

Sht 4 Hazard Identification & Risk Mitigation (HIRM) Worksheet

9 Sep '22

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HIRARC REFERENCE NUMBER:		GAM/SMS/H-09 (24)	
1. AREA / OPERATION / EQUIPMENT:		WORKSHOP- GAM OC	
2. HAZARD / THREAT [H/T]:		NEW AIRCRAFT BATTERY CAPABILITIES - LITHIUM-ION	
3. TOP-EVENT [TE]:		SHORT CIRCUIT OF THE BATTERY DUE TO MISHANDLING	
4. CONSEQUENCE [C]:		DAMAGE TO BATTERY/ EQUIPMENT/ INJURIES TO PERSONNEL	
Date Conducted	13-March-2024	Conducted by	Hamidah (WIC), Mior (Avionic Workshop), Farah (QAE), Ain (SE), Farah (Safety Protégé)
Revision	00	Received by	Safety Department
Approved by	Wan Izahan Zameree b. Ishak (SM)	Document Control Number	GAM/SMS/HRC-003-01/21R1



Top Event Mitigation															Ultimate Consequence Mitigation																																																											
Existing Preventive Controls [E-PC]															New Preventive Controls [N-PC]															Existing Recovery Measures [E-RM]															New Recovery Measures [N-RM]															ERI & T														
1. Emergency/ Backup system [EB] 2. Equipment/ Tooling [ET] 3. Regulatory/ Requirement [RR] 4. Std. Operating Procedure [SP] 5. Inspn/ Maint program [IM] 6. GM/ Advisory/ Notification [GM] 7. Process Certification/ Approval [PC] 8. Personnel Authorisation/ Licensing [PA] 9. Training/ Education/ Promotion [TE] 10. Others [OT] Escalation Factor [EF] or Unintended Consequence [UC] Escalation Control [EC]															1. Emergency/ Backup system [EB] 2. Equipment/ Tooling [ET] 3. Regulatory/ Requirement [RR] 4. Std. Operating Procedure [SP] 5. Inspn/ Maint program [IM] 6. GM/ Advisory/ Notification [GM] 7. Process Certification/ Approval [PC] 8. Personnel Authorisation/ Licensing [PA] 9. Training/ Education/ Promotion [TE] 10. Others [OT] Escalation Factor [EF] or Unintended Consequence [UC] Escalation Control [EC]															1. Emergency/ Backup system [EB] 2. Equipment/ Tooling [ET] 3. Regulatory/ Requirement [RR] 4. Std. Operating Procedure [SP] 5. Inspn/ Maint program [IM] 6. GM/ Advisory/ Notification [GM] 7. Process Certification/ Approval [PC] 8. Personnel Authorisation/ Licensing [PA] 9. Training/ Education/ Promotion [TE] 10. Others [OT] Escalation Factor [EF] or Unintended Consequence [UC] Escalation Control [EC]															1. Emergency/ Backup system [EB] 2. Equipment/ Tooling [ET] 3. Regulatory/ Requirement [RR] 4. Std. Operating Procedure [SP] 5. Inspn/ Maint program [IM] 6. GM/ Advisory/ Notification [GM] 7. Process Certification/ Approval [PC] 8. Personnel Authorisation/ Licensing [PA] 9. Training/ Education/ Promotion [TE] 10. Others [OT] Escalation Factor [EF] or Unintended Consequence [UC] Escalation Control [EC]															Resultant Risk Index Tolerability Consequence														
NEW AIRCRAFT BATTERY CAPABILITIES - LITHIUM-ION															SHORT CIRCUIT OF THE BATTERY DUE TO MISHANDLING															1D Acceptable															1D Acceptable															DAMAGE TO BATTERY/ EQUIPMENT/ INJURIES TO PERSONNEL														

Description of Existing Preventive Controls [E-PC]	BSV	Description of New Preventive Controls [N-PC]	BSV
E-PC1: Insulated tools/ equipment for the battery handling. EF/UC-E-PC1: EC/EF/UC-E-PC1:	5	N-PC1: To remove jewellery items Le rings, watch while handling the battery. EF/UC-N-PC1: EC/EF/UC-N-PC1:	4
E-PC2: Competent personnel for battery handling. EF/UC-E-PC2: EC/EF/UC-E-PC2:	5	N-PC2: EF/UC-N-PC2: EC/EF/UC-N-PC2:	0
E-PC3: Updated latest manuals (refer Appendix 1 - Masterlist Manual). EF/UC-E-PC3: EC/EF/UC-E-PC3:	5	N-PC3: EF/UC-N-PC3: EC/EF/UC-N-PC3:	0
E-PC4: EF/UC-E-PC4: EC/EF/UC-E-PC4:	0	N-PC4: EF/UC-N-PC4: EC/EF/UC-N-PC4:	0
E-PC5: EF/UC-E-PC5: EC/EF/UC-E-PC5:	0	N-PC5: EF/UC-N-PC5: EC/EF/UC-N-PC5:	0
E-PC6: EF/UC-E-PC6: EC/EF/UC-E-PC6:	0	N-PC6: EF/UC-N-PC6: EC/EF/UC-N-PC6:	0
E-PC7: EF/UC-E-PC7: EC/EF/UC-E-PC7:	0	N-PC7: EF/UC-N-PC7: EC/EF/UC-N-PC7:	0
E-PC8: EF/UC-E-PC8: EC/EF/UC-E-PC8:	0	N-PC8: EF/UC-N-PC8: EC/EF/UC-N-PC8:	0

<<< Unhide additional PC/ RM rows here where applicable.

Description of Existing Recovery Measures [E-RM]	BSV	Description of New Recovery Measures [N-RM]	BSV
E-RM1: To use the first-aid kit as temporary measures. EF/UC-E-RM1: EC/EF/UC-E-RM1:	4	N-RM1: Send the victims to the nearest help facilities. EF/UC-N-RM1: EC/EF/UC-N-RM1:	5
E-RM2: Immediately report the incident to the superior. EF/UC-E-RM2: EC/EF/UC-E-RM2:	5	N-RM2: EF/UC-N-RM2: EC/EF/UC-N-RM2:	0
E-RM3: EF/UC-E-RM3: EC/EF/UC-E-RM3:	0	N-RM3: EF/UC-N-RM3: EC/EF/UC-N-RM3:	0
E-RM4: EF/UC-E-RM4: EC/EF/UC-E-RM4:	0	N-RM4: EF/UC-N-RM4: EC/EF/UC-N-RM4:	0
E-RM5: EF/UC-E-RM5: EC/EF/UC-E-RM5:	0	N-RM5: EF/UC-N-RM5: EC/EF/UC-N-RM5:	0
E-RM6: EF/UC-E-RM6: EC/EF/UC-E-RM6:	0	N-RM6: EF/UC-N-RM6: EC/EF/UC-N-RM6:	0
E-RM7: EF/UC-E-RM7: EC/EF/UC-E-RM7:	0	N-RM7: EF/UC-N-RM7: EC/EF/UC-N-RM7:	0
E-RM8: EF/UC-E-RM8: EC/EF/UC-E-RM8:	0	N-RM8: EF/UC-N-RM8: EC/EF/UC-N-RM8:	0

<<< Unhide SC Rows here where applicable.

Description of Existing Severity Controls [SC] to mitigate C	Description of New Severity Controls [SC] to mitigate C
E-SC1:	N-SC1:
E-SC2:	N-SC2:

5-1. Existing Risk Index [Hazard > Consequence]

1. Severity level of Consequence [Sht 4C] >>	D																		
2. Consequence's Optimum No of Barriers (ONB) [Sht 4A, Table3] >>	3																		
3. Applicable CBSV-Likelihood Table [Sht 4A, Table 3] >>	4 (ii)																		
4. BSV of E-PCs and Existing-RMs [Sht 4B]:																			
<table border="1"> <tr><td>BSV</td><td>BSV</td></tr> <tr><td>E-PC1</td><td>E-RM1</td></tr> <tr><td>E-PC2</td><td>E-RM2</td></tr> <tr><td>E-PC3</td><td>E-RM3</td></tr> <tr><td>E-PC4</td><td>E-RM4</td></tr> <tr><td>E-PC5</td><td>E-RM5</td></tr> <tr><td>E-PC6</td><td>E-RM6</td></tr> <tr><td>E-PC7</td><td>E-RM7</td></tr> <tr><td>E-PC8</td><td>E-RM8</td></tr> </table>	BSV	BSV	E-PC1	E-RM1	E-PC2	E-RM2	E-PC3	E-RM3	E-PC4	E-RM4	E-PC5	E-RM5	E-PC6	E-RM6	E-PC7	E-RM7	E-PC8	E-RM8	
BSV	BSV																		
E-PC1	E-RM1																		
E-PC2	E-RM2																		
E-PC3	E-RM3																		
E-PC4	E-RM4																		
E-PC5	E-RM5																		
E-PC6	E-RM6																		
E-PC7	E-RM7																		
E-PC8	E-RM8																		
5. CBSV (SUM) of E-PCs and E-RMs >>	24																		
6. CBSV of ONB (Applicable if No of E-PCs and E-RMs is > ONB) >> (SUM of best BSVs up to ONB)	15																		
7. CBSV of Consequence (CBSV in Step 5 or 6, whichever is applicable) >>	15																		
8. Existing Likelihood of Consequence (Table of Item 3) >>	1																		
9. Existing Risk Index of Consequence (Pairing of Step 1 + 8) >>	10																		
10. Existing Tolerability of Consequence [Sht 8] >>	Acceptable																		

5-2. Resultant Risk Index [Hazard > Consequence]

1. Severity level of Consequence [Sht 4C] >>	D																																				
2. Consequence's Optimum No of Barriers (ONB) [Sht 4A, Table3] >>	3																																				
3. Applicable CBSV-Likelihood Table [Sht 4A, Table 3] >>	4 (ii)																																				
4. BSV of E-PCs, N-PCs, E-RMs, and N-RMs [Sht 4B]:																																					
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E-PC8	N-PC8	E-RM8	N-RM8																																		
5. CBSV (SUM) of E-PCs, N-PCs, E-RMs and N-RMs [Note comment flag] >>	33																																				
6. CBSV of ONB (Applicable if No of PCs and RMs is > ONB) >> (SUM of best BSVs up to ONB)	15																																				
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