

### **Contents:**



- Background
- General Approach
- Environmental Monitoring
- Usage Monitoring
- HTAWS

### **Background**



#### Objective:

To generate HFDM best practice guidance material specifically targeted at offshore helicopter operations.

#### Drivers:

- To improve safety by promoting more efficient and effective application / use of HFDM.
- EASA SPA.HOFO.145 mandate (by 01 January 2019) for HFDM to provide a 'yardstick' / 'level playing field'.
- UK review of offshore helicopter operations (CAP 1145) to provide improved information in relation to operational cause occurrences (under-reported in MORS / ECCAIRS).
- UK AAIB Safety Recommendations 2016-009 and 2016-010.

### **General Approach (1)**



- Review and utilise (where appropriate) existing material:
  - UK CAA CAP 739, Flight Data Monitoring, 2<sup>nd</sup> Edition, June 2013.
  - UK CAA CAA Paper 2002/02, Final Report on the Helicopter Operations Monitoring (HOMP) Trial, September 2002.
  - UK CAA CAA Paper 2004/12, Final Report on the Follow-on Activities to the HOMP Trial.
  - Global HFDM Steering Group Helicopter Flight Data Monitoring Industry Best Practice, Version 1.1, 01 April 2012.
  - EASA Developing Standardised FDM-Based Indicators, December 2013.

### **General Approach (2)**



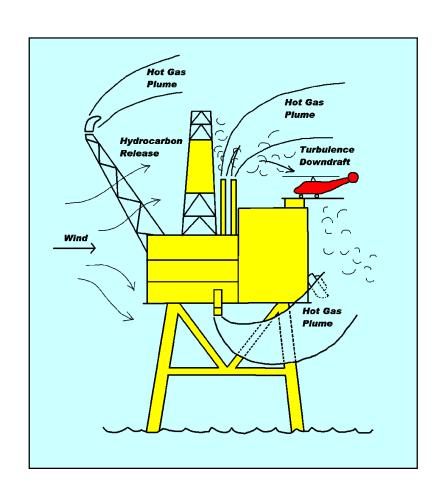
- Review existing events and measurements:
  - Adherence to RFM limits.
  - Adherence to SOPs.
  - Analysis of 'critical operations', e.g. approaches, (application of EOFDM WGA and WGB methodology).
- Develop new material for:
  - Environmental monitoring.
  - Usage monitoring.
  - HTAWS.
  - Supporting Evidence-Based Training (EBT).

### **Environmental Monitoring (1)**



#### Significant hazards presented by:

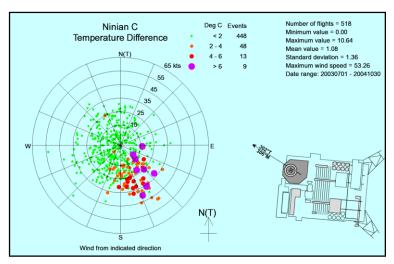
- Temperature rise above reported ambient due to:
  - Platform-mounted gas turbine exhausts;
  - Flaring.
- Turbulence due to:
  - Platform-mounted gas turbine exhausts;
  - Platform structure.

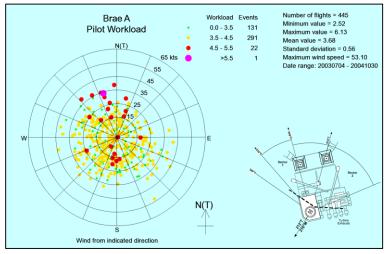


## **Environmental Monitoring (2)**



- Produce derived parameters based on:
  - Temperature OAT sensor;
  - Turbulence collective & cyclic control inputs.
- Use derived parameters to:
  - generate events, and
  - collect <u>measurements</u>
    for each approach as a function of platform, wind speed and wind direction.
- Add Aerad information, e.g. plan view.
- Add Helideck Limitations List (HLL) information, e.g. restricted sectors.





### **Environmental Monitoring (3)**



- Review plots and adjust operating limits as and when required:
  - Validate/refine existing HLL entries.
  - Add or delete HLL entries.
  - Monitor for significant changes to platform topsides, and review limits and / or procedures.
  - Identify 'problem' platforms to platform operator/owner for rectification / mitigation.

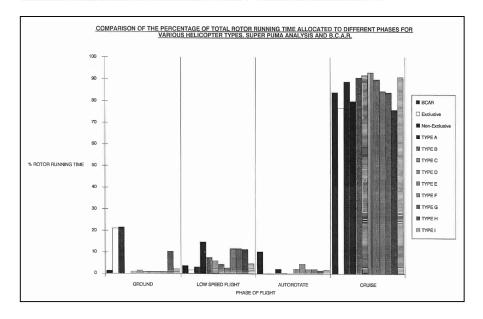


### **Usage Monitoring**

- Assumed usage spectrum used with load / strain data from flight testing to determine component lives and maintenance schedule.
- Deviations from the assumed spectrum could compromise airworthiness and, hence, safety.
- Important part of continued airworthiness.
- Usage spectrum can vary significantly between individual aircraft – need to monitor usage by 'tail number'.
- Impractical to achieve 'by hand' but could be performed by FDM.

MAJOR PHASE	CRITERIA
GROUND	Weight switch made and no normal acceleration activity
GROUND -Taxi	Weight switch made and normal acceleration activity
LOW SPEED FLT -Hover	Weight switch off; Airspeed < 40knots; Take-off recorded earlier and one engine torque > 10%
FORWARD FLT -Climb	Weight switch off; Airspeed > 40 knots; Rate of climb more than 4FPS and one engine torque > 10%
FORWARD FLT -Level	Weight switch off; Airspeed > 40 knots; Rate of climb/descent less than 4FPS and one engine torque > 10%
FORWARD FLT -Descent	Weight switch off; Airspeed > 40 knots; Rate of descent more than 4FPS and one engine torque > 10%
AUTOROTATION	Weight switch off; Average engine torque =< 5%; Rate of descent => 0 FPS
INDETERMINATE	No other phase identified



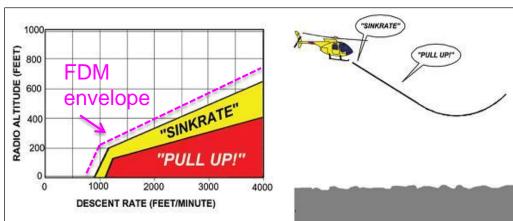


### **HTAWS (1)**



HTAWS = Helicopter Terrain Awareness & Warning System.

 EASA SPA.HOFO.160 c) mandate (new registrations from 01 January 2019).

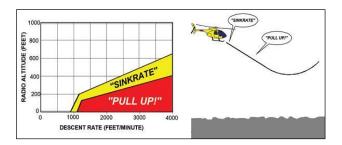


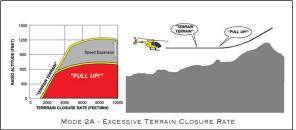
- New HTAWS standard to be voluntarily implemented by industry early 2018.
- Warnings and cautions deliberately set to minimise alert rate during normal operations – HTAWS alert means the helicopter is potentially seconds from impact.
- HFDM needs to monitor <u>proximity to</u> HTAWS alerts and not HTAWS alerts.

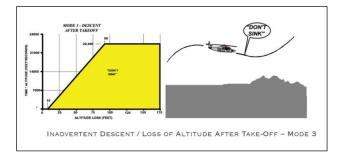
### **HTAWS (2)**

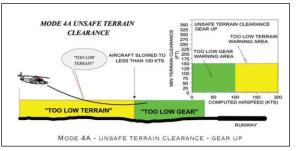


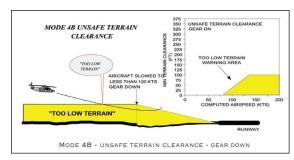
• There are a number of alert 'envelopes' to monitor (current envelopes shown).

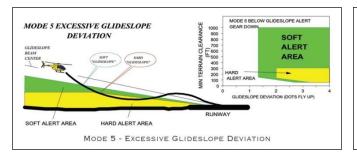


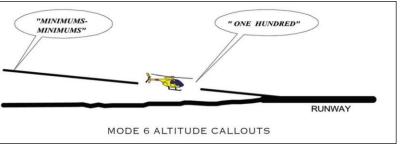














Thank you for your attention...

# Any questions?