Ministry of Defence

Defence Fire and Rescue Tactics Techniques Procedure

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Stakeholders:	DFR HQ ✓ Capita Fire and Rescue ✓ RN Aircraft Handler[1] ✓ RAF Fire and Rescue ✓ DFRS LEC ✓ Other FRS Providers[2] DFRS (DFSR, DIO, RN)[3] ✓ DFRS (USVF)
Technical Author(s):	Fire Station SMEs
Approved Authority:	DFR Sponsored Ops Policy Committee

Sponsor Details: Strategic Lead Operational Capability & Development
Defence Fire & Rescue (DFR) Headquarters
Sedgemoor Building, Marlborough Lines,
Monxton Road,
Andover,
Hampshire,
SP11 8HT

Contact: dfr-hqocd@mod.gov.uk

[1] RN (AH) stakeholders are the Operational Responders based at the Culdrose, Predannack, Yeovilton and Merryfield aerodromes
[2] Other FRS Providers include Babcock, Mitie and QinetiQ Fire Services. In addition, this publication will also be shared with AWE and QinetiQ FRS for information purposes only.
[3] For the purposes of this ATTP, DFRS Fire Officers employed within DFSR, DIO & RN, are included for information purposes only.

VERSION CONTROL HISTORY

Version	Date	Amended by	Role	Para No. Affected / Brief Details	Status
V1.0	18/03/2021	Chris Bradshaw	Training Manager	Draft	N/A
V1.0	05/12/2021	Phil McGuinness	CFR Hd of Response	For Publishing	N/A
V1.1	21/10/2024	Phil McGuinness	CFR Hd of Response	New Cover Change of Sponsor. Additional References added	
V1.1	23/10/2024	Steve Norton	WM/Sgt RAF Waddington	Full review undertaken no suggested changes.	
V1.1	11/11/2024	Shane Cook	AM for DFR HQ	Stakeholder review	
V1.1	11/11/2024	Phil McGuinness	CFR Hd of Response	For Issue	Issued

Defence Fire & Rescue

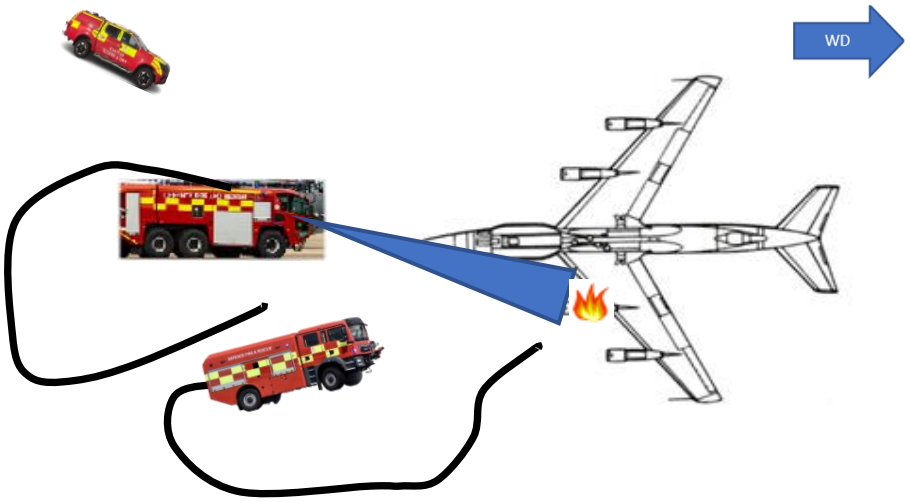
AIRCRAFT TACTICS TECHNIQUES PROCEDURES
ATTP-A17

River Joint RC 135W

1 x SUV 1 x MPRV 2 x Striker (HRET)

TTP 1 – Engine/External Fire

Event Plan - Initial Deployment



Incident Commander Considerations:

- Location of A/C
- Emergency declared
- POB
- Wind Direction
- Transit to incident
- Confirm with all crews the nature of incident and location
- Deployment of SUV
- Evacuating PAX
- DRA followed by M/ETHANE
- Inform ATC of Tactical Mode & request external resources
- Direct all operational control and implement ICS
- Consider contacting aircraft commander via ATC or 121.6 if available
- Repeat DRA as appropriate to the incident
- Prepare for ARA
- Declare state of airfield and ICAO category
- Consider use of secondary media

- Direct evacuated passengers / crew to a safe holding
- Direct Medics to SUV location
- SENGO/Sqn Support
- LAFRS
- Ensure safe handover of incident when declared safe to relevant authority
- Debrief all crew's post-incident and identify any further support required.

Crash 1 - MPRV Actions:

- Crash 1 to deploy on the port side/nose of the A/C. This will permit support of Crash 2 and additionally support redeployment as required during incident phases
- Designated BA wearers will don BA sets but remain off air until instructed by the IC
- Initially crew will respond and assist evacuating passengers/crew, who will be directed towards the SUV and away from danger area
- Vehicle commander will monitor operations of Crash 2 and identify entry points to aircraft if required (usually through nosewheel door or over wing)
- Deploy ladder if over wing access is required
- Deploy sufficient lengths of hose (45mm lay flat hose) for preparation of entry into airframe if required
- If BA entry is required, instruction will be given by the IC. BA Team will enter using suitable control measure with 45mm lay flat hose
- BA team should consider use of thermal image camera to identify internal hot spots
- BA team aim will be to ensure survivable conditions therefore ventilation should be considered at the earliest opportunity and reported to Incident Commander
- Remove any casualties as appropriate and according to SOP

N.B. No internal entry to airframe should take place until all external fires are extinguished or declared as under control.

Crash 2 - Striker HRET Actions:

- Crash 2 to deploy to engine fire. Initial use of bumper turret will be required for primary knock down using foam discharge. Consideration should be given to pump on the run with bumper turret if appropriate
- Once deployed, the driver will deploy the HRET to aircraft engine usually adopting low-attack mode
- Discharge appropriate media to extinguish engine fire through the HRET. Consider use of dual media application utilising secondary media available
- Bumper turret may be used to cool fuselage if required. Consider conservation of media used
- Consider use of FLIR to check for hot spots
- When available vehicle commander will report actions and situation update to Incident Commander (SUV)
- Vehicle Commander will provide supporting resources if incident requires BA intervention. (emergency covering line in support of BA Team, 45mm lay flat hose from MPRV, ladder access requirements)
- Vehicle commander will provide timely updates to Incident Commander and respond to command requests
- Once fire is extinguished and the aircraft has been made safe, casualties have been extracted and are in medical care, crew commander can look to close-down the incident and hand aircraft over to relevant agencies.

Specific Aircraft Hazards - (Make use of AQRC):

- 51 Sqn Aircrew are trained to evacuate via front portside exit, overwing or rear exit.
- 51 Sqn SOP requirement is to make A/C safe before evacuating
- Mk9 O2 masks on board for Aircrew's use giving between 15-30 mins supply
- At Full Take-Off Throttle – Rear up to 900ft Danger Area, intake 50ft Danger Area, 150ft HPE worn
- At Idle – Rear up to 200ft Danger Area, intake 25ft Danger Area, 60ft HPE worn
- Radar Safety Distances - Weather Radar (Nose 240°) 18m for Personnel, all other radars/radio equipment 6m all-around A/C
- 3 x 25 Litre LOX convertors, installed in baggage compartment, port side rear A/C.

Further Considerations:

- All Personnel to don BA and make ready for use with the exception of drivers and Incident Commander
- Will additional BA Team be required?
- Use of TIC
- Will engine covers need to be opened?
- ICP set up point
- LAFRS response times.

Supporting Information:

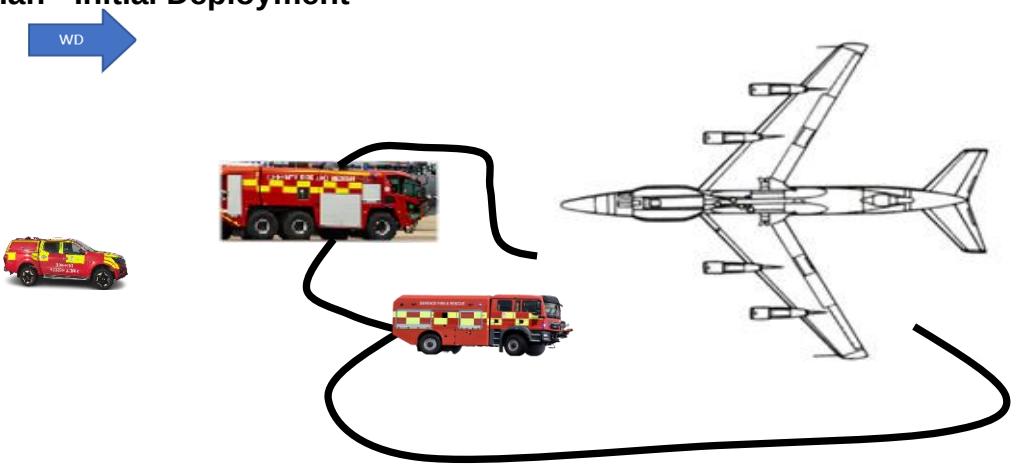
- DFR-OG 009 - Aircraft Fires
- Ops Instruction 001 - Aircraft Incidents
- Ops Instruction 002 - CFR HSE Policy
- Ops Instruction 005 - Low Speed Manoeuvring
- Ops Instruction 006 - MPRV ARFF Positioning Deployment & Task
- Ops Instruction 007 - MPRV Vehicle Operations
- Ops Instruction 009 - Oshkosh Striker HRET Positioning deployment & Task
- Ops Instruction 010 - Oshkosh Striker HRET ICs Considerations
- Ops Instruction 012 - Oshkosh Striker HRET Controls
- Ops Instruction 013 - Oshkosh Striker HRET Manual recovery
- Ops Instruction 014 - Oshkosh Striker HRET Safety Considerations
- Ops Instruction 016 - Oshkosh Striker HRET Operator Considerations
- Ops Instruction 018 - SUV positioning Deployment & Task
- Ops Instruction 033 - BA Operations
- Ops Instruction 066 - Fire Contaminants
- Ops Instruction 069 - Polymer-Composites-and-MMMF
- Op Guidance 001 - Aircraft Incidents
- Op Guidance 003 - Aircraft Fuel Fires and Foam Application
- Op Guidance 007 - Aircraft Engine Fires
- Op Guidance 009 - Incidents Involving Large Aircraft
- MOD Aircraft Crash Hazards Document Set
- NATO STANAG/TO 00-105E-9-Chapter 13 (Revision 16)
- AQRC A17 - Rivet Joint RC 135W

Training:

- Aircraft familiarization – 51 Sqn personnel
- Theoretical Lesson and Technical Note – approved by 51 Sqn.

TTP 2 – Internal/Smoke in the Cockpit

Event Plan - Initial Deployment



Incident Commander Considerations:

- Location of A/C
- Emergency declared
- POB
- Wind Direction
- Transit to incident
- Confirm with all crew's nature of incident and location
- Deployment of SUV
- Evacuating PAX
- DRA followed by M/ETHANE
- Inform ATC of Tactical Mode & request external resources
- Direct all operational control and implement ICS
- Consider contacting aircraft commander via ATC or 121.6 if available
- Consider deployment of ASPN
- Repeat DRA as appropriate to the incident
- Prepare for ARA
- Declare state of airfield and ICAO category
- Consider use of secondary media
- Direct evacuated passengers/crew to a safe holding area
- Direct Medics to SUV location
- SENGO/Sqn Support
- LAFRS
- Ensure safe handover of incident when declared safe to relevant authority
- Debrief all crew's post-incident and identify any further support required.

Crash 1 - MPRV Actions:

- Deploy to port side in preparation for entry over wing (consider normal means if open and free from casualties)
- Crew will assist passengers and aircrew to designated safe zones, while IC of vehicle observes considers safest entry point into airframe
- BA Team will prepare to enter airframe using suitable control measures while driver & IC make available equipment such as short extension ladder and 45mm lay flat hose to be used if required
- BA Team will enter airframe if necessary to make safe any risks and assist in casualty extraction, a 45m lay flat hose will be available for BA team
- BA team aim will be to ensure survivable conditions therefore ventilation should be considered at the earliest opportunity and reported to IC
- Remove any casualties as appropriate and according to SOP

Note: No internal entry to airframe should take place until all external fires are extinguished or declared as under control.

Crash 2 - HRET Actions

- Deploy to the main hazard ensuring the final approach is kept within the safe zone, use monitor to knock down mass flames if required
- Once initial discharge from the bumper monitor has taken effect, the driver will deploy the HRET to the danger area selecting the appropriate media to extinguish the fire. Consider dual media application utilising secondary media available
- Bumper turret may be used to cool fuselage if required. Consider conservation of media used
- Consider use of FLIR to check for hot spots
- When available, vehicle commander will provide situation feedback to Crew commander
- Vehicle commander will provide supporting resources if incident requires BA intervention (emergency covering line in support of BA Team, 45mm lay flat hose to MPRV, ladder access requirements)
- Once fire is extinguished and the aircraft has been made safe, casualties have been extracted and are in medical care, crew commander can look to close-down the incident.

Specific Aircraft Hazards - (Make use of AQRC):

- 51 Sqn aircrew are trained to evacuate via front portside exit, overwing or rear exit
- 51 Sqn SOP requires A/C made safe before evacuating
- Mk9 O2 masks on board for Aircrew's use giving between 15-30 mins supply
- At Full Take-Off Throttle – Rear up to 900ft Danger Area, intake 50ft Danger Area, 150ft HPE worn
- At Idle – Rear up to 200ft Danger Area, intake 25ft Danger Area, 60ft HPE worn
- Radar Safety Distances – Weather Radar (Nose 240°) 18m for Personnel, all other radars/radio equipment 6m all-around AC
- 3 x 25 Litre LOX convertors, installed in baggage compartment, port side rear of A/C.

Further Considerations:

- All Personnel to don BA and make ready for use with the exception of drivers and IC
- If fire penetrates fuselage or the situation escalates, adopt Engine Fire/External Fire TTPs (mass discharge)
- Are handheld CO2's sufficient? Will charged handlines be more effective?
- Will additional BA Team/s be required?
- ICP set up point?
- Can A/C Steps be used for extraction? Are they required?
- Stn/Sqn resources for any casualty handling
- Redeployment if situation deteriorates.

Training:

- Aircraft familiarization - 51 Sqn personnel
- *Theoretical Lesson and Technical Note – approved by 51 Sqn*

Supporting Information:

- DFR-OG 009 - Aircraft Fires
- Ops Instruction 001 - Aircraft Incidents
- Ops Instruction 002 - CFR HSE Policy
- Ops Instruction 005 - Low Speed Manoeuvring
- Ops Instruction 006 - MPRV ARFF Positioning Deployment & Task
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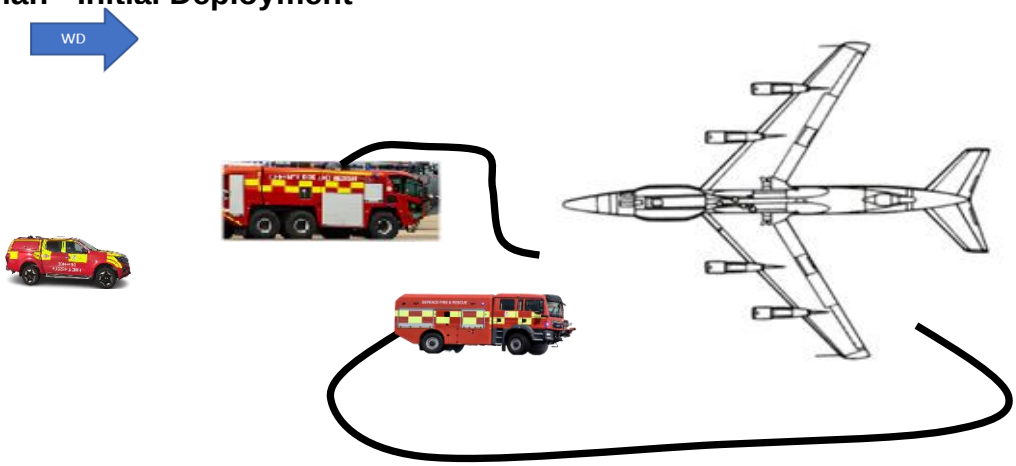
- Ops Instruction 069 - Polymer-Composites-and-MMMF
- Op Guidance 003 - Aircraft Fuel Fires and Foam Application
- Op Guidance 006 - Aircraft Internal Fires
- Op Guidance 009 - Incidents Involving Large Aircraft
- MOD Aircraft Crash Hazards Document Set
- AQRC A17 - Rivet Joint RC 135W

TTP 3 – Internal fire/Electrical Fire – Evacuation

Event Plan - Initial Deployment



Incident Commander Considerations:

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- Emergency declared
- POB
- Wind Direction
- Transit to incident
- Confirm with all crew's nature of incident and location
- Deployment of SUV
- Evacuating PAX
- DRA followed by M/ETHANE
- Inform ATC of Tactical Mode & request external resources
- Direct all operational control and implement ICS
- Consider contacting aircraft commander via ATC or 121.6 if available
- Consider deployment of ASPN
- Repeat DRA as appropriate to the incident
- Prepare for ARA
- Declare state of airfield and ICAO category
- Consider use of secondary media
- Direct evacuated passengers/crew to a safe holding area
- Direct Medics to SUV location
- SENGO/Sqn Support
- LAFRS
- Ensure safe handover of incident when declared safe to relevant authority
- Debrief all crew's post-incident and identify any further support required.

Crash 1 - MPRV Actions:

- Deploy to port side in preparation for entry over wing (consider normal means if open and free from casualties)
- Crew will assist passengers and aircrew to designated safe zones, while IC of vehicle considers safest entry point into airframe
- BA Team will prepare to enter airframe using suitable control measures while driver & IC make available equipment such as short extension ladder and 45mm lay flat hose to be used if required
- BA Team will enter airframe if necessary to make safe any risks and assist in casualty extraction, a 45m lay flat hose will be available for BA team
- BA team aim will be to ensure survivable conditions therefore ventilation should be considered at the earliest opportunity and reported to IC
- Remove any casualties as appropriate and according to SOP

Note: No internal entry to airframe should take place until all external fires are extinguished or declared as under control.

Crash 2 - HRET Actions

- Deploy to the main hazard ensuring the final approach is kept with the safe zone, use monitor to knock down mass flames if required
- Once initial discharge from the bumper monitor has taken effect, the driver will deploy the HRET to the danger area selecting the appropriate media to extinguish the fire. Consider dual media application utilising secondary media available
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- Vehicle commander will provide supporting resources if incident requires BA intervention (emergency covering line in support of BA Team, 45mm lay flat hose to MPRV, ladder access requirements)
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Specific Aircraft Hazards - (Make use of AQRC):

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- Radar Safety Distances – Weather Radar (Nose 240°) 18m for Personnel, all other radars/radio equipment 6m all-around AC
- 3 x 25 Litre LOX convertors, installed in baggage compartment, port side rear of A/C.

Further Considerations:

- All Personnel to don BA and make ready for use with the exception of drivers and IC
- If fire penetrates fuselage or the situation escalates, adopt Engine Fire/External Fire TTPs (mass discharge)
- Are handheld CO2's sufficient? Will charged handlines be more effective?
- Will additional BA Team/s be required?
- ICP set up point?
- Can A/C Steps be used for extraction? Are they required?
- Stn/Sqn resources for any casualty handling
- Redeployment if situation deteriorates.

Training:

- Aircraft familiarization - 51 Sqn personnel
- *Theoretical Lesson and Technical Note – approved by 51 Sqn*

Supporting Information:

- DFR-OG 009 - Aircraft Fires
- Ops Instruction 001 - Aircraft Incidents
- Ops Instruction 002 - CFR HSE Policy
- Ops Instruction 005 - Low Speed Manoeuvring
- Ops Instruction 006 - MPRV ARFF Positioning Deployment & Task
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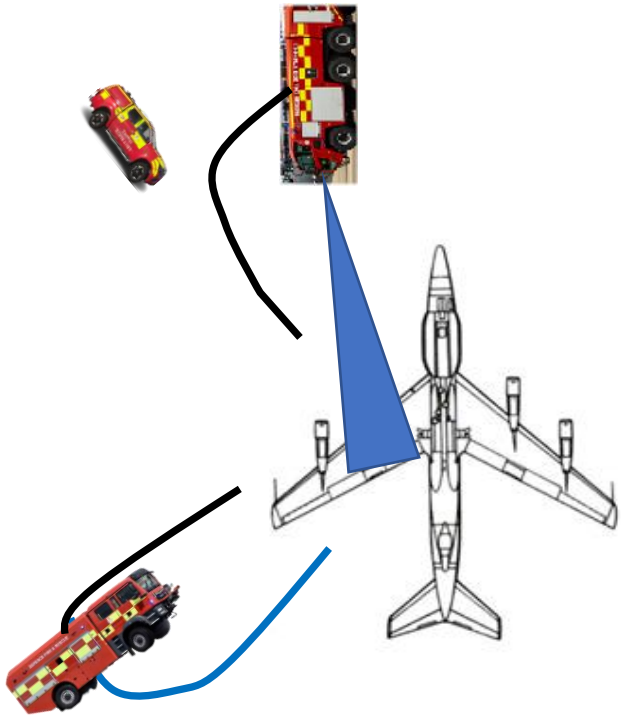
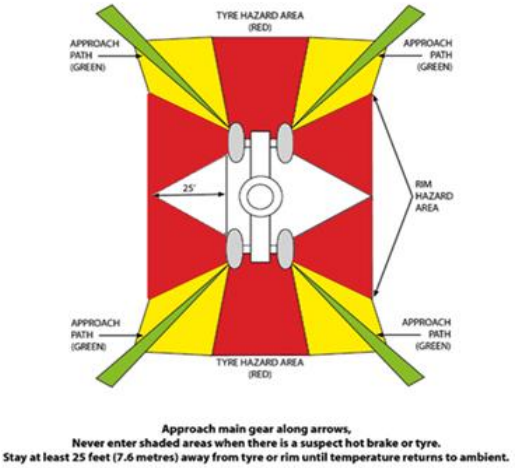
- Ops Instruction 066 - Fire Contaminants
- Ops Instruction 069 - Polymer-Composites-and-MMMF
- Op Guidance 003 - Aircraft Fuel Fires and Foam Application
- Op Guidance 006 - Aircraft Internal Fires
- Op Guidance 009 - Incidents Involving Large Aircraft
- MOD Aircraft Crash Hazards Document Set
- AQRC A17 - Rivet Joint RC 135W

TTP 4 – Wheel Assembly Incidents

Event Plan - Initial Deployment





Approach main gear along arrows,
Never enter shaded areas when there is a suspect hot brake or tyre.
Stay at least 25 feet (7.6 metres) away from tyre or rim until temperature returns to ambient.

Incident Commander Considerations:

- Gather information from available sources such as ATC enroute:
  - POB?
  - Any other complications?
- The Crew Commander is to prepare to react to the potential of:
  - Aircraft hot brakes
  - Wheel brake fires
  - Undercarriage collapse
- Correct deployment on aircraft, taking into consideration wind direction
- I/C to book in attendance at incident with ATC controller
- Owing to the potential of a minor incident involving an undercarriage to rapidly escalate into a major fire all Fire Service personnel should consider:
  - Possible spread of fire and heat to fuel tanks and fuselage
  - Evacuating aircrew
  - Danger zones
  - Sudden movement or collapse of the aircraft
  - Rapid and effective intervention is essential if the incident is to be confined to the undercarriage assembly itself, preventing the spread of flame to the aircraft fuselage
  - Always keep away from the disintegration zones, ensuring hoses are run out avoiding these areas as far as possible
- Carry out a dynamic risk assessment, identify hazards, any possible casualties in the vicinity of aircraft which IC can rescue, evaluate risks and select safe systems of work, declare tactical mode to all personnel and ATC

- Fire and Rescue Service personnel should be dressed in full protective clothing with visors down and those working in the vicinity of an undercarriage should wear respiratory protective equipment and aural protection
- Dry powder should be considered especially where hydraulic oils are on fire. Advantages of dry chemical powders:

    - Envelopes and covers the whole heated surface simultaneously and uniformly
    - Low cooling effect, therefore avoiding thermal shock
    - Powder forms a coating where there is oil contamination
    - Effective extinguishing agent on hydraulic fluids and lubricants

- The duty fire crew commander will retain command and control of the incident site until relieved by the nominated incident commander
- Liaise with pilot via ATC or 121.6, if available, at earliest opportunity to confirm immediate shut down of engines to reduce escalation of incident and evacuate aircraft safely
- Provide M/ETHANE report
- Direct other agencies if required
- Maintain contact with ATC and relevant agencies throughout.

Crash 1 - MPRV Actions:

- Deploy vehicle to rescue side of aircraft taking into consideration wind direction, gradient, passengers and other ARFF vehicle positions
- Crash 1 crew are to attempt to deploy on the Port side of the aircraft. Using the Raytek temperature gun, ascertain the temperatures of:

    - Wheel brakes / Wheel Rims
    - Tyres and transference of heat to the undercarriage

- Depending on the type of incident, deploy Dry Powder extinguishers, crash line, CO2 and 45mm hose.
- Prepare to approach the aircraft to chock the front wheel
- Report all findings and temperature readings to the Crew Commander
- Be prepared to operate Monitor
- Don BA and utilise Initial Deployment procedures if required to prevent the incident escalating
- Maintain contact with IC.

Note: No internal entry to airframe should take place until all external fires are extinguished or declared as under control.

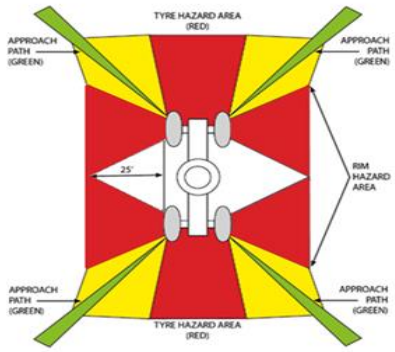
Crash 2 - HRET Actions

- Deploy vehicle to rescue side of aircraft taking into consideration wind direction, gradient, passengers and other ARFF vehicle positions
- Be prepared to operate monitor
- Prepare to approach the aircraft to chock the front wheel.
- Don BA and utilize Initial Deployment procedures if required to prevent the incident escalating
- Vehicle IC to act as Sector Commander and maintain contact with IC

Specific Aircraft Hazards - (Make use of AQRC):

- 51 Sqn aircrew are trained to evacuate via front portside exit, overwing or rear exit
- 51 Sqn SOP requires A/C to be made safe before evacuating

- Mk9 O2 masks on board for Aircrew's use giving between 15-30 mins supply
- At Full Take-Off Throttle – Rear up to 900ft Danger Area, intake 50ft Danger Area, 150ft HPE worn
- At Idle – Rear up to 200ft Danger Area, intake 25ft Danger Area, 60ft HPE worn
- Radar Safety Distances – Weather Radar (Nose 240°) 18m for Personnel, all other radars/radio equipment 6m all-around AC
- Wheel Assembly hazard areas are fully in line with wheels or alongside the hub. Ideal entry point 45° taken from where thread meets tyre wall
- 3 x 25 Litre LOX convertors, installed in baggage compartment, in the port side rear of A/C.



Approach main gear along arrows,
Never enter shaded areas when there is a suspect hot brake or tyre.
Stay at least 25 feet (7.6 metres) away from tyre or rim until temperature returns to ambient.

Further Considerations:

- If fire penetrates fuselage or the situation escalates, adopt Engine Fire/External Fire TTPs (mass discharge)
- Are handheld CO2's sufficient? Will charged handlines be more effective?
- Access to wheel assembly
- Sqn response/actions
- Undercarriage pins
- Redeployment if situation deteriorates.

Supporting Information:

- DFR-OG 009 - Aircraft Fires
- Ops Instruction 001 - Aircraft Incidents
- Ops Instruction 002 - CFR HSE Policy
- Ops Instruction 005 - Low Speed Manoeuvring
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Training:

- Aircraft familiarization - 51 Sqn personnel
- *Theoretical Lesson and Technical Note – approved by 51 Sqn*