



TACTICS TECHNIQUES & PROCEDURES

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Airframe: Typhoon FGR 4 2 MPRV Response

Supersedes: N/A

Applies to: CFR
TG 7
RN (AH)
DFR

Stakeholders: CFR HQ
DFSR

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Sponsor Details: Alex Clark
Chief Fire Officer
Capita Fire & Rescue (CFR) HQ
Reading Bridge House
1st Floor
George Street
Reading
RG1 8PJ

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Capita Fire & Rescue



AIRCRAFT TACTICS TECHNIQUES PROCEDURES

Typhoon FGR 4 Note:

This TTP applies to the operation of the Typhoon utilising a 2 MPRV response

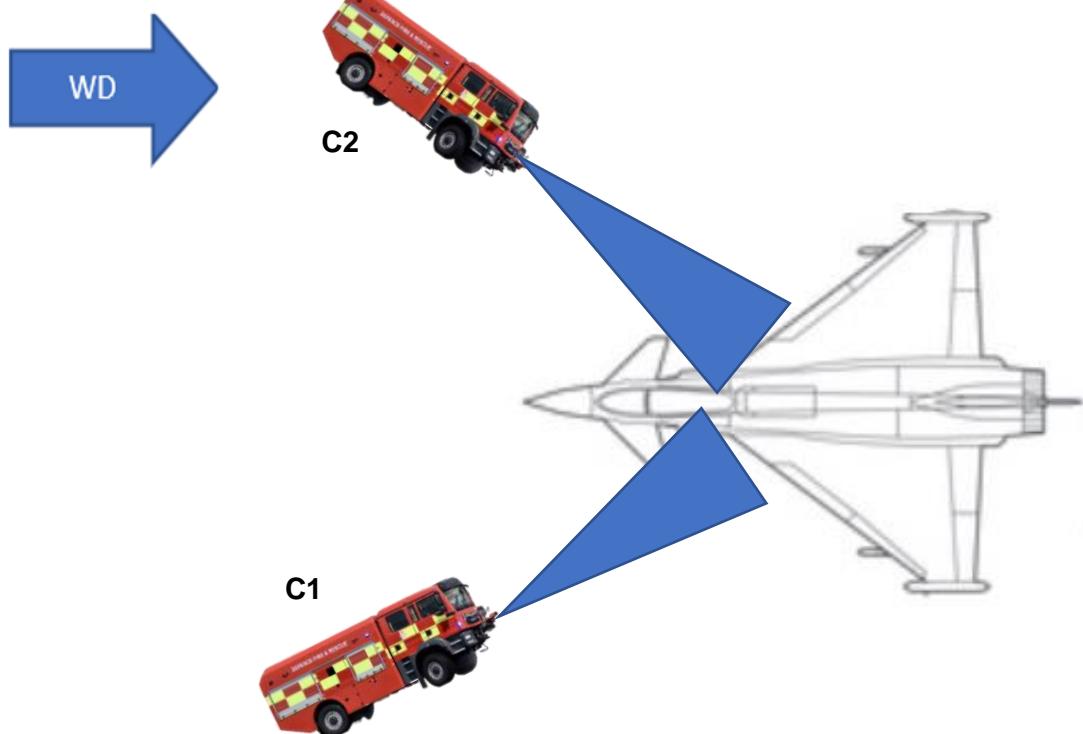
Crash1 MPRV

Crash 2 MPRV

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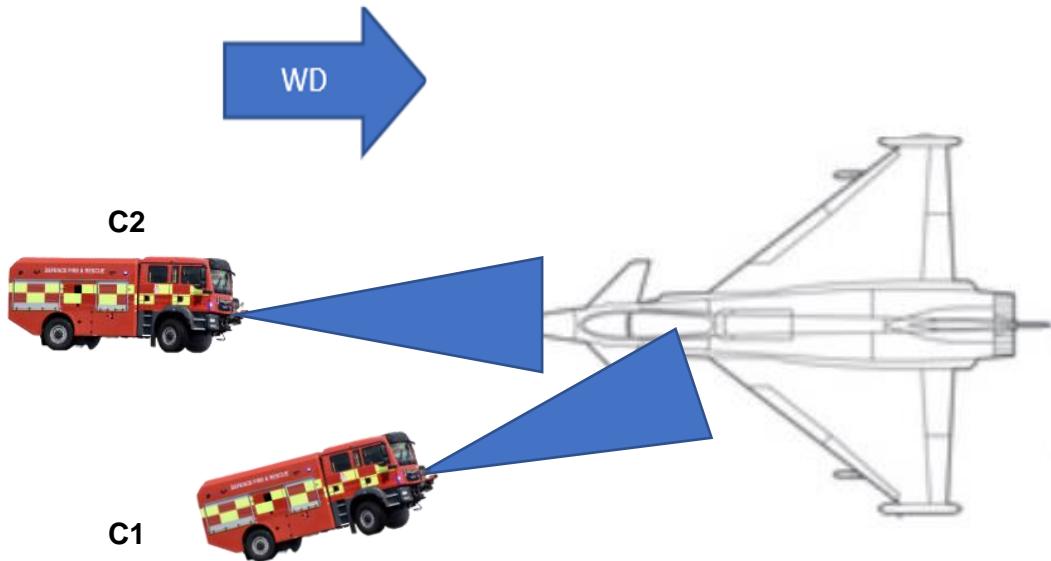
TTP 1 – Engine Fire (ARMED)

Event Plan - Initial Deployment:





TTP 1 – Engine Fire (UN - ARMED)



Incident Commander Considerations:

- Location of A/C
- Emergency declared
- Aircraft armed or unarmed (**ASRAM or AMRAM deployment consideration**)
- POB (aircraft variant)
- Wind Direction
- Transit to incident
- Confirm with all crews the nature of incident and location
- Evacuating PAX
- DRA followed by M/ETHANE
- Inform ATC of Tactical Mode & request external resources
- Direct all operational control and implement ICS
- Contacting aircraft commander via ATC or direct visually, to ensure shutdown of engine and fuel cocks (IAW BTY 103 Crash Rescue Procedures & BTY 400 CES Safety for Emergency Crews)
- Repeat DRA as appropriate to the incident
- Prepare for ARA
- Declare state of airfield and ICAO category
- Consider use of secondary media
- Direct evacuated flight crew to safe holding area prior to designated casualty clearance set up by Medics
- Direct Medics to 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 according to event plan for ARMED or UNARMED aircraft. This will permit support of Crash 2 and additionally support redeployment as required during incident phases
- Designated BA wearers (led by JNCO) will don BA sets but remain off air until instruction from Incident Commander
- Initially, crew will respond and assist evacuating crew, who will be directed towards the medics and away from danger area
- Vehicle commander will monitor operations of Crash 2 and assist with extinguishment of the fire and protection of the cockpit as required
- Prepare ladder for rescue requirements as appropriate
- Prepare for use of 9kg dry powder extinguisher and appropriate hose line in preparation of engine fire access following mass discharge knockdown if required
- If engine fire access is required, instruction will be given by Incident Commander. BA Team will enter the area using suitable control measure with appropriate media and hose line
- Incident Commander should consider use of thermal image camera to identify hot spots, monitoring the temperature of armaments and the airframe which is to be under 150 degrees due to Polymer Composites before the use of dust masks is permitted
- BA team aim will brief Incident Commander when extinguishment of fire has been achieved
- BA team should chock and pin airframe
- BA team should gain access and make safe the airframe IAW:
 - Engineering Authority BTY 103 Crash Rescue Procedures
 - Engineering Authority BTY 400 CES Safety for Emergency crew
- AAES - Request specialist advice for AAES. Establish cordon of 30m for ejected AAES
- Make external systems safe (weapons, defensive suites, canopy)
- Gain access into cockpit (Normal/Emergency/Forcible) make safe AAES/special risks, shut down A/c (if required) and initiate the rescue of trapped aircrew
- Working from ladders or other suitable platforms may have to be considered
- Foam and water sprays should be used externally to keep adjacent structures/explosive stores cool.
- Remove any casualties as appropriate and according to local SOP / IAW TRA.

N.B. No direct access to airframe should take place until mass discharge has extinguished external engine fire.

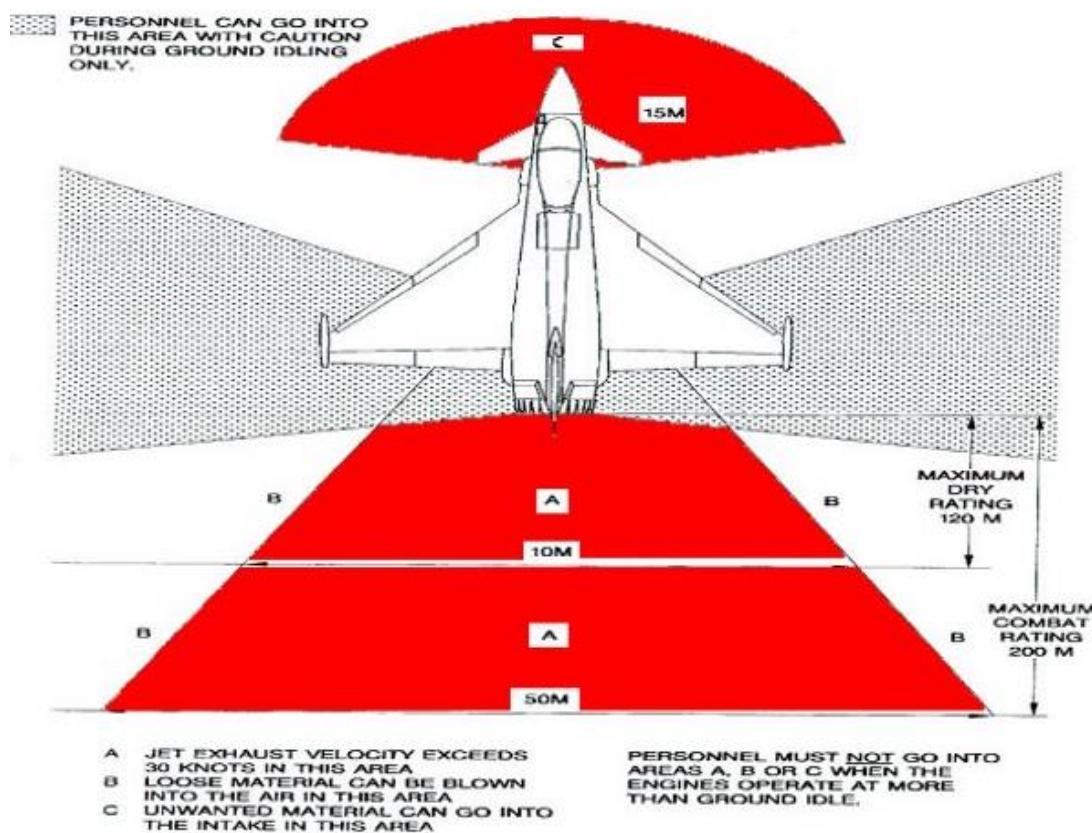
CRASH 2 - MPRV Actions

- Crash 2 to deploy according to event plan for ARMED or UN-ARMED aircraft. Initial use of bumper turret will be required for primary knock down using foam discharge. Consideration should be given to the use of vehicle secondary media (DP) if appropriate as dual media application
- Bumper turret may be used to cool fuselage if required following mass discharge to engine fire. Consider conservation of media used
- Bumper turret may be required to ensure any fuel spillage has foam blanket applied
- Aviation fuel/hydraulic oils and composite fibres may be released. An aspirated foam blanket should be maintained over any such releases for the duration of the incident
- Incident Commander will provide supporting resources if incident requires BA intervention (emergency covering line in support of BA Team, from MPRV, ladder access requirements)
- If a rescue task is required Crash 1 driver and passenger will enter Risk Area utilizing dust masks (when temp under 150 degrees) to assist the BA team in gaining entry and shutting down the airframe and carryout rescue



- If Rescue Task is required Crash 2 driver will remain with the vehicle to provide scene safety from the monitor in event of reignition
- If BA teams are utilised the Incident Commander is to ensure that the following information is passed to ATC
 - The number of BA in use
 - The purpose, e.g. ventilation
 - What Stage of control is in operation?
 - What additional BA resources are required?
- 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):



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
- Typhoon APU fires can vary from cause and potential outcome, so I/C to continually assess and implement safe systems of work to deal with incident. This involves using TIC to check heat transfers and temperature on typhoon. If aircraft is armed then continually assess temperature of armaments.
- Deployment of vehicle and portable secondary media.
- ICP set up point
- LAFRS response times.



Supporting Information:

- NOG
- CFR ARFF TOG
- CFR Ops Instruction 001 – Aircraft Incidents
- CFR Ops Instruction 002 – CFR HSE Policy
- CFR Ops Instruction 005 – Low Speed Manoeuvring
- CFR Ops Instruction 006 – MPRV ARFF Positioning Deployment & Task
- CFR Ops Instruction 007 – MPRV Vehicle Operations
- CFR Ops Instruction 033 – BA Operations
- CFR Op Guidance 001 – 2020 – Aircraft Incidents
- CFR Op Guidance 003 – 2020 – Aircraft Fuel Fires
- CFR Op Guidance 007 – 2020 – Aircraft Engine Fire
- MOD Aircraft Crash Hazards Document Set
- NATO STANAG/TO 00-105E-9-Chapter 13 (revision 16)
- AQRC A28.

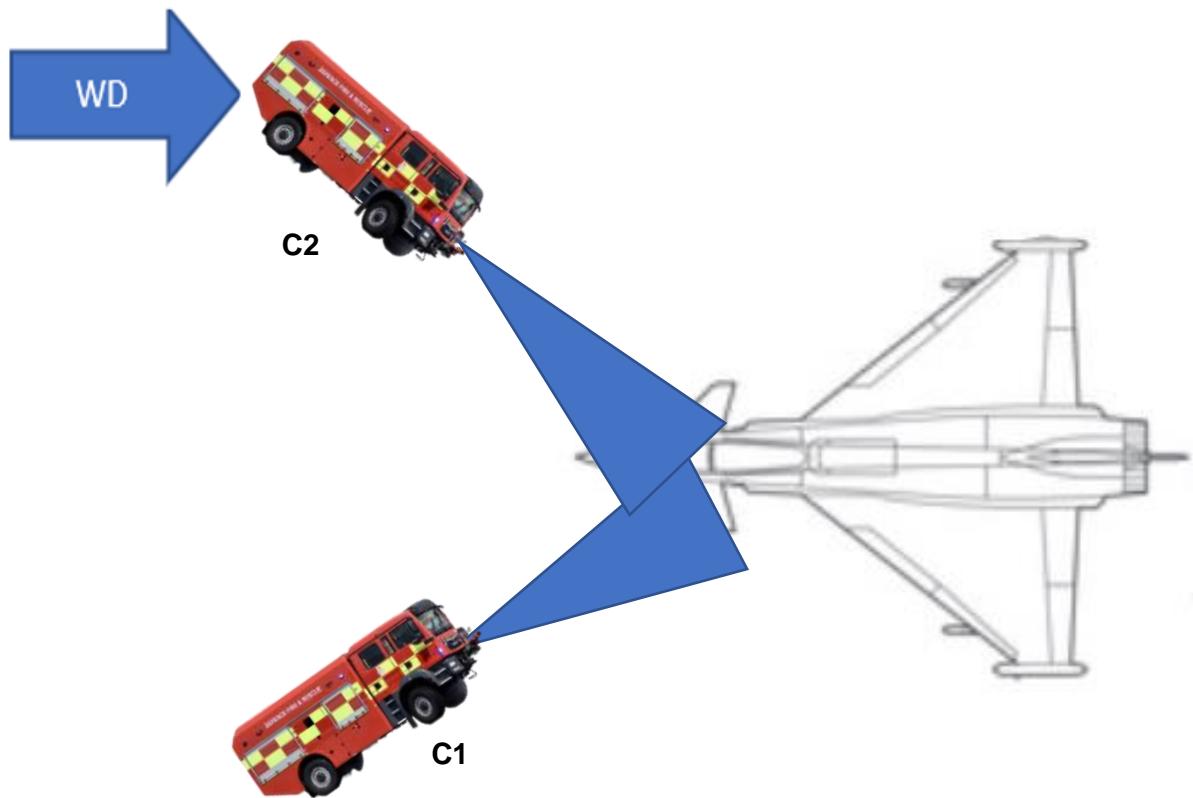
Training:

- Aircraft familiarization – Sqn personnel
- Theoretical lesson Typhoon A/C
- Engineering Authority BTY 103 Crash Rescue Procedures
- Engineering Authority BTY 400 CES Safety for Emergency crew.

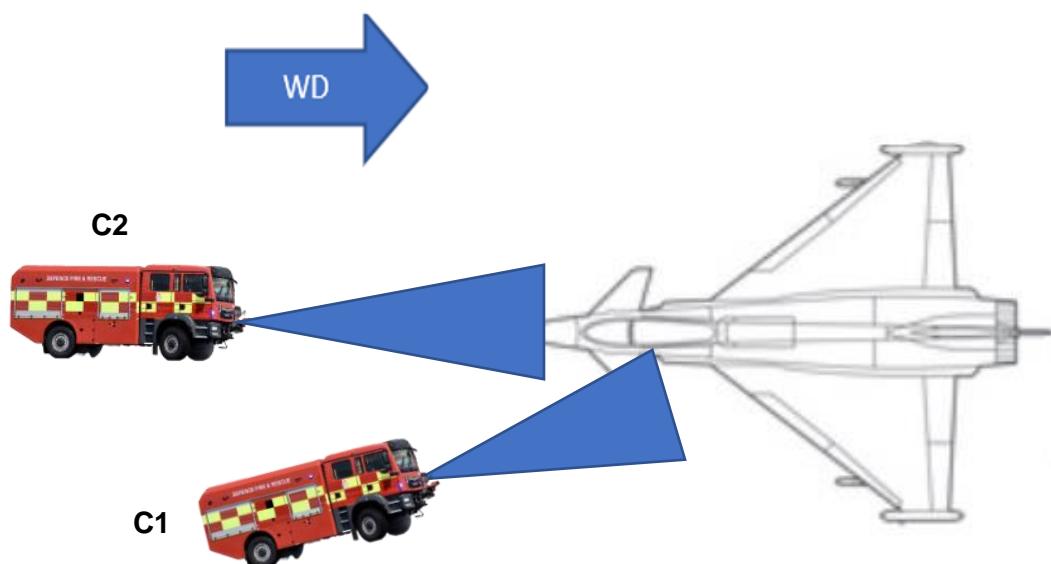


TTP 2 – External Fire (Armed)

Event Plan - Initial Deployment



TTP 2 – External Fire (Unarmed)





Incident Commander Considerations:

- Location of A/C
- Emergency declared
- Aircraft armed or unarmed (**ASRAM or AMRAM deployment consideration**)
- POB (aircraft variant)
- Wind Direction
- Transit to incident
- Confirm with all crews the nature of incident and location
- Evacuating PAX (ejected pilot)
- DRA followed by M/ETHANE
- Inform ATC of Tactical Mode & request external resources
- Direct all operational control and implement ICS
- Contacting aircraft commander via ATC or direct visually, to ensure shutdown of engine and fuel cocks (IAW BTY 103 Crash Rescue Procedures & BTY 400 CES Safety for Emergency Crews)
- Repeat DRA as appropriate to the incident
- Prepare for ARA
- Declare state of airfield and ICAO category
- Consider use of secondary media
- Direct evacuated flight crew to safe holding area prior to designated casualty clearance set up by Medics
- Direct Medics to 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 according to event plan for ARMED or UN-ARMED aircraft or to the side the fire is located. This will permit support of Crash 2 and additionally support redeployment as required during incident phases
- Designated BA wearers (led by JNCO) will don BA sets but remain off air until instruction from Incident Commander
- Initially crew will respond and assist evacuating crew, who will be directed towards the medics and away from danger area
- Vehicle commander will monitor operations of Crash 2 and assist with extinguishment of the fire and protection of the cockpit as required
- Prepare ladder for rescue requirements as appropriate
- Prepare for use of 9kg dry powder extinguisher and appropriate hose line in preparation of engine fire access following mass discharge knockdown if required
- If engine fire access is required, instruction will be given by Incident Commander. BA Team will enter the area using suitable control measure with appropriate media and hose line
- Incident Commander should consider. use of thermal image camera to identify hot spots, monitoring the temperature of armaments and the airframe which is to be under 150 degrees due to Polymer Composites before the use of dust masks is permitted.
- BA team aim will brief Incident Commander when extinguishment of fire has been achieved.
- BA team should chock and pin airframe
- BA team should gain access and make safe the airframe IAW:
 - Engineering Authority BTY 103 Crash Rescue Procedures
 - Engineering Authority BTY 400 CES Safety for Emergency crew
- **AAES** - Request specialist advice for AAES. Establish cordon of 30m for ejected AAES.
- Make external systems safe (weapons, defensive suites, canopy)



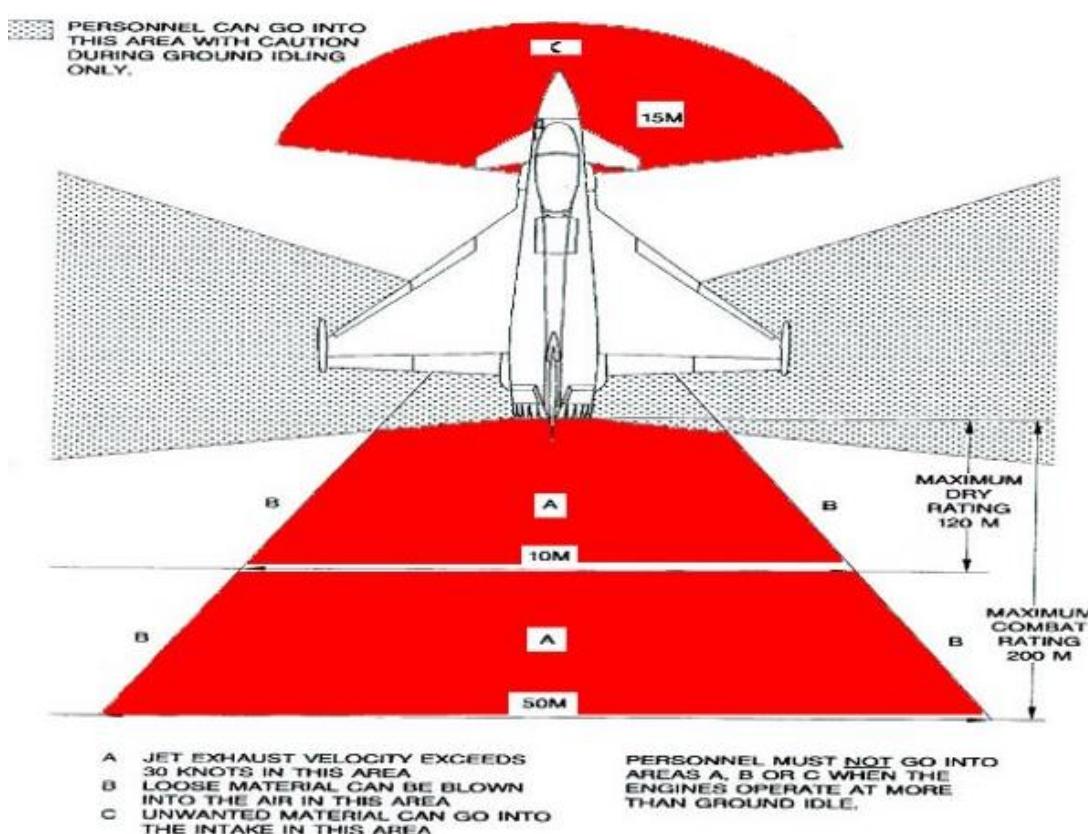
- Gain access into cockpit (Normal/Emergency/Forcible) make safe AAES/special risks, shut down A/c (if required) and initiate the rescue of trapped aircrew
- Working from ladders or other suitable platforms may have to be considered
- Foam and water sprays should be used externally to keep adjacent structures/explosive stores cool
- Remove any casualties as appropriate and according to local SOP / IAW TRA.

N.B. No direct access to airframe should take place until mass discharge has extinguished external fire.

CRASH 2 - MPRV Actions

- Crash 2 to deploy according to event plan for ARMED or UN-ARMED aircraft. Initial use of bumper turret will be required for primary knock down using foam discharge. Consideration should be given to the use of vehicle secondary media (DP) if appropriate as dual media application
- Bumper turret may be used to cool fuselage if required following mass discharge to engine fire. Consider conservation of media used
- Bumper turret may be required to ensure any fuel spillage has foam blanket applied. Aviation fuel/hydraulic oils and composite fibers may be released. An aspirated foam blanket should be maintained over any such releases for the duration of the incident
- Incident Commander will provide supporting resources if incident requires BA intervention. (emergency covering line in support of BA Team, from MPRV, ladder access requirements)
- If a rescue task is required Crash 1 driver and passenger will enter Risk Area utilizing dust masks (when temp under 150 degrees) to assist the BA team in gaining entry and shutting down the airframe and carryout rescue
- If Rescue Task is required Crash 2 driver will remain with the vehicle to provide scene safety from the monitor in event of reignition
- If BA teams are utilised the Incident Commander is to ensure that the following information is passed to ATC
 - The number of BA in use
 - The purpose, e.g. ventilation
 - What Stage of control is in operation?
 - What additional BA resources are required?
- 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):



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
- Deployment of vehicle and portable secondary media.
- ICP set up point
- Due to potential for fibres created in fire situations consideration should be given to the need to clean non-disposable personal protective equipment at the earliest opportunity.
- Casualties contaminated with fire residues from composites should have outer clothing removed where possible, to prevent fibres being transported away from the crash site and ambulance/medical teams advised as to the irritant nature of these products.
- The treatment of casualties with serious/life threatening injuries should not be delayed. Medical teams must be advised of the hazards posed by contaminated clothing.
- It is generally considered that normal washing protocols for personal protective equipment will suffice following normal Fire and Rescue Service (F&RS) operations at aircraft fire/crash scenarios. Incident commanders may wish to liaise with AAIB or Joint Aircraft Recovery & Transportation Squadron (JARTS) on the scene advisers with regards to cleaning protocols.
- LAFRS response times.

Supporting Information:

- NOG
- CFR ARFF TOG
- CFR Ops Instruction 001 – Aircraft Incidents



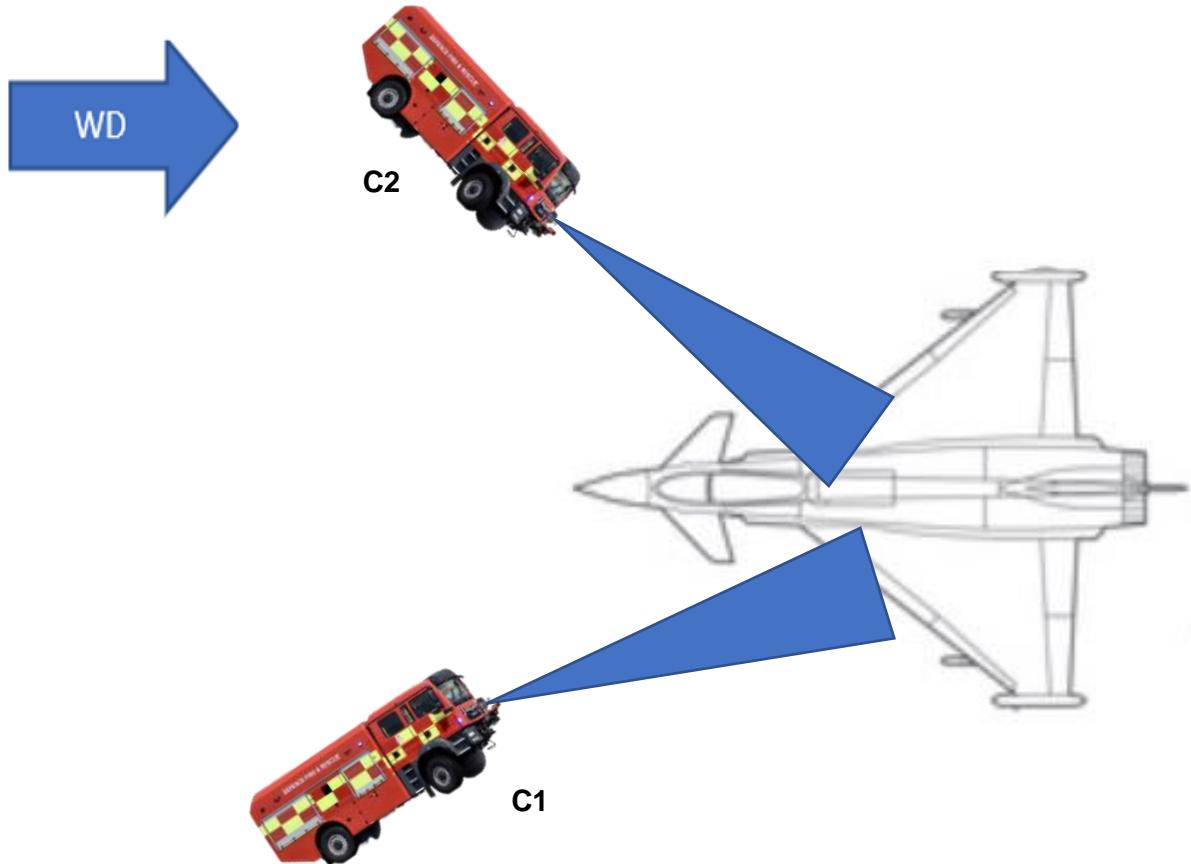
- CFR Ops Instruction 002 – CFR HSE Policy
- CFR Ops Instruction 005 – Low Speed Manoeuvring
- CFR Ops Instruction 006 – MPRV ARFF Positioning Deployment & Task
- CFR Ops Instruction 007 – MPRV Vehicle Operations
- CFR Ops Instruction 033 – BA Operations
- CFR Op Guidance 001 – 2020 – Aircraft Incidents
- CFR Op Guidance 003 – 2020 – Aircraft Fuel Fires
- CFR Op Guidance 007 – 2020 – Aircraft Engine Fire
- MOD Aircraft Crash Hazards Document Set
- NATO STANAG/TO 00-105E-9-Chapter 13 (revision 16)
- AQRC A28.

Training:

- Aircraft familiarization – Sqn personnel
- Theoretical lesson Typhoon A/C
- Engineering Authority BTY 103 Crash Rescue Procedures
- Engineering Authority BTY 400 CES Safety for Emergency crew.

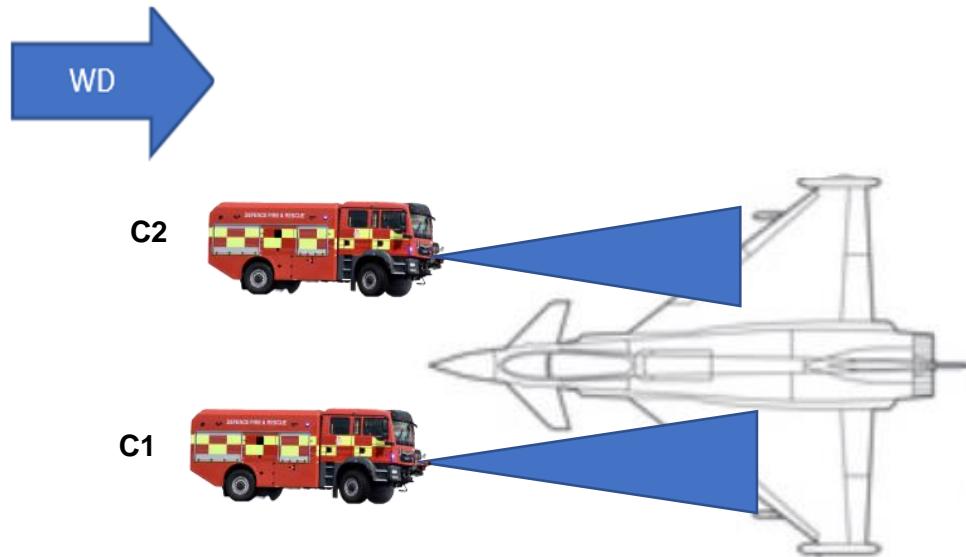
TTP 3 – Undercarriage Incident / Fire (ARMED)

Event Plan - Initial Deployment





TPP 3 – Undercarriage Incident / Fire (UNARMED)



Incident Commander Considerations:

- Location of A/C
- Emergency declared
- Aircraft armed or unarmed (**ASRAM or AMRAM deployment consideration**)
- POB (aircraft variant)
- Wind Direction
- Transit to incident
- Confirm with all crews the nature of incident and location
- Evacuating PAX
- DRA followed by M/ETHANE
- Inform ATC of Tactical Mode & request external resources
- Direct all operational control and implement ICS
- Contacting aircraft commander via ATC or direct visually, to ensure shutdown of engine and fuel cocks (IAW BTY 103 Crash Rescue Procedures & BTY 400 CES Safety for Emergency Crews)
- Repeat DRA as appropriate to the incident
- Prepare for ARA
- Declare state of airfield and ICAO category
- Consider use of secondary media
- Direct evacuated flight crew to safe holding area prior to designated casualty clearance set up by Medics
- Direct Medics to 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 according to event plan for ARMED or UN-ARMED aircraft. Initial use of bumper turret will be required for primary knock down using foam discharge. Consideration should be given to the use of vehicle secondary media (DP) if appropriate as dual media application.

N.B. Where no fire is evident media should not be applied but crews should standby

- Designated BA wearers will don BA sets but remain off air until instruction from Incident Commander
- Initially crew will respond and assist evacuating crew, who will be directed towards the medics and away from danger area
- Vehicle commander will monitor operations of Crash 2 and assist with protection of the cockpit as required
- Prepare for use of 9kg dry powder extinguisher and appropriate hose line in preparation for access to undercarriage void following mass discharge knockdown if required
- If undercarriage void fire access is required, instruction will be given by Incident Commander. BA Team will enter the area using suitable control measure with hose line and 9kg dry powder extinguisher
- Incident Commander should consider use of thermal image camera to identify hot spots, monitoring the temperature of armaments and the airframe which is to be under 150 degrees due to Polymer Composites before the use of dust masks is permitted
- BA team aim will brief Incident Commander when extinguishment of fire has been achieved
- BA team should chock and pin airframe
- BA team should gain access and make safe the airframe IAW:
 - Engineering Authority BTY 103 Crash Rescue Procedures
 - Engineering Authority BTY 400 CES Safety for Emergency crew
- AAES - Request specialist advice for AAES. Establish cordon of 30m for ejected AAES
- Make external systems safe (weapons, defensive suites, canopy)
- Gain access into cockpit (Normal/Emergency/Forcible) make safe AAES/special risks, shut down A/c (if required) and initiate the rescue of trapped aircrew
- Working from ladders or other suitable platforms may have to be considered.
- Foam and water sprays should be used externally to keep adjacent structures/explosive stores cool
- Remove any casualties as appropriate and according to local SOP / IAW TRA.

CRASH 2 - MPRV Actions

- Crash 2 to deploy according to event plan for ARMED or UN-ARMED aircraft. Initial use of bumper turret will be required for primary knock down using foam discharge. Consideration should be given to the use of vehicle secondary media (DP) if appropriate as dual media application.

N.B. Where no fire is evident media should not be applied but crews should standby in case of fire initiation.

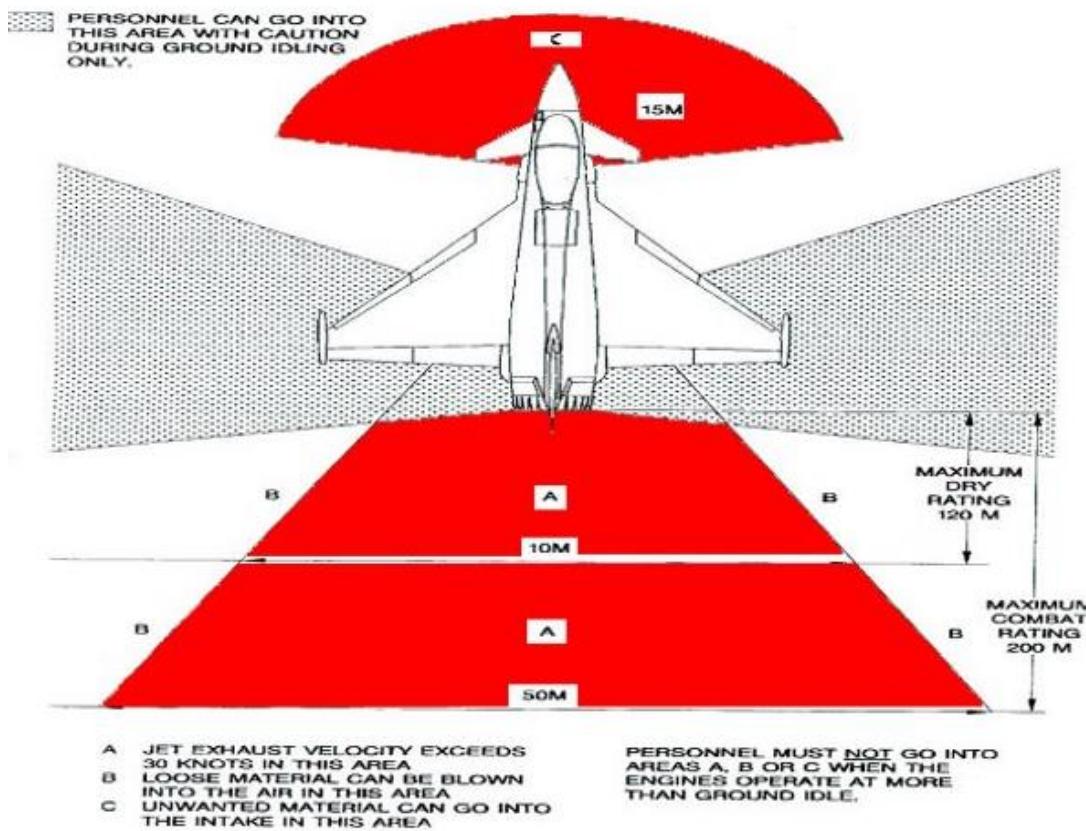
- Bumper turret may be used to cool fuselage if required following mass discharge to engine fire. Consider conservation of media used
- Bumper turret may be required to ensure any fuel spillage has foam blanket applied.



Aviation fuel/hydraulic oils and composite fibers may be released. An aspirated foam blanket should be maintained over any such releases for the duration of the incident

- Incident Commander will provide supporting resources if incident requires BA intervention. (emergency covering line in support of BA Team, from MPRV, ladder access requirements)
- If a rescue task is required Crash 1 driver and passenger will enter Risk Area utilizing dust masks (when temp under 150 degrees) to assist the BA team in gaining entry and shutting down the airframe and carryout rescue
- If Rescue Task is required Crash 2 driver will remain with the vehicle to provide scene safety from the monitor in event of reignition
- If BA teams are utilised the Incident Commander is to ensure that the following information is passed to ATC
 - The number of BA in use
 - The purpose, e.g. ventilation
 - What Stage of control is in operation?
 - What additional BA resources are required?
- 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):



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
- Deployment of vehicle and portable secondary media.



- ICP set up point
- Hazards, gaining access to wheel assemblies.
- Pinning undercarriage (The following authorisations refer):
 - BTY 103 Crash Rescue Procedure/Typhoon
 - BTY400 CES Safety for emergency crews/Typhoon
 - Moving aircraft surfaces; Flaps etc.
 - Unstable aircraft fuselage.
 - Fuel spill.
 - Armed aircraft.
 - Live ejection seats (AAES).
 - Intakes, running engines to allow A/C's wheel fans to operate.
 - A/C to be shut down IAW DAP 101B-5400-1A
 - All personnel in the risk area (engine fire vicinity) to be in full PPE wearing Breathing Apparatus,
 - LAFRS response times.

Supporting Information:

- NOG
- CFR ARFF TOG
- CFR Ops Instruction 001 – Aircraft Incidents
- CFR Ops Instruction 002 – CFR HSE Policy
- CFR Ops Instruction 005 – Low Speed Manoeuvring
- CFR Ops Instruction 006 – MPRV ARFF Positioning Deployment & Task
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- CFR Op Guidance 007 – 2020 – Aircraft Engine Fire
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- AQRC A28.

Training:

- Aircraft familiarization – Sqn personnel
- Theoretical lesson Typhoon A/C
- Engineering Authority BTY 103 Crash Rescue Procedures
- Engineering Authority BTY 400 CES Safety for Emergency crew.

Document Control

Version	Date	Author	Role/Name	Status	Changes
v1	September 2021	A. Carr	CY FS Training Mgr	Current/draft	N/A