Ministry of Defence

Defence Fire and Rescue

Tactics Techniques & Procedures

Tactics Techniques & Procedures

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Stakeholders:				
	DFR HQ	✓	Capita Fire and Rescue	✓
	RN Aircraft Handler	✓	RAF Fire and Rescue	✓
	DFRS LEC	✓	Other FRS Providers[1]	✓
	DFRS (Retained Officers)		DFRS (USVF)	

Technical Approved	Defence Fire and Rescue (CFR HQ) Operations Committee

Sponsor Details:

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Conditions of Release

[1] Other FRS Providers include Babcock Fire Services, Mitie Fire Service, QinetiQ Fire Service.

Document Control

Version	Amendment	Para No. Affected/Brief Details	Amended By	Date
V1.0	N/A	Initial Draft	WO S Blair	22/05/2023
V1.1	N/A	Engineering Sqn Review	Chf Tech R Wherry	31/05/2023
V1.1	Review	Format and New Cover	P McGuinness	01/06/2023
V1.2	Stakeholder Review	Comments reviewed	G Tiley	08/06/2023
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AIRCRAFT TACTICS TECHNIQUES PROCEDURES (ATTP/A43)

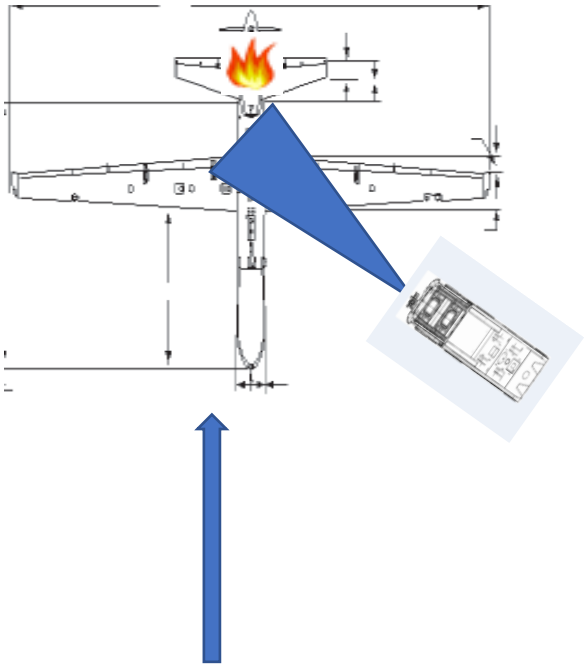
Protector RG Mk1

This TTP applies to the operation of MPRV response.

MPRV (Crash1)

TTP 1 – Internal Electrical Fire

Event Plan – Initial deployment



Wind direction

Incident Commander Considerations:

- Location of A/C
- Emergency declared
- Wind Direction
- Transit to incident
- Confirm with all crews nature of incident and location
- Deployment of MPRV
- Informing ATC of Tactical Mode (Defensive) & Potentially Requesting External Resources
- DRA followed by M/ETHANE
- Repeat DRA as appropriate to the incident.
- Prepare for ARA
- Declaring State of Airfield and ICAO capability
- Consider use of secondary media
- Consider involvement of Li-Ion Batteries and refer to the actions within Op-Ins-045
- Medics to incident location
- SENGO/Sqn Support 31 Squadron
- LAFS
- Ensure safe handover of incident, when declared safe to relevant authority
- Debrief all crews post incident, identifying any further support required

Crash 1 - MPRV Actions:

- Crash One to deploy safely to locate internal / electrical fire.
- MPRV crew will deploy the monitor and begin to extinguish the fire and/or cool the airframe using relevant media, with pump and roll an option if required.
- Designated BA wearers if required will don BA sets but remain off air, within the cab, until command from Incident Commander to commence close proximity firefighting.
- Incident Commander will monitor all operations and identify hazard areas for aircraft and implement SSoW.
- Deploy covering line if required for leaking fuel.
- If BA is required command will be given by Incident Commander. BA Team will deploy according to current SOP with hose reel or sideline as appropriate to the incident.
- *The use of secondary media should be considered when extinguishing an enclosed/internal fire.*
- BA team should consider use of thermal image camera to identify internal hot spots.
- **NB No internal entry required to airframe all external fires are to be extinguished or declared as under control**

Specific Aircraft Hazards:

- Propeller
- Noise
- Li-Ion Batteries
- Composite materials (Kevlar, Carbon fibres, Glass fibres and Epoxy): *3m face masks to be worn in inner cordon once assessed as below 150^{o}C iaw Op Ins-060 and CFR Op Guidance for Aircraft Firefighting.*
- Radiation: If the AC is still transmitting on Xband, the RadHaz is 37ft diameter (same as the AC wingspan) and will be indicated by flashing red conspicuous lights on the nose wheel strut and the vertical tail. *Conduct operations at a distance more than the wingspan in order to remain outside of the affected area.*
- Electro-optical/infrared (EO/IR)
- Depending on severity of fire, crew commander may request use handheld extinguishers Scattered debris

Further Considerations:

- Consider security implications in relation to aircraft use.
- Environmental considerations from fire run off and incident interaction.
- Sqn crash team response / actions
- Isolate batteries
- Aircraft recovery
- Fuel quantities and spillage

Supporting Information:

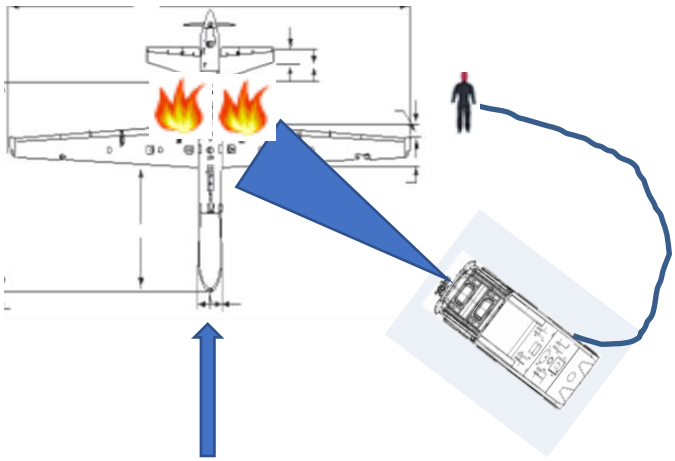
- CFR Op Guidance: Aircraft Incidents
- Op-Guidance-001v1.1-Aircraft Incidents-Final.pdf
- Ops Ins 060-Respiratory-Protective-Equipment
- DFR Command - Capita Op Guidance - All Documents (sharepoint.com)
- DSA02 DFSR - Defence Aerodrome Rescue & Fire Fighting (ARFF) Regulations
- BD-700 ARM - Bombardier Global Series Aircraft Recovery Manual
- Ops Ins 045-Ops-Lithium-Ion-Batteries-Final.pdf (sharepoint.com)
- https://www.ga-asi.com/
- https://www.flightglobal.com/
- RA 1600
- https://dronewars.net/
- JESIP
- ICS
- CAP 722
- CT1_TN229_Internal_AC_Fires
- DSA Response assessments

Training:

- Aircraft familiarization with Sqn personnel
- Endorsed PPT
- CMS
- CT package
- Case studies

TTP 2 – Undercarriage Incident

Event Plan - Initial Deployment



Wind Direction

Incident Commander Considerations:

- Location of A/C
- Emergency declared
- Wind Direction
- Transit to incident
- Confirm with all crew's nature of incident and location
- Deployment of MPRV
- Informing ATC of Tactical Mode (Defensive) & Potentially Requesting External Resources
- DRA followed by M/ETHANE
- Repeat DRA as appropriate to the incident.
- Prepare for ARA.
- Declaring State of Airfield and ICAO capability
- Consider use of secondary media
- Medics to incident location
- SENGO/Sqn Support 31 Squadron
- LAFS
- Ensure safe handover of incident, when declared safe to relevant authority
- Debrief all crews post incident, identifying any further support required

Crash 1 - MPRV Actions:

- Crash One to deploy on the relevant affected undercarriage area. They will bring the monitor into place ready to be used should it be needed, with pump and roll an option if required and the FLIR can be used to ascertain a heat signature.
- Designated BA wearers will don BA sets but remain off air until command from Incident Commander.
- MPRV crew will deploy the monitor and begin to extinguish the undercarriage fire using relevant media, with pump and roll an option if required.
- Designated BA wearers if required will don BA sets but remain off air until command from Incident Commander.
- Incident Commander will monitor all operations and identify hazard areas for aircraft and implement SSoW.
- Deploy covering line if required for leaking fuel.
- If BA is required command will be given by Incident Commander. BA Team will deploy according to current SOP with hose reel or side-line as appropriate to the incident.

- BA team should consider use of thermal image camera to identify internal hot spots.
- NB No internal entry required to airframe all external fires are to be extinguished or declared as under control

Specific Aircraft Hazards/Procedures:

- Propeller
- Noise
- Li-Ion Batteries
- Composite materials (Kevlar, Carbon fibres, Glass fibres and Epoxy): *3m face masks to be worn in inner cordon once assessed as below 150^{o}C iaw Op-Ins-060 and CFR Op Guidance for Aircraft Firefighting.*
- Radiation: If the AC is still transmitting on Xband, the RadHaz is 37ft diameter (same as the AC wingspan) and will be indicated by flashing red conspicuous lights on the nose wheel strut and the vertical tail. *Conduct operations at a distance more than the wingspan in order to remain outside of the affected area.*
- Electro-optical/infrared (EO/IR)
- Depending on severity of fire, crew commander may request use handheld extinguishers Scattered debris

Further Considerations:

- Consider security implications in relation to aircraft use
- Environmental considerations from fire run off and incident interaction
- Sqn crash team response / actions
- Isolate batteries
- Assessment of wheel assembly
- Aircraft recovery

Supporting Information:

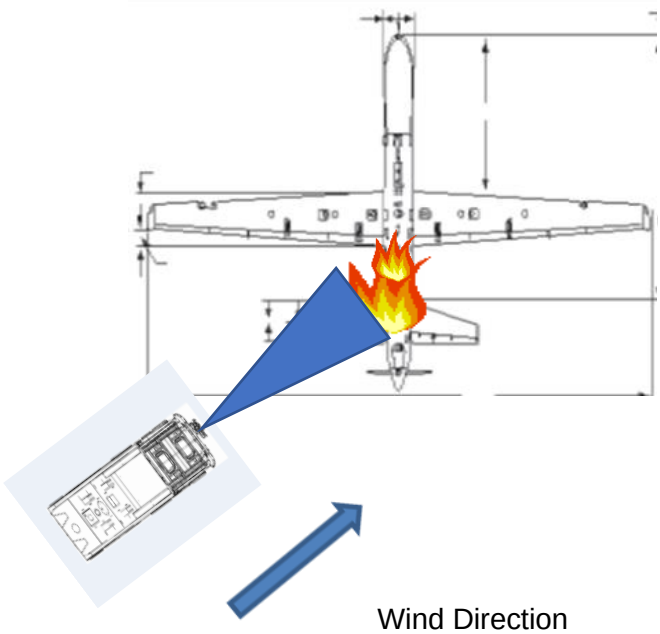
- CFR Op Guidance: Aircraft Incidents
- Op-Guidance-001v1.1-Aircraft Incidents-Final.pdf
- DFR Command - Capita Op Guidance - All Documents (sharepoint.com)
- DSA02 DFSR - Defence Aerodrome Rescue & Fire Fighting (ARFF) Regulations
- BD-700 ARM - Bombardier Global Series Aircraft Recovery Manual
- https://www.ga-asi.com/
- https://www.flightglobal.com/
- RA 1600
- https://dronewars.net/
- JESIP
- ICS
- CAP 722
- CT 1 Lesson Technical Note 62 - Hot Brakes Wheel Brake Assemblies

Training – Link to CMS

- Aircraft familiarization with Sqn personnel
- Endorsed PPT
- CMS
- CT package
- Case studies

TTP 3 – External Fuel Fire

Event Plan - Initial Deployment



Wind Direction

Incident Commander Considerations:

- Location of A/C
- Emergency declared
- Wind Direction
- Transit to incident
- Confirm with all crews nature of incident and location
- Deployment of MPRV
- Informing ATC of Tactical Mode (Defensive) & Potentially Requesting External Resources
- DRA followed by M/ETHANE
- Repeat DRA as appropriate to the incident.
- Prepare for ARA.
- Declaring State of Airfield and ICAO capability
- Consider use of secondary media
- SENGO/Sqn Support 31 Squadron
- LAFS
- Ensure safe handover of incident, when declared safe to relevant authority
- Debrief all crews post incident, identifying any further support required

Crash 1 - MPRV Actions

- Crash One to deploy on the side of the A/C where the flame mass is. The use of the monitor should be considered, with pump and roll an option if required. Foam blanket should be laid to protect the integrity of the airframe, and flames swept away from the fuselage.
- MPRV crew will deploy the monitor and begin to extinguish the engine fire using relevant media and the FLIR can be used to ascertain a heat signature.
- Designated BA wearers if required will don BA sets but remain off air until command from Incident Commander.
- Incident Commander will monitor all operations and identify hazard areas for aircraft and implement SSoW.
- Deploy covering line if required for leaking fuel.
- If BA is required command will be given by Incident Commander. BA Team will deploy according to current SOP with hose reel or sideline as appropriate to the incident.
- BA team should consider use of thermal image camera to identify internal hot spots.

- **NB No internal entry required to airframe all external fires are to be extinguished or declared as under control**

Specific Aircraft Hazards/Procedures:

- Propeller
- Noise
- Li-Ion Batteries
- Composite materials (Kevlar, Carbon fibres, Glass fibres and Epoxy): *3m face masks to be worn in inner cordon once assessed as below 150^{o}C iaw Op Ins-060 and CFR Op Guidance for Aircraft Firefighting.*
- Radiation: If the AC is still transmitting on Xband, the RadHaz is 37ft diameter (same as the AC wingspan) and will be indicated by flashing red conspicuous lights on the nose wheel strut and the vertical tail. *Conduct operations at a distance more than the wingspan in order to remain outside of the affected area.*
- Electro-optical/infrared (EO/IR)
- Depending on severity of fire, crew commander may request use handheld extinguishers Scattered debris

Further Considerations:

- Consider security implications in relation to aircraft use.
- Environmental considerations from fire run off and incident interaction.
- Sqn crash team response / actions
- Isolate batteries
- Ground gradient
- Running fuel fire
- Aircraft recovery
- Fuel quantities and spillage

Supporting Information:

- CFR Op Guidance: Aircraft Incidents
- Op-Guidance-001v1.1-Aircraft Incidents-Final.pdf
- DFR Command - Capita Op Guidance - All Documents (sharepoint.com)
- DSA02 DFSR - Defence Aerodrome Rescue & Fire Fighting Regulations
- BD-700 ARM - Bombardier Global Series Aircraft Recovery Manual
- https://www.ga-asi.com/
- https://www.flightglobal.com/
- RA 1600
- https://dronewars.net/
- JESIP
- ICS
- CAP 722
- CT1 TN39 Flammable Liquids Aviation Fuels

Training:

- Aircraft familiarization with Sqn personnel
- Endorsed PPT
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- CT package
- Case studies