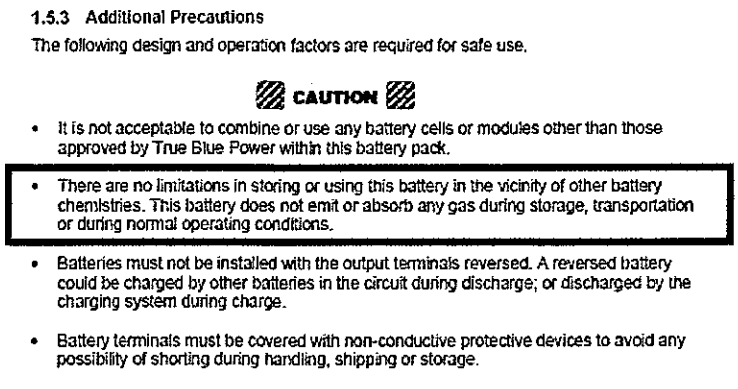


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Figure 2 – Extracted page from TB17 manual

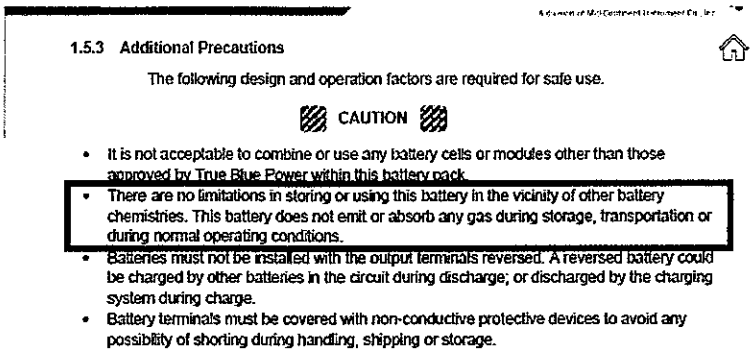

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Figure 3 – Extracted page from TBX series manual

(d) Lead acid battery manual was reviewed as well for any potential limitation to maintain the lithium-ion battery inside the lead acid battery environment. Nil limitation was found on the lead acid battery manual.

3. **Personnel**

(a) There are 2 component certifying staff qualified to perform the task.

No.	Name	GAM ID	Approval No.
1.	Mior Mohd Adib bin Mior Sallehhuddin	8110	C001
2.	Mohammad Fakhqursy bin Haniz	8235	C004

Table 2 – List of proposed certifying personnel

(b) True Blue Power has identified 7 courses to be attended by the personnel to maintain the True Blue Power battery on their website (https://www.thelithiumexperts.com/courses)

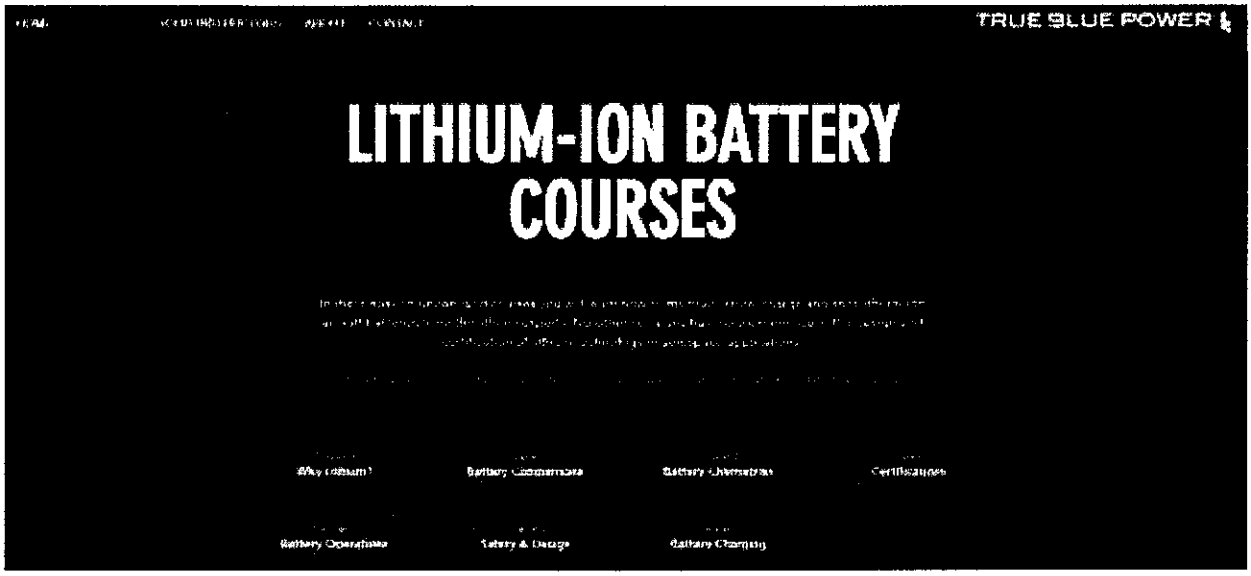

Figure 4 – List of course on True Blue Power website for Lithium Ion Battery

(c) Both personnel has attended the mandatory courses as reflected on True Blue Power Battery website. Copy of the training certificate was provided to the auditor for verification. Review of the training certificate found satisfactory.

4. **Maintenance Data / Documentation**

(a) The applicable battery type and reference manuals are as follow:

Model	Manuals
TB14 and TB28-12V	True Blue Power TB14 Series and TB28-12V Advanced Lithium-Ion Battery Installation Manual and Operating Instructions, Manual Number 9019706 Latest Revision.
TB17	True Blue Power TB17 Series Advanced Lithium-Ion Battery Installation Manual and Operating Instructions, Manual Number 9018047 Latest Revision.
Gen5 TB20, Gen5 TB30 and Gen5 TB40	True Blue Power TBX Series Advanced Lithium-Ion Battery Installation Manual and Operating Instructions, Manual Number 9020005 Latest Revision.

Table 3 – List of maintenance manual

(b) The Publication Master List Issue No. GAM/WS/P-02-2024 dated 21-02-2024 was reviewed during the audit. The review was found satisfactory. All the manuals were in current revision.

(c) GAM workshops utilize the workshop worksheet to record the maintenance activities for the True Blue Power lithium-ion battery. Auditor has highlighted to auditee to come out with a single workshop worksheet covering all the Lithium-ion battery work details to minimize the information entry error during the paperwork clearing process **(Observation)**

5. **Tools & Equipments**

(a) Tools / equipment was checked for availability and serviceability in accordance with the relevant maintenance data for the intended scope of maintenance.

(b) List of tools / equipment found for tool control. The tool location and calibration due were also identified in the list for ease of monitoring.

(c) List of equipment and tools available for the intended maintenance were as follows:

DESIGNATION	CHARACTERISTIC	USAGE	
		CHARGING	CAPACITY CHECK
Battery Charger and Discharger	PN	**X**	**X**
Digital Multimeter	Commercially available	X	X
Standard Mechanic's Tools	Commercially available	**X**	**X**

Table 4 – List of tools & equipment

(d) True Blue Power Lithium-ion battery has identified the recommended charger for battery charging. During the audit, it was observed that the proposed battery charger and discharger to be used for the maintenance is different than the one specified in the manual. GAM has established an Alternative Tools and Test Equipment Equivalency Report form (ref no: GAM/E-081) for any alternative equipment planned to be use during maintenance by GAM. Nil equivalency matrix for the alternate equipment was presented during the audit (**NCR 01**).

7.	**Conclusion** There was **One Minor NCRs** and **One Observation** raised during this audit and no major finding was found during the audit. The audit was determined to be satisfactory in general. Respective auditee shall also take the necessary action to all issues highlighted by the auditor during the audit.
C	**PREPARATION AND APPROVAL**
1.	Prepared by Signature :  Date : 19/3/2024 Name : MUHAMMAD IZZUDDIN BIN IBEHARIM Quality Assurance Inspector Galaxy Aerospace (M) Sdn. Bhd. (1040262D)
2.	Approved by Signature :  Date : 19/03/2024 Name : OMAR BIN AHMAD Quality Assurance Manager Galaxy Aerospace (M) Sdn. Bhd (1040262-D)