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Defence Fire and Rescue Tactics, Techniques & Procedures

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	RN Aircraft Handler	✓	RAF Fire and Rescue	✓
	DFRS LEC		Other FRS Providers ¹	✓
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Technical Approved DFR HQ & CFR
Operations Committee

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¹ Other FRS Providers include Babcock, Mitie, QinetiQ Fire Services



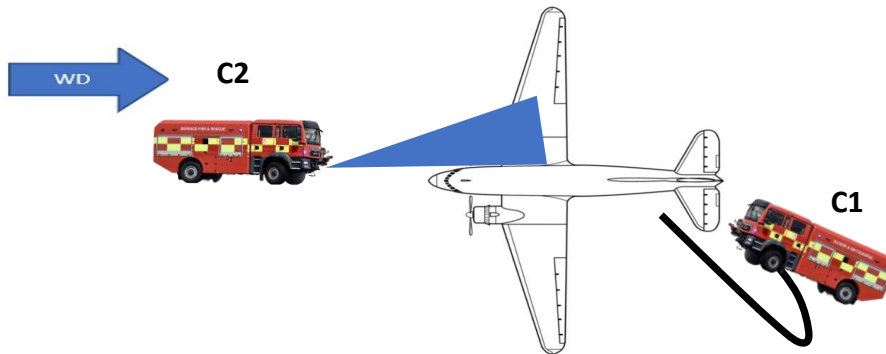
AIRCRAFT TACTICS TECHNIQUES PROCEDURES

Douglas Dakota

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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
- Evacuating PAX
- DRA followed by M/ETHANE
- Inform ATC of Tactical Mode & request external resources
- Direct all operational control and implement ICS
- Contact aircraft commander via ATC, or direct visually, to ensure shutdown of engine and fuel cocks B172 CGY BBMF Dakota Crash/Rescue
- Repeat DRA as appropriate to the incident
- Prepare for ARA
- Declare state of airfield and ICAO category
- Consider use of secondary media initially as mass discharge dual application.
- Direct evacuated flight crew to safe holding area prior to designated casualty clearance set up by Medics
- Direct Medics to location
- SENG/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 deploys to the rear of the aircraft on the port side covering the main egress and exit point. This will permit support of Crash 2 and additionally support redeployment as required during incident phases
- Be aware of PAX exiting the aircraft port rear.
- Designated BA wearers (Led by JNCO²) 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 fuselage as required.
- Prepare for use of 9kg dry powder extinguisher together with appropriate equipment such as DP Fog Spike and an 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 extinguishing media and equipment and with an appropriate hose line under suitable BA Entry Control measures.
- Incident Commander should consider the use of thermal image camera to identify hot spots, monitoring the fuselage for heat transfer.
- BA team will need to check internal fuselage accessing through port entrance / egress for heat transfer / casualties as appropriate and make safe the airframe IAW:
 - B172 CGY BBMF Dakota Crash/Rescue
- BA team will brief Incident Commander when extinguishment of fire has been achieved.
- Remove any casualties as appropriate and according to SOP.

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 wind direction for immediate access to engine fire. Initial use of bumper turret will be required for primary knock down using foam discharge.
- Be aware of PAX exiting the aircraft.
- 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.
- 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 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?
- If a Rescue Task is required Crash 2 driver will remain with the vehicle to provide scene safety from the monitor in event of reignition.
- 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.

² RAF Coningsby's operating model.

Specific Aircraft Hazards - (Make use of AQRC):

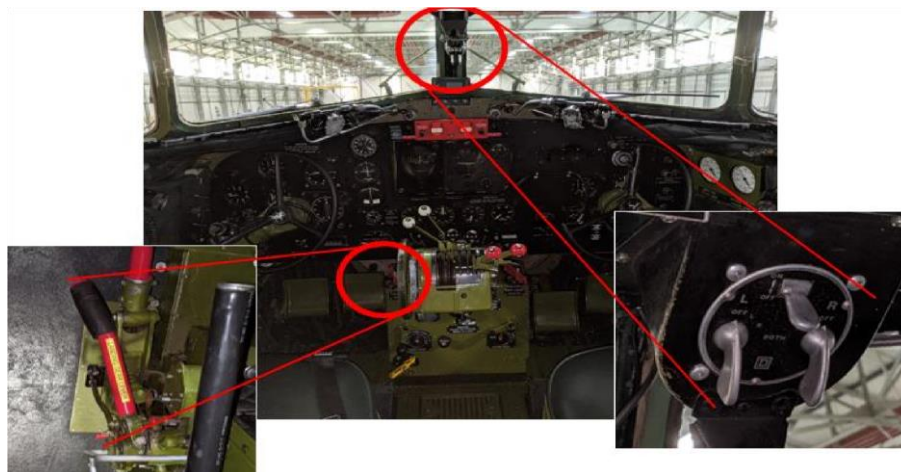
- Access to internal engine or cover is through a small opening on the engine cover or use of fog spike to penetrate the engine cowling.



- All crew to be aware of engine propellers when approaching engine fire, taking into consideration engine danger zones.
- Prop engine can be extinguished by spraying foam into the intake.
- Aircraft to be shut down.
- Normal means of access to the cockpit is gained by using the rear port side opening door, which is usually always open in flight. An emergency exit is located on the portside of the cockpit, but this is unlikely to be utilised due to its close proximity to the propeller. In addition, an emergency hatch is located in the roof above the cockpit.



Aircraft shutdown should be confirmed or completed as shown.



- To safely shut down the aircraft the magneto switch should be placed in the position shown.

Further Considerations:

- Propeller danger zones
- Will additional BA Team be required?
- Use of TIC
- No engine covers therefore access through the intake (as shown previously) or use of the fog spike (if determined by Incident Commander)
- ICP set up point
- LAFRS response times.

Training:

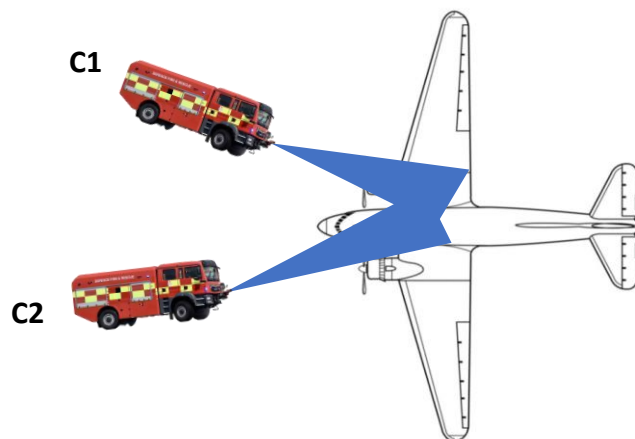
- Aircraft familiarization
- B172 CGY BBMF Dakota Crash /Rescue
- Deployment exercise(s)
- Redkite CMS.

Supporting Information:

- DFR-Ops Guidance 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 033 - BA Operations
- Ops Instruction 066 - Fire Contaminants
- Op Guidance 001 - Aircraft Incidents
- Op Guidance 003 - Aircraft Fuel Fires
- Op Guidance 006 - Aircraft Internal Fires
- Op Guidance 007 - Aircraft Engine Fire
- Op Guidance 008 - Aircraft Undercarriage Incidents
- ATTP A08 Dakota
- MOD Aircraft Crash Hazards Document Set
- NATO STANAG/TO 00-105E-9-Chapter 13 (revision 16)

TTP 2 - Wheel Assembly Incidents

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
- 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 B172 CGY BBMF Dakota Crash/Rescue)
- Repeat DRA as appropriate to the incident
- Prepare for ARA
- Declare state of airfield and ICAO category
- Consider use of secondary media initially as mass discharge dual application.
- Direct evacuated flight crew to safe holding area prior to designated casualty clearance set up by Medics
- Direct Medics to location
- SENG/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 the side of aircraft the fire is located. 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.
Note: Where no fire is evident media should not be applied but crews should standby.
- Designated BA wearers (Led by JNCO³) 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

³ RAF Coningsby's operating model.

- Vehicle commander will monitor operations of Crash 2 and assist with protection of the fuselage as required
- Prepare for use of 9kg dry powder extinguisher and appropriate hose lines in preparation for access to undercarriage void following mass discharge knockdown (where required)
- If undercarriage void fire access is required, instruction will be given by the incident commander. BA Team will enter the area using suitable control measure with an appropriate hose line and 9kg dry powder extinguisher.
- Incident commander should consider use of thermal image camera to identify hot spots, monitoring the fuselage for heat transfer
- BA team will ensure engines and fuel cocks are shut down IAW: should gain access and make safe the airframe IAW:
 - Engineering Authority B172 CGY BBMF Dakota Crash/Rescue
- BA team aim will brief Incident Commander when extinguishment of fire has been achieved.
- Remove any casualties as appropriate and according to SOP

CRASH 2 - MPRV Actions

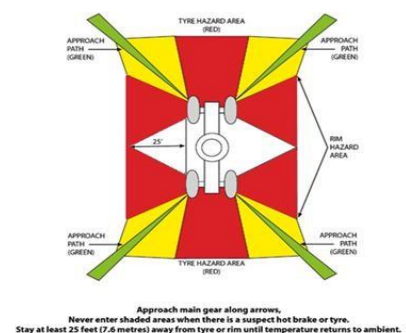
- Crash 2 to deploy according to wind direction to nose of aircraft. Initial use of bumper turret will be required for primary knock down using foam discharge. Consideration should be given to the use of vehicle secondary media (DP) if appropriate as dual media application

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 and maintain foam blanket if required following mass discharge to undercarriage fire. Consider conservation of media used
- 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 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?
- If Rescue Task is required Crash 2 driver will remain with the vehicle to provide scene safety from the monitor in event of reignition.
- 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.

Wheel assembly danger areas

- Generic wheel assembly danger areas
- Potential structural collapse due to weakened undercarriage
- Landing gear must be pinned for security. The Pin Bag for landing gear is in rear of the fuselage, right of the rear entrance.





- Pin main undercarriage as below.



Further Considerations:

- Propeller danger zones
- 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:

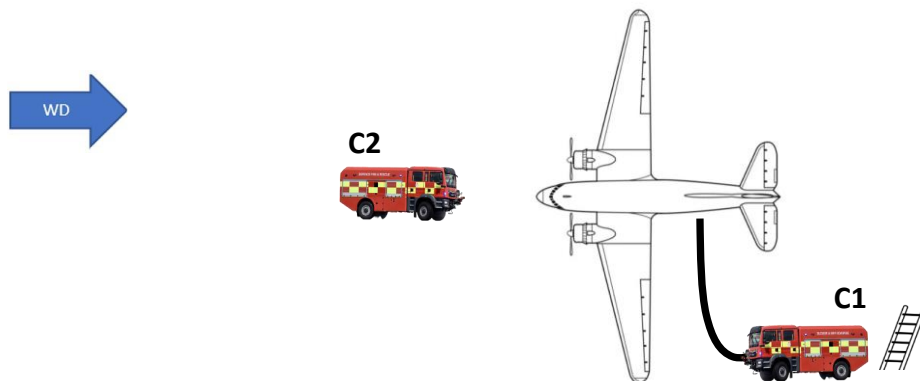
- DFR-Ops Guidance 009 - Aircraft Fires
- Ops Instruction 001 - Aircraft Incidents
- Ops Instruction 002 - CFR HSE Policy
- Ops Instruction 005 - Low Speed Manoeuvring
- Ops Instruction 006 - MPRV ARFF Positioning Deployment & Task
- Ops Instruction 007 - MPRV Vehicle Operations
- Ops Instruction 033 - BA Operations
- Ops Instruction 066 - Fire Contaminants
- Op Guidance 001 - Aircraft Incidents
- Op Guidance 003 - Aircraft Fuel Fires
- Op Guidance 006 - Aircraft Internal Fires
- Op Guidance 007 - Aircraft Engine Fire
- Op Guidance 008 - Aircraft Undercarriage Incidents
- ATP A08 Dakota
- MOD Aircraft Crash Hazards Document Set
- NATO STANAG/TO 00-105E-9-Chapter 13 (revision 16)

Training:

- Aircraft familiarization
- B172 CGY BBMF Dakota Crash/Rescue
- Deployment exercise(s)
- Redkite CMS.

TTP 3 – Internal 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
- 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 B172 CGY BBMF Dakota Crash/Rescue)
- Repeat DRA as appropriate to the incident
- Prepare for ARA
- Declare state of airfield and ICAO category
- Direct evacuated flight crew to safe holding area prior to designated casualty clearance set up by Medics
- Direct Medics to location
- SENG/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 Deploys to the rear of the aircraft on the port side covering the main access / egress point in preparation for internal access to fuselage.
- Be aware of PAX exiting the aircraft port rear.
- Designated BA wearers (Led by JNCO⁴) 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
- Deploy ladder for access through port access / egress.

⁴ RAF Coningsby's operating model.

- Incident Commander should consider use of thermal image camera to identify hot spots, monitoring the fuselage for heat transfer.
- BA team enter RA under suitable BA Entry Control measures and will need to check internal fuselage accessing through port entrance / egress for heat transfer / casualties as appropriate and make safe the airframe IAW:

□ B172 CGY BBMF Dakota Crash/Rescue

- BA team will brief Incident Commander when extinguishment of fire has been achieved.
- Remove any casualties as appropriate and according to local SOP and IAW TRA.

CRASH 2 - MPRV Actions

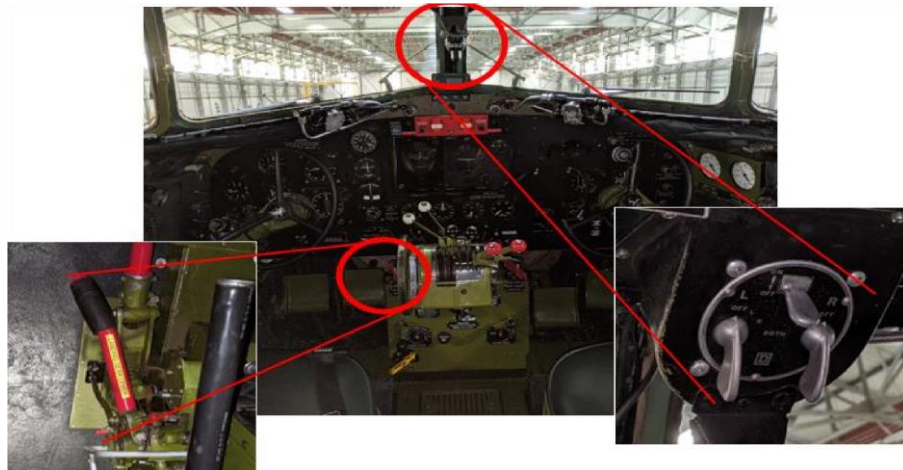
- Crash 2 to deploy according to wind direction slightly to port side of fuselage to cover cockpit critical area.
- Be aware of PAX exiting the aircraft.
- Bumper turret may be used to cool fuselage if required.
- Incident Commander will provide supporting resources to Crash 1.
- Crew will assist Crash 1 deploy ladder to starboard access / egress and appropriate hose line for fuselage entry by BA team.
- 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?
- If Rescue Task is required Crash 2 driver will remain with the vehicle to provide scene safety from the monitor in event of reignition.
- 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):

- All crew to be aware of engine propellers when approaching the aircraft, taking into consideration engine danger zones.
- Aircraft to be shut down.
- Normal means of access to the cockpit is gained by using the rear port side opening door, which is usually always open in flight. An emergency exit is located on the portside of the cockpit, but this is unlikely to be utilised due to its close proximity to the propeller. In addition, an emergency hatch is located in the roof above the cockpit.



Aircraft shutdown should be confirmed or completed as shown.



- To safely shut down the aircraft the magneto switch should be placed in the position shown.

Further Considerations:

- Propeller danger zones
- Will additional BA Team be required?
- Use of TIC
- ICP set up point
- LAFRS response times.

Training:

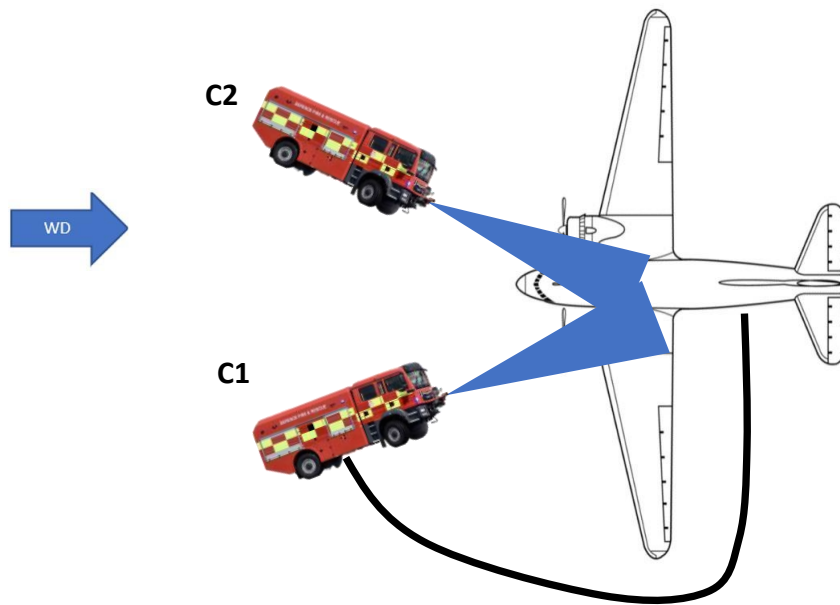
- Aircraft familiarization
- B172 CGY BBMF Dakota Crash /Rescue
- Deployment exercise(s)
- Redkite CMS.

Supporting Information:

- DFR-Ops Guidance 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 033 - BA Operations
- Ops Instruction 066 - Fire Contaminants
- Op Guidance 001 - Aircraft Incidents
- Op Guidance 003 - Aircraft Fuel Fires
- Op Guidance 006 - Aircraft Internal Fires
- Op Guidance 007 - Aircraft Engine Fire
- Op Guidance 008 - Aircraft Undercarriage Incidents
- ATP A08 Dakota
- MOD Aircraft Crash Hazards Document Set
- NATO STANAG/TO 00-105E-9-Chapter 13 (revision 16)

TTP 4 – External Fire

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
- Contacting aircraft commander via ATC, or direct visually, to ensure shutdown of engine and fuel cocks (IAW B172 CGY BBMF Dakota Crash/Rescue)
- 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 safe holding area prior to designated casualty clearance set up by Medics
- 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 to port side of aircraft. This will permit support of Crash 2 in initial knockdown of fire protecting the critical area and provide site of rear access / egress.
- Designated BA wearers (Led by JNCO⁵) 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 mass protection of the cockpit as required.
- Prepare ladder for rescue requirements as appropriate.
- Prepare appropriate lengths of hose line in preparation for airframe access following mass discharge knockdown if required.
- Designated BA team will don BA if instruction given by Incident Commander. BA Team will enter the area using suitable control measure with an appropriate hose line.
- Incident Commander should consider use of thermal image camera to identify hot spots.
- BA team will brief Incident Commander when extinguishment of fire has been confirmed.
- An inspection of the aircraft interior/exterior should be carried out at the earliest opportunity to either ensure that fire/heat has not penetrated the cockpit/fuselage and to organize internal firefighting BA team should this be necessary.
- BA team will ensure engines and fuel cocks are shut down and IAW:

☐ B172 CGY BBMF Dakota Crash/Rescue

- BA team aim will brief Incident Commander when extinguishment of fire has been confirmed.
- Remove any casualties as appropriate and according to local SOP and 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 to starboard of aircraft. Initial use of bumper turret will be required for primary knock down using foam discharge.
- Bumper turret may be used to cool fuselage if required following mass discharge. Consider conservation of media used.
- Bumper turret may be required to ensure any fuel spillage has foam blanket applied.
- 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 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?
- If Rescue Task is required Crash 2 driver will remain with the vehicle to provide scene safety from the monitor in event of reignition.
- 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.

⁵ RAF Coningsby's operating model.

Specific Aircraft Hazards – (Make use of AQRC):

- Potential structural collapse due to weakened undercarriage
- Landing gear must be pinned for security. The Pin Bag for landing gear is in rear of the fuselage, right of the rear entrance.



- Pin main undercarriage as below.



Further Considerations:

- Propeller danger zones
- 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-Ops Guidance 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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- Op Guidance 007 - Aircraft Engine Fire
- Op Guidance 008 - Aircraft Undercarriage Incidents
- ATTP A08 Dakota
- MOD Aircraft Crash Hazards Document Set
- NATO STANAG/TO 00-105E-9-Chapter 13 (revision 16)

Training:

- Aircraft familiarization
- B172 CGY BBMF Dakota Crash/Rescue
- Deployment exercise(s)
- Redkite CMS.

Document Control					
Version	Date	Author	Role/Name	Status	Changes
V1.0	25 06 2021	A. Carr	F.S. Training Manager	Current	Drafted
V1.0	15 10 2021	P McGuinness	CFR Hd of Response	Issue	Published
V1.1	19 06 2024	P McGuinness	CFR Hd of Response	Doc Update	New Cover New Sponsor
V1.1	20 06 2024	S Dalglish	FSM / FS	Endorsed	
V1.1	21 06 2024	S Cook	AM DFR HQ	Stakeholder review	Footnotes requested
V1.1	24 06 2024	P McGuinness	CFR Hd of Response	Issued	Footnotes added