


Audit Report

Report No.	IAR-2022/011
Area / Scope	GAM – JBPM BERTAM
Date of audit	24 – 25 FEB 2022

A		AUDIT DETAILS
1.	Audit Type / Category	Tick where applicable <input type="checkbox"/> Scheduled <input type="checkbox"/> Vendor <input type="checkbox"/> Surveillance <input type="checkbox"/> Product <input checked="" type="checkbox"/> Variation to approval Specify: Variation audit Galaxy Aerospace (M) Sdn Bhd (GAM) – Jabatan Bomba dan Penyelamat Malaysia (JBPM) Bertam, Pulau Pinang from approved line maintenance to approved base maintenance.
2.	Audit Reference	1. CAD 8601 Maintenance Organisation Approval Issue 01 Rev 00 dated 01 May 2021, 2. CAGM 8601 Maintenance Organisation Approval Issue 01 Rev 00 dated 01 October 2021, 3. GAM/CAAM/MOE Issue 2 Rev 04, dated 04 March 2021, and 4. GAM/EPM/AMO Issue 2 Rev 0, dated 31 Oct 2021.
3.	Auditor(s)	1. Amira Zakaria (Lead Auditor) 2. Nurul Syafiqah Saharudin Annuar
4.	Auditee(s)	1. Mohamad Razif bin Roslan 2. Rose Azreena binti Roslee 3. Mohd Syazwan bin Mohd Safri 4. Shaiful Syazwan bin Saleh 5. Muhamad Zamri bin Awang
5.	Location	Hangar Pangkalan Udara JBPM Bertam, Jalan Pinang Tunggal, 13200 Kepala Batas, Pulau Pinang.
B		AUDIT SUMMARY
1.	<u>General Information</u>	<p>Variation audit was carried out on GAM – JBPM Bertam facility to evaluate the compliance of GAM – JBPM Bertam operation prior to submission of variation approval to Civil Aviation Authority of Malaysia for additional capability approved base maintenance inspection helicopter Leonardo AW139 fitted with PWC PT6C-67C engines. This facility is currently approved for line maintenance inspection up to 300 flying hours (FH) inspection only as stated in MOE Part 1.8.2 Iss 2 Rev 04 dated on 04 March 2021.</p> <p>The variation audit was carried out with the reference made to the latest revision of Maintenance Organisation Exposition (MOE), Engineering Procedure Manual (EPM), AMO Audit Checklist, MOC Ref No. MOC/22/0016 and AMP Document Ref. JBPM/CAMO/AMP/AW139 Iss 02 Rev 1 dated 20 September 2021.</p> <p>Audit methodology is through documentation review, interviews with auditee, and inspection of the workspace.</p>

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2. **Facilities**

- a. GAM - JBPM Bertam facility include of office work area for AMO production planning and certifying staff, storage area (which consists of equipment holding area, temporary bonded store area, and unserviceable area), POL storage and maintenance area (hangar).
- b. Office work area was adequate for personnel to work on planning and documentation. The aircraft maintenance staff were provided with an area where they may study maintenance instructions and complete maintenance records in a proper manner.
- c. The hangar is sufficient to allow a certain number of aircraft to be stationed at a time. The hangar is large enough to accommodate helicopter on planned base maintenance inspection as stated in Chapter 7.1(C)(5) of AMP Ref No. JBPM/CAMO/AMP/AW139 Iss 02 Rev 1 dated 20 September 2021. The cleanliness of the hangar was well maintained.
- d. A clearly labelled holding rack was found to be available and sufficient for line maintenance activity. GAM – JBPM Bertam require additional holding rack in order to support base maintenance inspection activity. **(NCR 01 raised)**
- e. The hangar's lighting was deemed to be suitable for maintenance purposes. The lighting is featured as part of the hangar's amenities.
- f. One (1) POL cabinet was found available. The POL Master List was updated satisfactory.
- g. The hangar was inspected to be clean, with minimal dust or any other airborne contamination and FOD. Bird repellent was used to keep the birds away and minimal the causes of FOD.
- h. Production waste containers were also available at the hangar. The containers were clearly labelled to differentiate between general and schedule waste.
- i. Three (3) maintenance platforms were made available during the audit. During the interviewed with auditee, it was found that the platforms are sufficient to carry out the proposed base maintenance activity. Refer Figure 1 - 4.
- j. The storage area is equipped with air-conditioned. The temperature and humidity of the area is controlled and recorded in the Temperature and Humidity Record Form (Form No. GAME/E-026).

3. **Personnel/Certifying Staff**

- a. A total of 7 personnel has been assigned at GAM - JBPM Bertam operation. Currently, all the personnel are in the normal shift pattern. Below are the details of the personnel involved in Bertam's Operation:

No.	Name	Position
1	Mohamad Razif bin Roslan	B1.3 LAE / EIC
2	Rafizal bin Ramli	B1.3 LAE
3	Mohd Syazwan bin Mohd Safri	B2 LAE
4	Muhammad Saufi bin Mahat	Technician
5	Shaiful Syazwan bin Saleh	Technician
6	Muhamad Zamri bin Awang	Technician
7	Rose Azreena binti Roslee	AMO Planner

- b. One Certifying Staff; Mohd Syazwan bin Mohd Safri was interviewed for his understanding of the company procedure, as well as to provide proof of authorization, and the interview was found satisfactory.
- c. Below are the details of the highest complex base maintenance inspection:

No	Highest complex inspection due by	Task Description	Proposed manpower required
1	Flying hours (FH)	1200FH	(3) B1.3 LAE, (2) B2 LAE and (5) technician.
		2400FH	(3) B1.3 LAE, (2) B2 LAE and (5) technician.
2	Calendar	4 years inspection	(3) B1.3 LAE, (2) B2 LAE and (5) technician.

During the highest complex inspection task, it was informed that the manpower will be backed up from other operation to support the maintenance activity. The category C certifying staff will be backed up from Subang Operation. Refer Attachment 1 for justification for base maintenance inspection.

4. **Tools, Equipment & Materials**

- The components and tools were found properly segregated between serviceable and unserviceable.
- The general tools were made available during the audit which consists of JBPM's sets of tools and GAM's sets of tools.
- Calibrated tools and equipment were made available in JBPM Bertam. Any additional calibrated tools and equipment will be loaned from GAM's MIAT facility.
- Special tools for AW139 operation were made available during the audit. Any additional special tools will be loaned from GAM MIAT. GAM also had an agreement with Agusta Westland Malaysia for the support of special tools whenever required.
- All the test equipment required for the maintenance in Bertam Operation will be made available onsite once required.



5. **Maintenance Data**

- Publication master listing (GAM/P-2022-005) dated 18 Feb 2022 was reviewed during the audit, each document in the list were verified in the registered PC GAM/IT_ASSET/H180 and found satisfactory. No additional publication required in order to extend the capability from line maintenance inspection to base maintenance inspection.

6. **Conclusion**

GAM – JBPM Bertam Operation has demonstrated their readiness to extend their capability to an approved base maintenance inspection provided the highlighted issue have been resolved.

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C	PREPARATION AND APPROVAL
1.	Prepared by Signature :  Date : 21 MARCH 2022 Name : AMIRA ZAKARIA Quality Assurance Inspector Galaxy Aerospace (M) Sdn. Bhd. (1040262-D)
2.	Approved by Signature :  Date : 22 MAR 2022 Name : OMAR BIN AHMAD Quality Assurance Manager Galaxy Aerospace (M) Sdn. Bhd. (1040262-D)



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Figure 1: Maintenance Platform



Figure 2: Maintenance Platform



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Figure 3: Maintenance Platform



Figure 4: Maintenance Platform

ATTACHMENT 1

JBPM AW139 SPECIAL TOOLS

BASE INSPECTION SPECIAL TOOLS

600FH INSPECTION

MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN

NO	ITEM	PART NO	QUANTITY	REMARKS	LOCATION
1	Tensiometer	OUTIL-DIVE-00001	1		SUBANG
2	Tool kit, fixed flight controls adjusting	3G6705G00132	1		SUBANG

900FH INSPECTION

MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN

NO SPECIAL TOOLS REQUIRED

1200FH INSPECTION (HIGHEST COMPLEX TASKS BY FLYING HOURS)

MANPOWER: 3 LAE B1, 2 LAE B2, 5 TECHNICIAN

NO	ITEM	PART NO	QUANTITY	REMARKS	LOCATION
1	Tool kit, M/R blade retention bolt rem/instl	3G6205G00331	1		MIAT
2	Stand, M/R and T/R blades storage	3G6200G00131	1		MIAT
3	Tool, M/R blade lifting	3G6205G00632	1		MIAT
4	Puller kit, M/R and T/R upper ring rem.	3G6005G00231	1		MIAT
5	Tool, M/R scissors coupling rem/instl	3G6205G08931	1		MIAT
6	Sling, A/C lifting, M/R head rem/instl	3G0705G00131	1		MIAT
7	Multipurpose trolley	3G6005G00131	1		MIAT
8	Trolley adapter, M/R head support	3G6205G09031	1		MIAT
9	Sling, swashplate lifting	6F6230G00131	1		MIAT
10	Transportable stand, swashplate support	3G6205G11532	1		LEONARDO
11	Tool kit, swashplate assy assembly - Case 1	3G6205G15231	1		LEONARDO
12	Tool kit, swashplate assy assembly - Case 2	3G6205G13831	1		LEONARDO
13	Tool kit, T.R.D. support bearing repair	3T6505G00431	1		LEONARDO

1300FH INSPECTION*MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN*

NO SPECIAL TOOLS REQUIRED

2400FH INSPECTION*MANPOWER: 3 LAE B1, 2 LAE B2, 5 TECHNICIAN*

NO	ITEM	PART NO	QUANTITY	REMARKS	LOCATION
1	Multipurpose trolley	3G6005G00131	1		MIAT
2	Trolley adapter, M/R head support	3G6205G09031	1		MIAT
3	Tool, tail rotor head removal	3G6405G01831	1		MIAT

3000FH INSPECTION*MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN*

NO SPECIAL TOOLS REQUIRED

3600FH INSPECTION*MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN*

NO	ITEM	PART NO	QUANTITY	REMARKS	LOCATION
1	Hydraulic system test bench	120-1D & ALTERNATIVO GB941-010-500	1		BERTAM
2	PCM Adapters kit, hydraulic system test bench	3G2905G00132	1		BERTAM
3	Jackscrews kit	3G6005G00431	1		MIAT
4	Tool kit, MGB freewheel repl.	3G6305G01331	1		MIAT

5000FH INSPECTION*MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN*

NO	ITEM	PART NO	QUANTITY	REMARKS	LOCATION
1	Jack Assy, helicopter lifting	3G0705G00232	4		MIAT
2	Sling, A/C lifting, M/R head rem/instl	3G0705G00131	1		MIAT

10000FH INSPECTION

MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN

NO SPECIAL TOOLS REQUIRED

BASE INSPECTION SPECIAL TOOLS**1 YEAR AIRFRAME INSPECTION***MANPOWER: 3 LAE B1, 1 LAE B2, 5 TECHNICIAN*

NO	ITEM	PART NO	QUANTITY	REMARKS	LOCATION
1	Ground replay cable	SA109680	1		BERTAM
2	Aircraft replay cable	SA109654	1		BERTAM
3	Jack Assy, helicopter lifting	3G0705G00232	4		MIAT
4	Hydraulic system test bench	120-1D & ALTERNATIVO GB941-010-500	1		BERTAM
5	PCM Adapters kit, hydraulic system test bench	3G2905G00132	1		BERTAM

4 YEARS AIRFRAME INSPECTION (HIGHEST COMPLEX TASKS BY CALENDAR DUE)*MANPOWER: 3 LAE B1, 2 LAE B2, 5 TECHNICIAN*

NO	ITEM	PART NO	QUANTITY	REMARKS	LOCATION
1	Tool kit, M/R blade retention bolt rem/instl	3G6205G00331	1		MIAT
2	Stand, M/R and T/R blades storage	3G6200G00131	1		MIAT
3	Tool, M/R blade lifting	3G6205G00632	1		MIAT
4	Puller kit, M/R and T/R upper ring rem.	3G6005G00231	1		MIAT
5	Tool, M/R scissors coupling rem/instl	3G6205G08931	1		MIAT
6	Sling, A/C lifting, M/R head rem/instl	3G0705G00131	1		MIAT
7	Multipurpose trolley	3G6005G00131	2		MIAT
8	Trolley adapter, M/R head support	3G6205G09031	1		MIAT
9	Sling, swashplate lifting	6F6230G00131	1		MIAT
10	Tool M/R damper attaching bolt removal	3G6205G21631	1		LEONARDO
11	Tool, T/R blade damper attach. bushing rem.	3G6405G02131	1		LEONARDO
12	Sling, MGB lifting	8G6320G19131	1		MIAT
13	MGB anti torque beam installation pin	3G6305G26631	1		MIAT
14	Tool, engine lifting	3G7105G00231	1		MIAT
15	Trolley, engine transport	3G7105G00132	2		MIAT
16	T/R spider and slider, assembly tool	3G6405G09931	1		MIAT
17	Trolley adapter, swashplate support	3G6205G09132	1		MIAT

18	Tool kit, swashplate assy assembly - Case 1	3G6205G15231	1		LEONARDO
19	Tool kit, swashplate assy assembly - Case 2	3G6205G13831	1		LEONARDO
20	Positioning tool, MR hub instl	3G6200G00331	1		LEONARDO
21	Expander assy, M/R pitch control lever inst	3G6205G06131	1		LEONARDO
22	Tool kit, M/R flanged bushing rem/instl	3G6205G06232	1		LEONARDO
23	Jack Assy, helicopter lifting	3G0705G00232	4		MIAT

8 YEARS AIRFRAME INSPECTION

MANPOWER: 3 LAE B1, 2 LAE B2, 5 TECHNICIAN

NO SPECIAL TOOLS REQUIRED

BASE INSPECTION SPECIAL TOOLS

600FH//1 YEAR INSPECTION

MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN

NO	ITEM	PART NO	QUANTITY	REMARKS	LOCATION
1	Adapters kit, helicopter servicing	3G1200G00131	1		BERTAM
2	Jack Assy, helicopter lifting	3G0705G00232	4		MIAT
3	Trolley, L/G nitrogen charging	GB966-203-200	1		BERTAM
4	Tool, T/R scissors short coupling rem	3G6405G07331	1		MIAT

1500FH//2 YEARS INSPECTION

MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN



NO	ITEM	PART NO	QUANTITY	REMARKS	LOCATION
1	Adapters kit, helicopter servicing	3G1200G00131	1		BERTAM
2	Manual hydraulic pump, A/C servicing	7197	1		MIAT

2400FH//4 YEARS INSPECTION

MANPOWER: 2 LAE B1, 1 LAE B2, 3 TECHNICIAN

NO SPECIAL TOOLS REQUIRED

PREPARED BY: MOHAMAD RAZIF BIN ROSLAN

SIGNATURE:  

DATE: 17/3/2022