



HSAC

Helicopter Safety Advisory Conference

Helideck Committee

Committee meeting 17 May 2023

Lafayette, LA



AGENDA

➤ Intro

- Anti-Trust Statement
- Introductions
- Objectives

➤ Industry Updates

- HeliOffshore, IOGP, ICAO, Others (CAP 437 & CAR-HVD)

➤ Windfarms Sub-Group Update

➤ AFFF Sub-Group Update

➤ Enhancing Visibility of Helipad Surfaces Using Photoluminescent Coatings

➤ Helideck Monitoring Systems

➤ HSAC RP Updates

➤ Future Work

➤ AOB



INDUSTRY UPDATES

HeliOffshore, IOGP, ICAO & Other Updates



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HELI-OFFSHORE

MMHEL:

- Terms of Reference drafted
- Setting up trials between Helicopter Operators and Helideck Owners



IOGP

IOGP 697 Airfield, Heliports, Helidecks and Facilities

- Still not published.
- Could be any day now.



ICAO

➤ No update



OTHER

UK CAA (CAP 437):

- ✦ Edition 9 was published in February 2023

UAE CAR-HVD

- ✦ Civil Aviation Regulations
Heliports (Onshore/ Offshore)
Vertiports (Onshore)
- ✦ Issue 01 Published March 2023



UAE CAR-HVD ISSUE 1

- ✦ The General Civil Aviation Authority has developed CAR HVD based on latest ICAO Annex 14 Volume II standards and recommended practices including ICAO Document 9261 heliport Manual. The document is divided into seven parts:
 - Part I – Onshore Heliports
 - Part II – Offshore Helidecks
 - Part III – Onshore Vertiports
 - Part IV – (reserved)
 - Part V – (reserved)
 - Part VI – (reserved)
 - Part VII - Hybrid Heliport/Vertiport Operations – (Reserved)
- ✦ CAR-HVD cancels and supersedes CAAP/AMC 70 and CAAP/AMC 71.

CIVIL AVIATION REGULATIONS

Heliports (Onshore/Offshore) Vertiports (Onshore)

(CAR-HVD)

Issue 01

March 2023

UNCONTROLLED COPY WHEN DOWNLOADED/PRINTED

Check with GCAA Website to verify current version before using

DETAILS UAE CAR-HVD ISSUE 1 – MARCH 2023

PART II – OFFSHORE HELIDECKS (240 pages)

- ✦ Chapter II-1 – Introduction
- ✦ Chapter II-2 – Introduction to the GCAA Regulatory Oversight
- ✦ Chapter II-3 – Requirements for a Primary Accountable Organisation
- ✦ Chapter II-4 – Requirements for a Helideck
- ✦ Chapter II-5 – Helideck: Design Factors
- ✦ Chapter II-6 – Physical Characteristics: Helidecks
- ✦ Chapter II-7 – Physical Characteristics: Shipboard Helideck
- ✦ Chapter II-8 – Helideck Surface Arrangements: Objects, Slopes, Friction, Tie-Down Points, Perimeter Safety Net
- ✦ Chapter II-9 – Obstacle Environment
- ✦ Chapter II-10 – Winching Areas on Ships
- ✦ Chapter II-11 – Visual Aids
- ✦ Chapter II-12 – Aeronautical Lights
- ✦ Chapter II-13 – Parking Areas and Push-In
- ✦ Chapter II-14 – Not Permanently Attended Installations (NPAI)
- ✦ Chapter II-15 – Helidecks and Vessels – Personnel Requirements
- ✦ Chapter II-16 – Rescue and Firefighting
- ✦ Chapter II-17 – Emergency Planning
- ✦ Chapter II-18 – Helideck Operations
- ✦ Chapter II-20 – Meteorological Equipment Provision
- ✦ Chapter II-21 – Deck Motion Reporting and Recording
- ✦ Chapter II-22 – Helicopter Refuelling Operations
- ✦ Appendix II-A –Guidance Material - Helidecks: Types of Facilities
- ✦ Appendix II-B – Designation of Helidecks Class of Use
- ✦ Appendix II-C: Helideck Compliance Checklist
- ✦ Appendix II-D: GCAA Approval Assessment Checklist - Primary Accountable Organisation

MANY DRAWINGS USED IN CAR-HVD FROM HSAC RP-S

Characteristics

- 11.7.4 A touchdown/positioning marking shall be a yellow circle and have a line width of at least 0.5 m. For a helideck or a purpose-built shipboard helideck with a D value of 16.0 m or larger, the line width shall be at least 1 m.
- 11.7.5 The inner diameter of the circle shall be 0.5 D of the largest helicopter the TLOF is intended to serve.

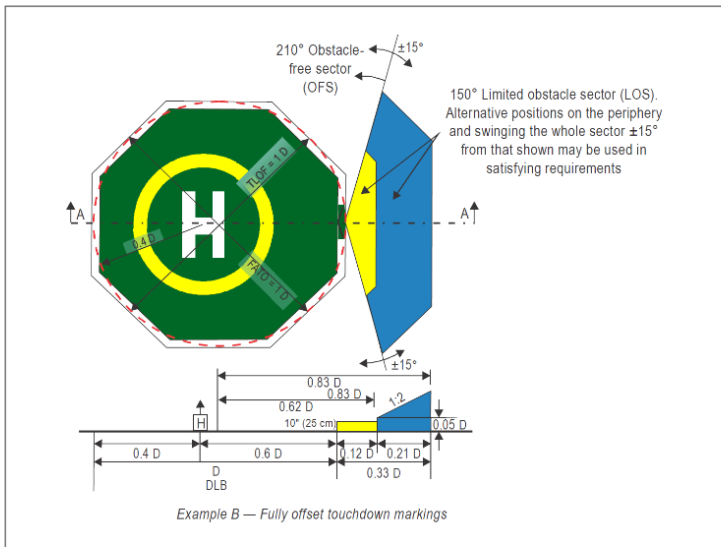


Figure 11-6 Location of offset touchdown marking

<< EXAMPLE 1

EXAMPLE 2 >>

Characteristics

- 11.11.3 The prohibited landing sector markings shall be indicated by white and red hatched markings as shown in Figure 11-10.

Note — Prohibited landing sector markings, where deemed necessary, are applied to indicate a range of helicopter headings that are not to be used by a helicopter when landing. This is to ensure that the nose of the helicopter is kept clear of the hatched markings during the manoeuvre to land.

The following can be considered as guidance:

- The arc of coverage should be sufficient to ensure that the tail rotor system will be positioned clear of the obstruction when hovering above, and touching down on, the yellow circle at any location beyond the prohibited landing sector marking. As a guide it is recommended that the prohibited landing sector marking extends by a minimum 10 to 15 degrees either side of the edge of the obstacle (this implies that even for a simple whip aerial infringement the prohibited landing sector arc applied will be an arc no less than 20-30 degrees of coverage).



WINDFARM SUB-GROUP UPDATE

HSAC Helideck Committee



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OBJECTIVES

At the last HSAC meeting (17-18 Jan 2023):

- ☑ It was agreed upon that there is a need for additional guidance by HSAC regarding offshore helicopter facilities in support of offshore wind operations, and...
- ☑ It was also determined that there is a need for additional guidance, to develop and recommend the appropriate design standards and recommended practices for approval by the HSAC Helideck Committee



ACP OCRP-1-2022

➤ The Text of Section 5.7.5.3 will read as follows:

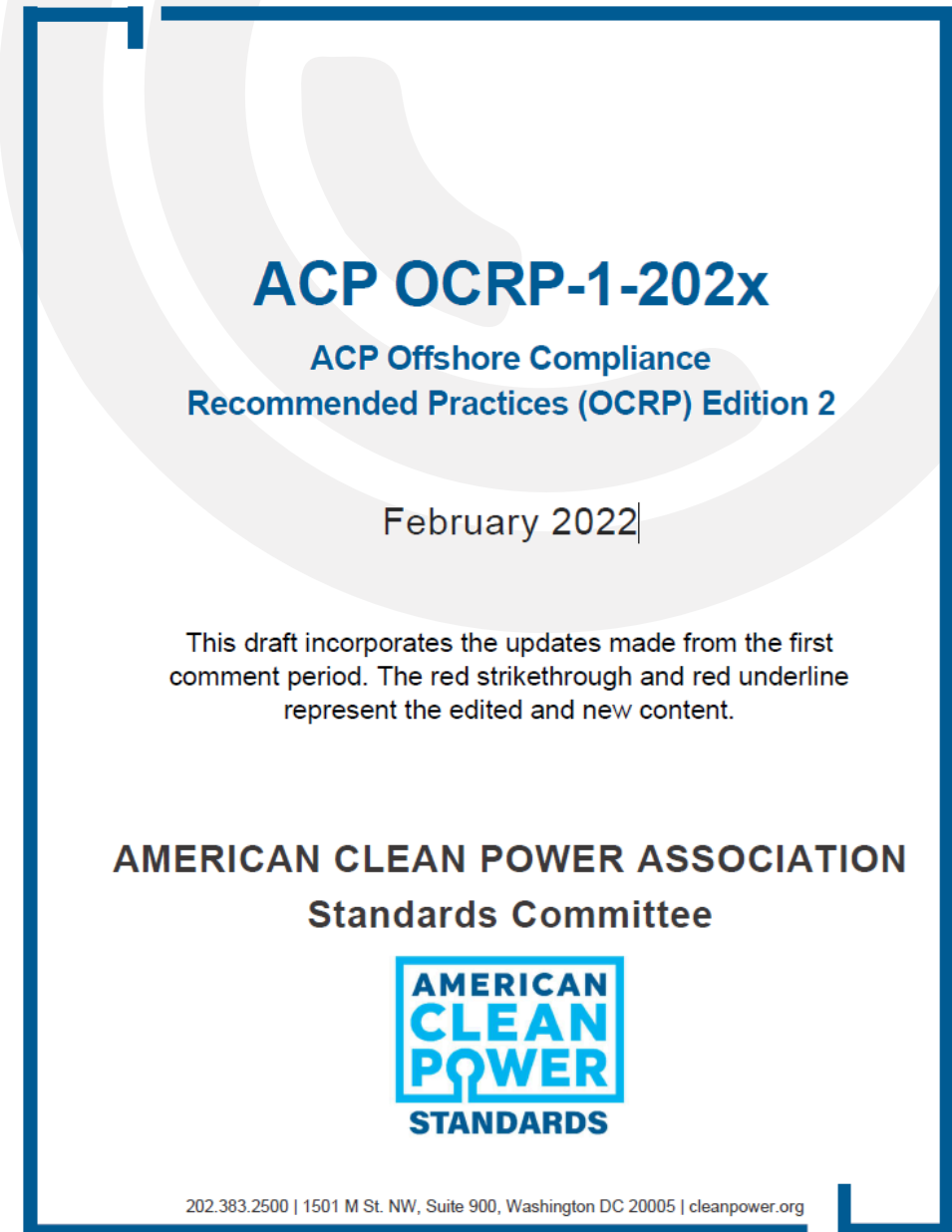
Helidecks shall be designed according to accepted industry standards:

- The FAA and USCG publish regulations for helicopter landing areas.
- FAA AC150/5390-2C (needs to be updated to 2D) provides regulations governing the design, marking, and lighting of helicopter landing decks.
- Coast Guard 46 CFR 108.231
- Additional information can be found in the below guidelines:

▲ HSAC RP 161 New Build Helideck Design Guidelines



**API 2L has been rescinded
and will be removed as reference**





WAY FORWARD

- With OSW Ventures in the U.S. currently in the design and build phases, as well as the likelihood that OSW will continue to spread to other U.S. waters, it is important that one well thought out standard be put into writing and accepted by the larger energy community for the purposes of standardization and safety
 - ❑ Near focus should be put on establishing a relationship with the OSW community, and advertise ourselves as the premier offshore helicopter safety organization in the industry
 - ❑ The HSAC OSW Subcommittee continues work and proceeds with development of design and procedural standards
 - ❑ Focus on design standards first with the intent to publish a standard during the design phase and then continue work on more in-depth procedural items



AFFF SUB-GROUP UPDATE

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PURPOSE

- The aim is to provide guidelines in the HSAC RPs on approved alternative methods of commissioning and annual testing of the heliport fire protection system.
- Due to environmental restraints of conventional Mil-Spec foam or AFFF, the use of an environmentally friendly surrogate liquid should be considered when commissioning and annually testing fixed firefighting systems.

Disclaimer

The information provided in this presentation is collated from publicly available sources and personal knowledge in the subject field. The data contained herein is provided by author as a guide only. It is not intended to be all inclusive and should not be substituted for professional judgement. Author believes to the best of his knowledge the data to be accurate. Images and contents used in this presentation are proprietary of its owners.

PROGRESS

- Excel file was created to share comments for additions to HSAC RP161 on AFFF testing and present members agreed on excel format.
- HSAC RP 161 gives guidance only on commissioning helideck with produced foam test (Section 13.8, p.93 + p.94). Added in as a note to allow for environmentally friendly surrogate liquid testing when commissioning as option.
- Section about Annual Testing needs to be added to RP161. This will include conventional produced test. This will also include Alternative Test methods that are environmentally friendly

ALTERNATIVE TEST METHODS

- Group identified and agreed on alternative test methods for 3 types of systems that are used for helideck fire protection systems:
 - **Surrogate Liquid Test Method:**
 - ▲ Atmospheric Tank with line proportioner (Eductor/Inductor) System. Proprietary conventional surrogate test liquids could perhaps work but have shown to not be compatible with salt water.
 - **Surrogate Liquid Test Method:**
 - ▲ Bladder Tank System.
 - **Water Equivalency Method:**
 - ▲ Water Powered Foam Concentrate Proportioner Pump.

HSAC RP 162 & 163 IMPACT

- ▲ Once Group has completed new sections and guidelines to RP 161, Group will need to modify and make changes to RP 163 Inspections Maintenance and Operations
- ▲ Group also discussed impact to RP 162 Legacy Decks, when it comes to annual testing of fire protection systems, to refer to sections of RP 161.



<< Working document



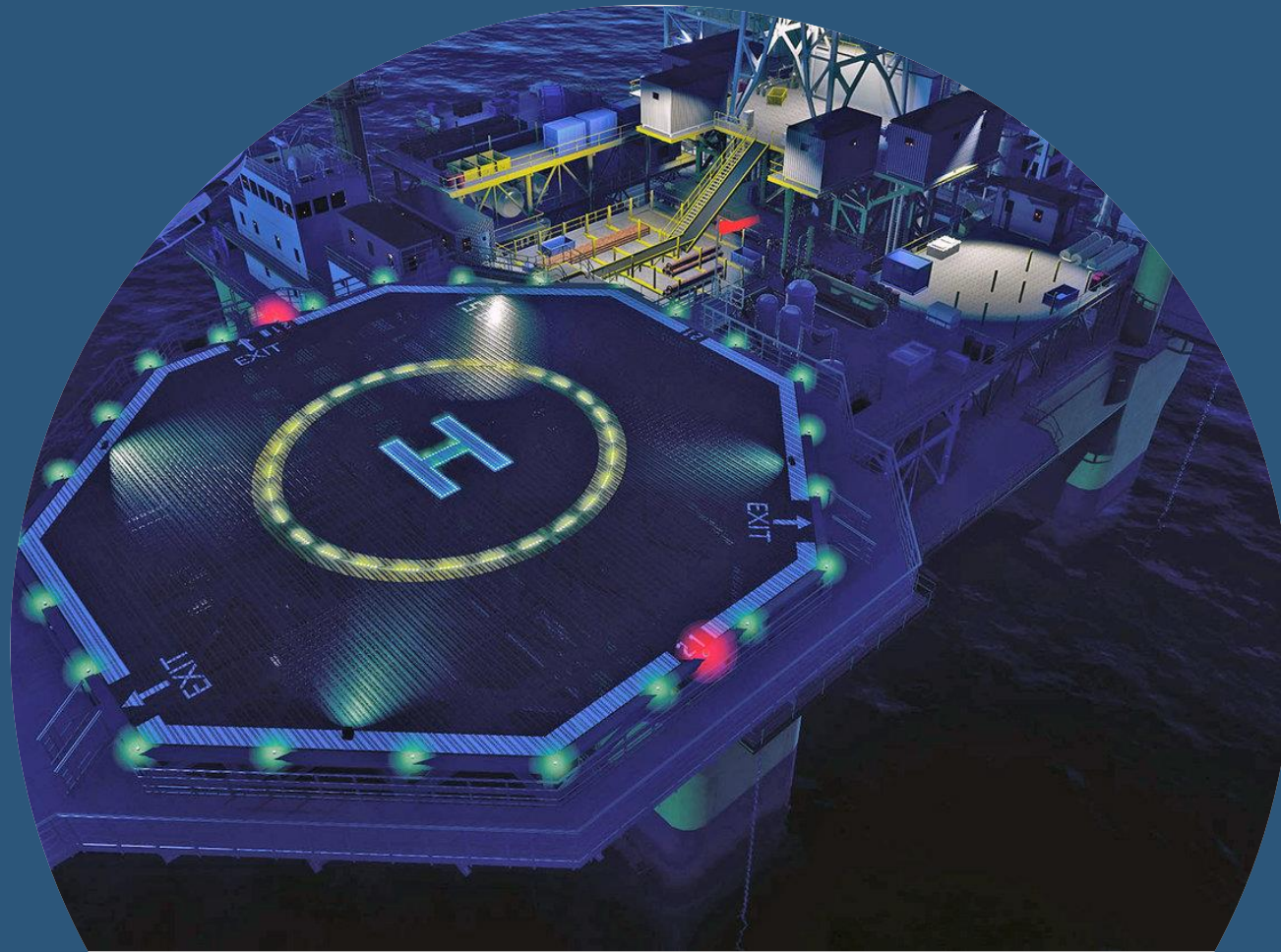
INTRODUCTION TO THE NEXT TOPIC

- Approx. 1463 Helidecks in the Gulf of Mexico (not counting vessels, drill ships, and MODU's)
- Only a small portion of these helidecks have TDPM/H Lighting Systems and/or even adequate perimeter and flood-lighting arrangements
- Without adequate lighting, night flights in the US Gulf of Mexico are limited to dedicated Medevac and SAR assets.
- Retrofitting all helidecks with relatively expensive TDPM/H lighting systems is not realistic.
- Are there potential alternatives that could be cost-effective and increase the night lighting compliance and improve safety for night flights to potentially make their way into the GOM?



ENHANCING VISIBILITY OF HELIPAD SURFACES USING PHOTOLUMINESCENT COATINGS

by Cliff Parker



HSAC

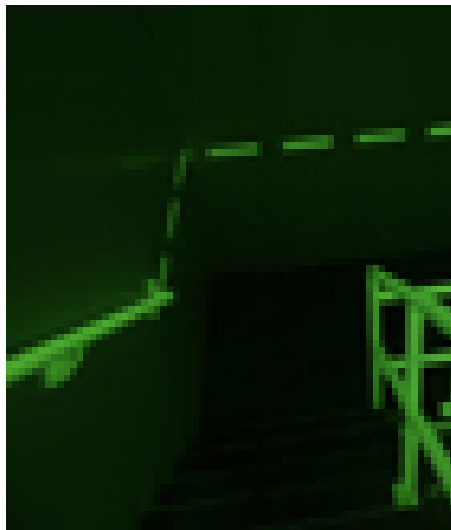
Helicopter Safety Advisory Conference

PURPOSE OF PHOTOLUMINESCENT COATING FOR HELIPADS

- Improve Visibility during both Day and Night Operations.
- Provide Identifiable Markings for Improved Landing Performance.
- Perform Improvements Without Jeopardizing Pilot's Scotopic Vision.
- Enhance Safety of Operations under all Environmental Conditions by Highlighting Perimeters and Limits .

PROVIDE IDENTIFIABLE MARKINGS FOR IMPROVED LANDING PERFORMANCE

- Fluorescent appearance provides high contrast for easy identification of landing target and operational space.



Actual application: CTA

PHOTOLUMINESCENT PROPERTIES

- ▲ Passive light emission at very low levels.
- ▲ Rare-earth doped garnet structure provides **stability of photoluminescent properties.**
- ▲ Particles **stable in wide variety of environments.**
- ▲ Charging can be accomplished with **any light source** that provides UV to deep blue wavelengths.
- ▲ “Battery” properties of doped Aluminum oxide crystals ensures continuous visible emission for up to 12 hours in total darkness.

TWO-COMPONENT EPOXY COATING

- ▲ Low VOC formulation.
- ▲ Siloxane-Epoxy hybrid binder provides a **corrosion and weather resistant coating.**
- ▲ Cured coating exhibits **excellent dirt pickup resistance and anti-graffiti properties.**

HSAC HELIDECK COMMITTEE DISCUSSION

- What does the group think?
- Should we proceed with a sub-committee to investigate if the use of photoluminescent paint would be an alternative means of providing a night-flight option for the Gulf of Mexico helidecks that will never be upgraded with a TDPM/H lighting system?

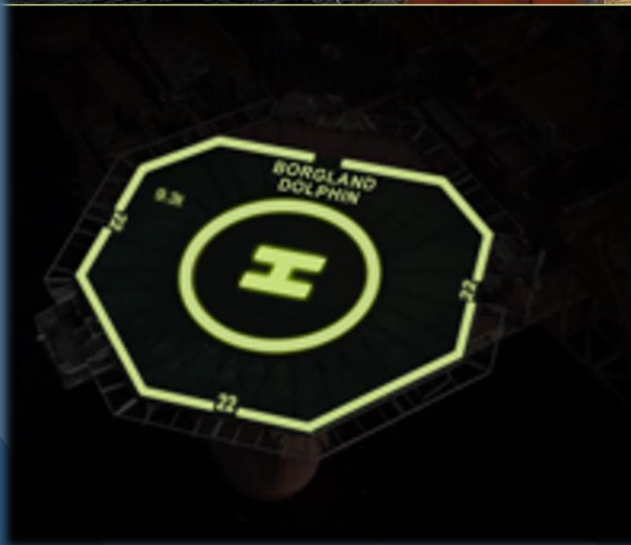




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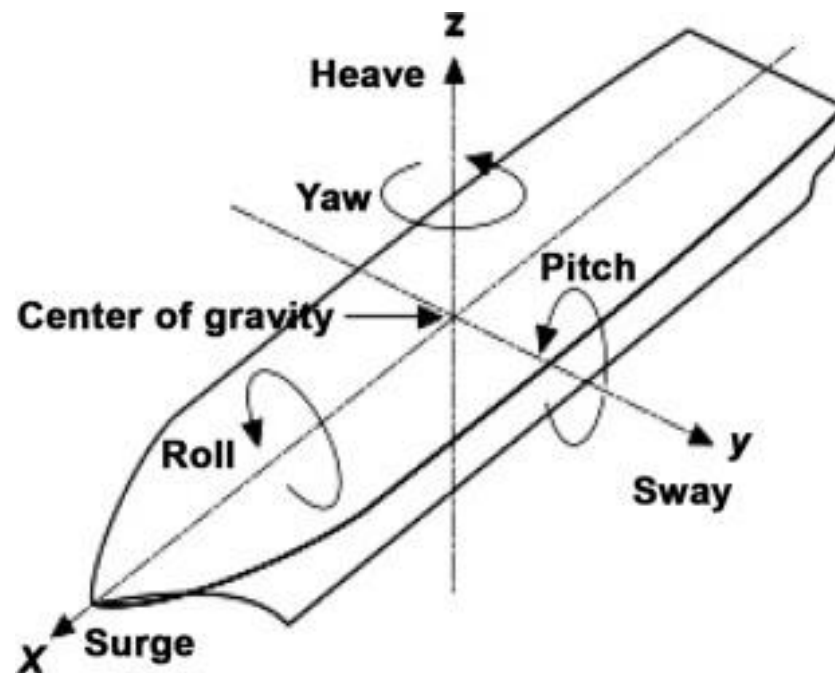


EXAMPLE





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HELIDECK MONITORING SYSTEMS (HMS)

WHAT SETTINGS ARE USED BY THE HMS?

HCA Helideck Limitation List

Part C

- **Category 1** = MODUs & Vessels such as FPSO's etc with good visual references
- **Category 2** = Vessels with Stern or mid-ships mounted helidecks giving good visual references
- **Category 3** = Vessels with Bow mounted helidecks with poor visual references

| Aircraft Category | | Helideck Category | | | | | | | | |
|-------------------|----------------|-------------------|-----|-----|----------------|-----|-----|----------------|------|------|
| | | 1 | | | 2 | | | 3 | | |
| | | P/R | INC | SHR | P/R | INC | SHR | P/R | INC | SHR |
| A | DAY | ±3 | 3.5 | 1.3 | ±2 | 2.5 | 1.0 | ±2 | 2.5 | 1.0 |
| | Night Semi-Sub | ±3 | 3.5 | 1.0 | Not Applicable | | | Not Applicable | | |
| | Night Other | ±2 | 2.5 | 1.0 | ±2 | 2.5 | 0.5 | ±1* | 1.5* | 0.5* |
| B | DAY | ±4 | 4.5 | 1.3 | ±3 | 3.5 | 1.0 | ±3 | 3.5 | 1.0 |
| | Night Semi-Sub | ±4 | 4.5 | 1.0 | Not Applicable | | | Not Applicable | | |
| | Night Other | ±3 | 3.5 | 1.0 | ±2 | 2.5 | 0.5 | ±1.5* | 2.0* | 0.5* |

P/R = Pitch and Roll (deg); INC = Helideck inclination (deg); SHR = Significant Heave Rate (m/s);

Aircraft Category:

A = S92, EC225, AS332 Series, AW189

B = AW139, S76 series, AS365 Series, B212, B412, EC135, EC145, EC155, EC175, AW169.

Helicopter Operator Ops Manual

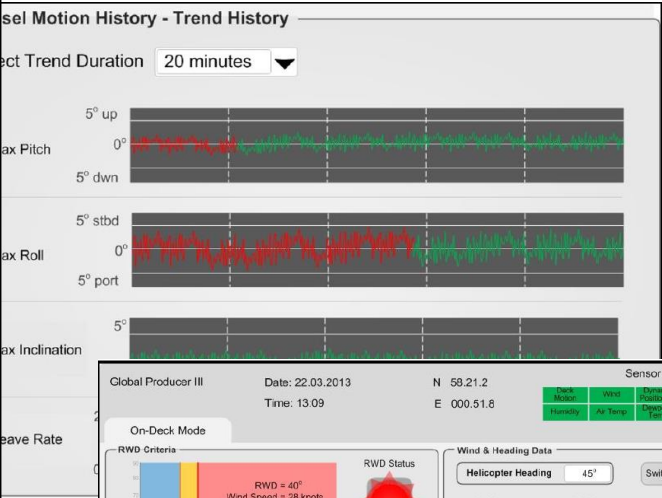
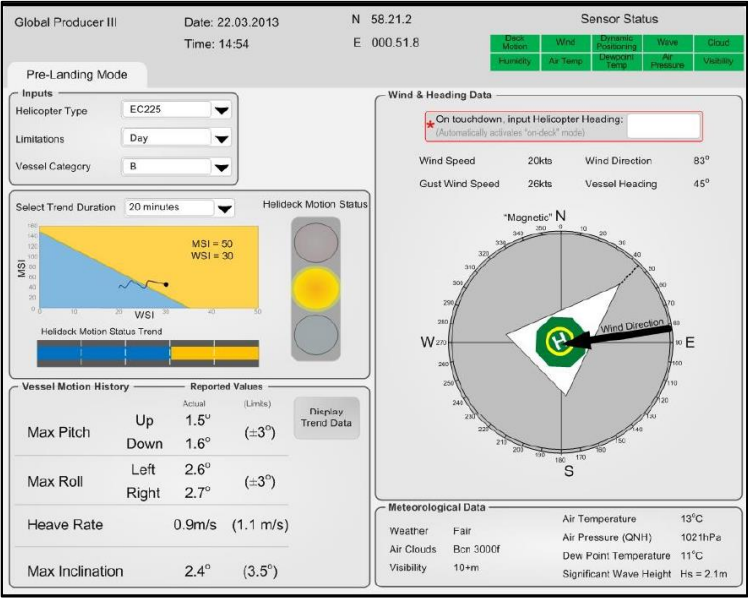
Example

- Landings to vessels shall not be attempted if pitch and roll exceeds 2.5 degrees either side of center, heave exceeds 10 feet, or heave rate exceeds one meter per second. Night operations may require a 50 percent reduction in pitch, roll, and heave limits.
- Landings to vessels shall not be attempted unless information in 2.2.7.5.(b)(i) is known prior to landing.
- Deviations from this policy must be authorized by the DO or Chief Pilot.

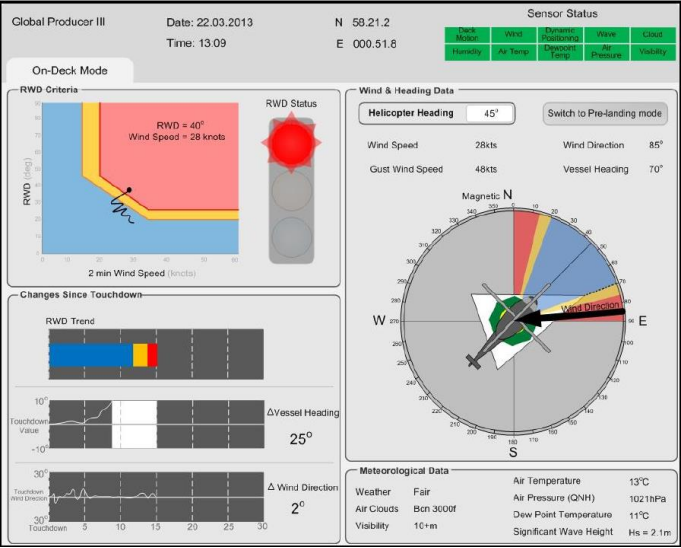
Do the Helideck Monitoring Systems currently in use provide options to have Air Operator specific thresholds loaded that can be used for their flights and activate the HMS repeater lights in accordance with their specific thresholds?





Market introduction HMS3.0



What did we do?
PRE-DEFINED SCREENS



<http://www.helidecks.org/download%20files/HMS%20Specification%20V9.0%20clean.pdf>

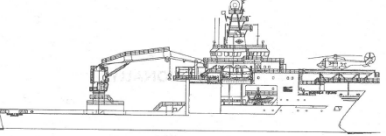


**Standard Measuring Equipment
for
Helideck Monitoring System (HMS)
and
Weather Data**

(HCA, UK CAA, Bristow Group, Babcock
International, CHC, NHV)



Standard Helideck Monitoring Systems Rev 9 2018 04 01 Page 1 of 26

What did we do?
HELIDECK REPEATER LIGHTS

BEFORE LANDING

1. BLUE STATUS, STEADY BURNING:
'SAFE TO LAND'

2. AMBER STATUS, STEADY BURNING:
'CONSIDER USING MODIFIED
OPERATING PROCEDURES'

3. RED STATUS, STEADY BURNING:
'DO NOT LAND'

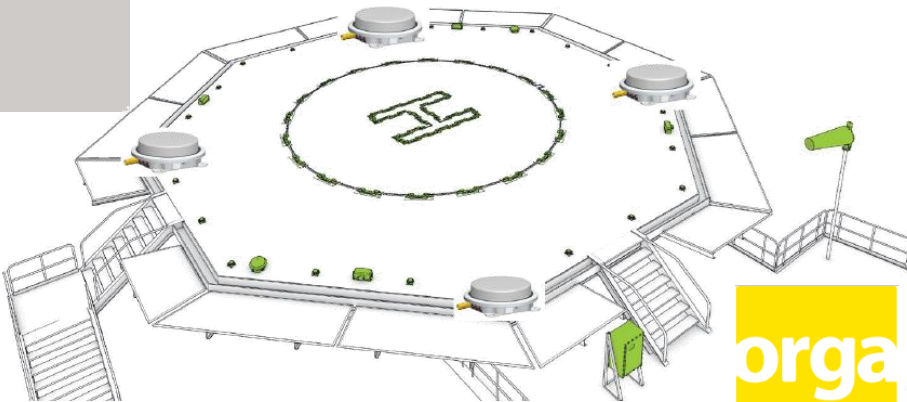
AFTER LANDING


1. BLUE STATUS, SLOW FLASH:
'RELATIVE WIND DIRECTION WITHIN
LIMITS'

2. AMBER STATUS, FAST FLASH:
'IMPENDING RELATIVE WIND LIMIT
EXCEEDANCE'

3. RED STATUS, FAST FLASH:
'RELATIVE WIND LIMIT EXCEEDED'

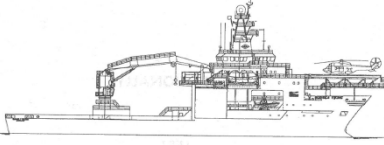
<http://www.helidecks.org/download%20files/HMS%20Specification%20V9.0%20clean.pdf>





**Standard Measuring Equipment
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(HCA, UK CAA, Bristow Group, Babcock
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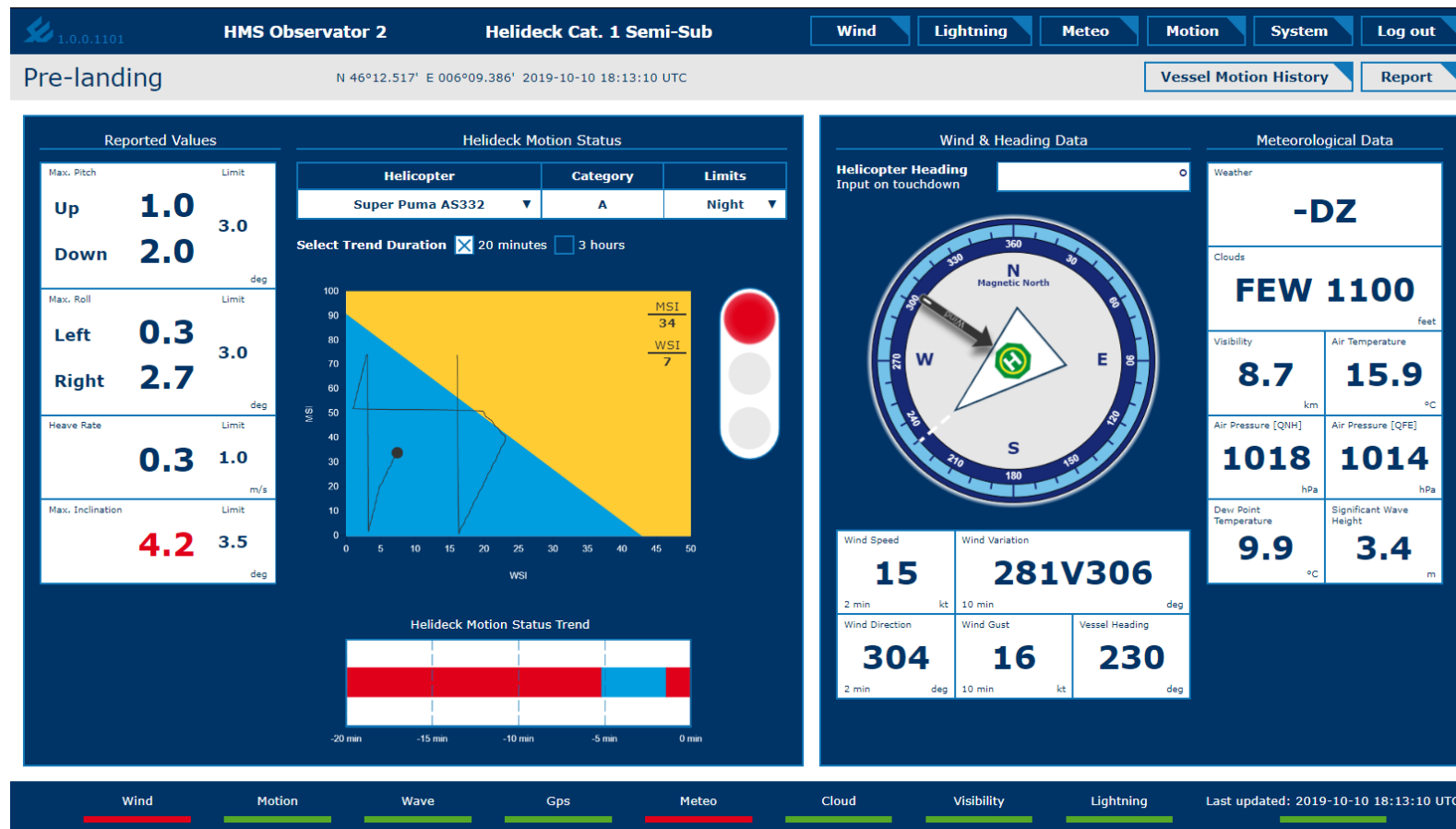
Standard Helideck Monitoring Systems Rev 9 2018 04 01

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Market introduction HMS3.0

What did we do? SOFTWARE

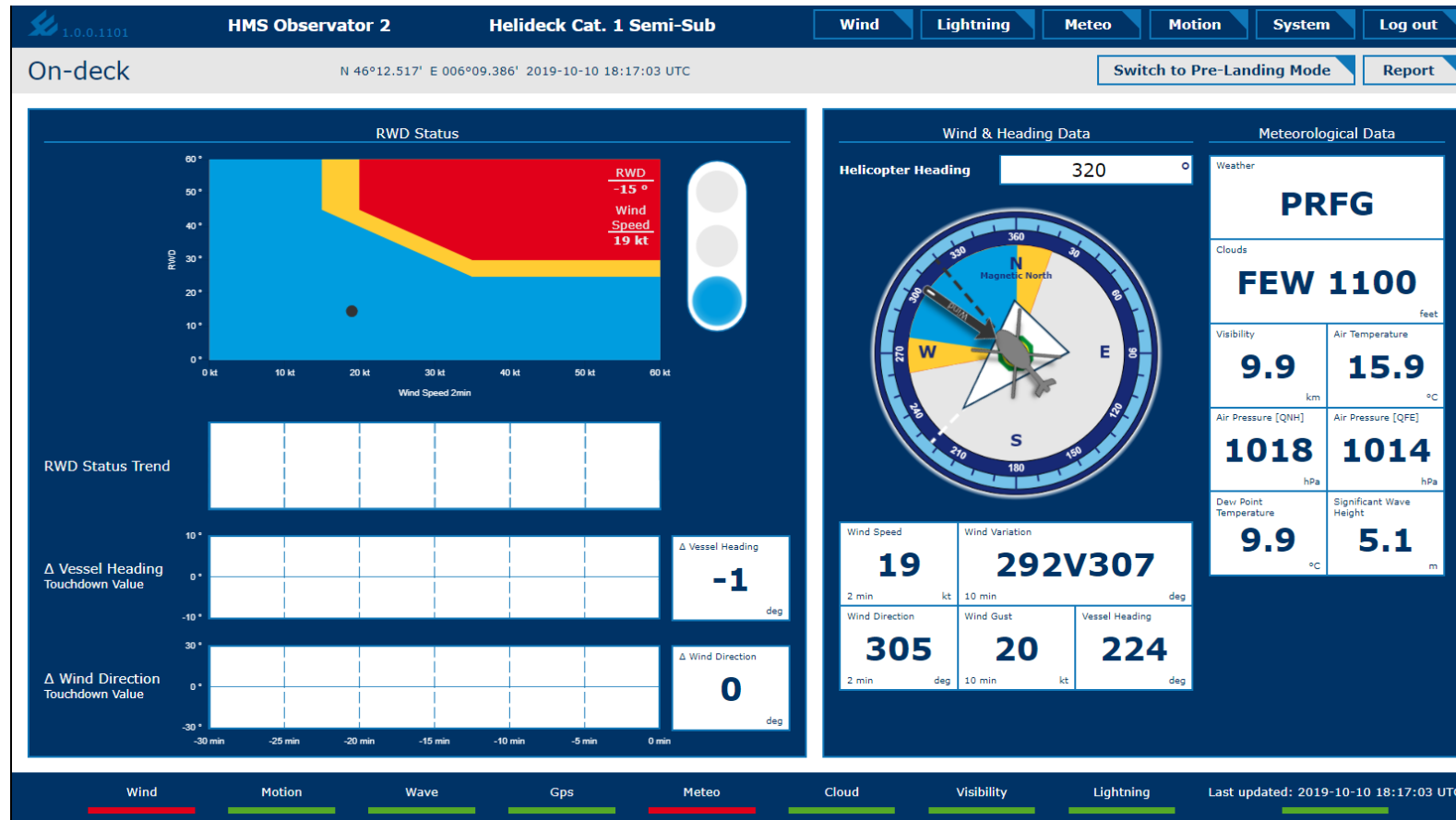
- Mandatory 'Pre-landing' page



Market introduction HMS3.0

What did we do? SOFTWARE

- Mandatory 'On-deck' page



HSAC RP UPDATES

HSAC Helideck Committee

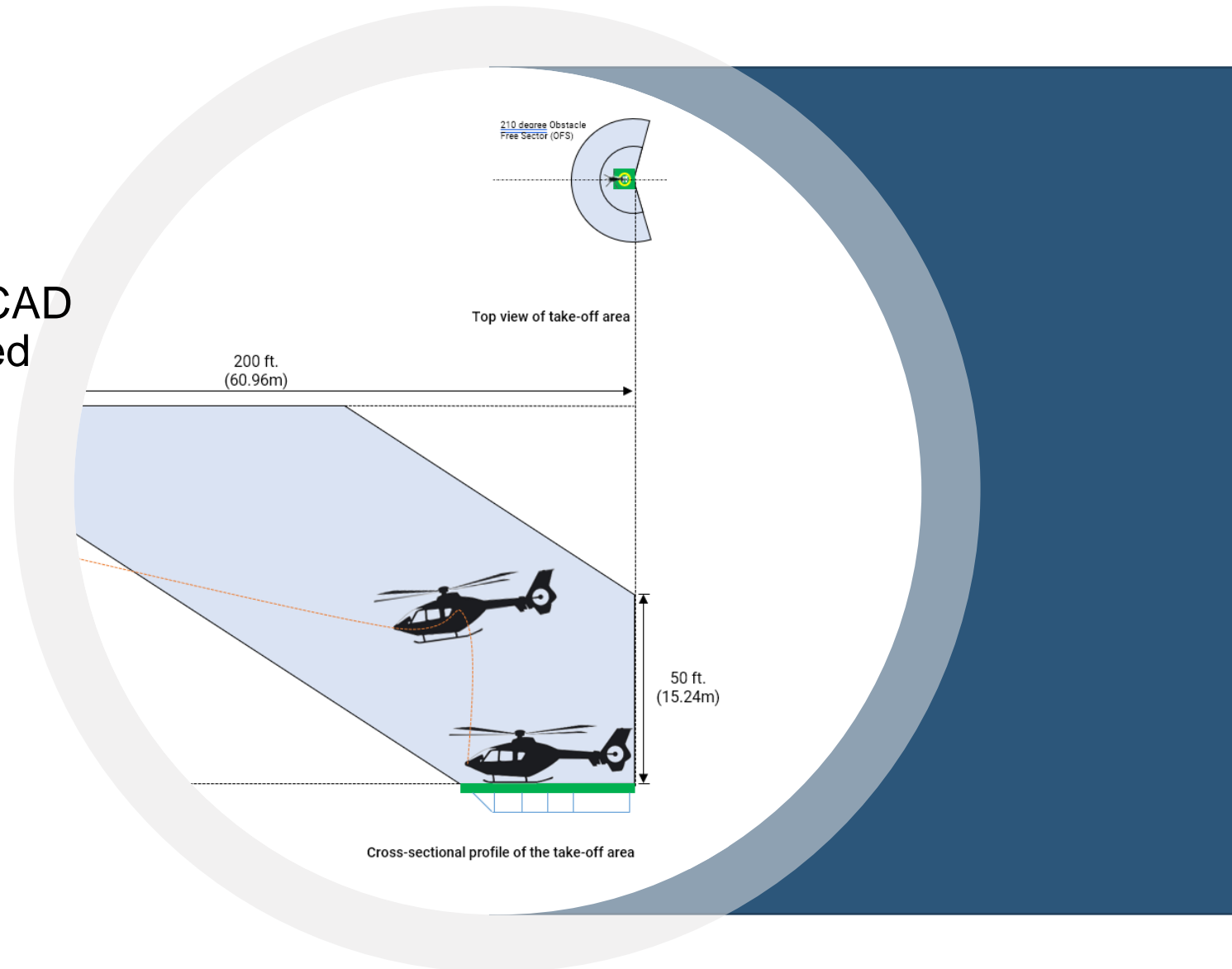


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HSAC RP UPDATES

- HSAC RP 161 – Hot Air/CFD
 - Imenco has offered to create 3D CAD drawings to accompany the revised text.
 - Next slide will show proposed changes.
- HSAC RP Updates based on TBDs in HSAC RP 191
 - See Updates in upcoming slides.



HSAC RP 161 – HOT AIR/CFD

4.7 Hot Air, Raw Gas, and Hydrogen Sulfide (H2S) Discharge

4.7.1 Hot Air Discharge

Hot air discharges from compressors and cooling systems adjacent to helidecks may be hazardous to helicopter operations and can drastically affect helicopter performance and appropriate restrictions shall be imposed on the use of the helideck where either of the above exists.

All new-build offshore helidecks, modifications to existing topside arrangements which could potentially have an effect on the environmental conditions around an existing helideck, or helidecks where operational experience has highlighted potential airflow problems should be subject to appropriate wind tunnel testing or Computational Fluid Dynamics (CFD) studies to establish the wind environment in which helicopters will be expected to operate.

As a rule, a limit on the standard deviation of the vertical airflow velocity of 5.75 ft./s (1.75 m/s) shall not be exceeded. The helicopter operator should be informed at the earliest opportunity of any wind conditions for which this criterion is not met. Operational restrictions may be necessary.

When the results of such modelling and/or testing indicate that there may be a rise of air temperature of more than 2°C (averaged over a three-second time interval), the helicopter operator should be consulted at the earliest opportunity so that appropriate operational restrictions may be applied.

Any restrictions or limitations based on exceeding the turbulence or ambient air temperature rise due to hot air discharge mentioned above shall be documented in the Helideck Information Plate (See HSAC RP 164) and/or in a NOTAM made available to the air operator(s) operating to the facility's helideck, mentioning the specific conditions at the offshore facility and the wind speed and wind directions that induce the turbulence or ambient air temperature rise, allowing the air operator to apply the restrictions or limitation during flight planning and before departing to the offshore facility.

Example of Helideck Limitations, including those rooted in turbulence and hot air discharge:

| Wind Direction | Wind Speed | Limitation/Comments |
|--------------------|------------|--|
| Due to turbulence: | | |
| 110°-160° | 00-30 kts | • No restriction |
| | 31-44 kts | • Apply HCA Helideck Limitation List – Table 2 Weight Limitations |
| | 45+ kts | • Landings Prohibited |
| When flare is lit: | | |
| 090°-125° | 00-15 kts | • Apply HCA Helideck Limitation List – Table 2 Weight Limitations due to hot exhaust gases drifting through helideck operations area and degrading helicopter performance. |
| In all conditions: | | |
| | | • Apply HCA Helideck Limitation List – Table 1 (T) if over-flight of adjacent Bravo platform is unavoidable during take-off. |
| | | • Approved Helideck Friction – no net installed |

NOTE 1:

When considering the volume of airspace to which the mentioned criteria apply, installation designers should consider the airspace up to a height above helideck level which takes into consideration the requirement to accommodate helicopter landing and take-off decision points or committal points. (See Figures 1, 2, and 3 below).

NOTE 2:

HeliOffshore's Flight Path Management Recommended Practice provides additional information.

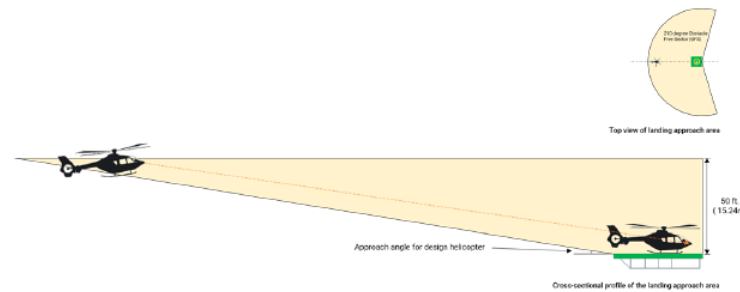


Figure 1: Example of Approach Profile for use in CFD analysis

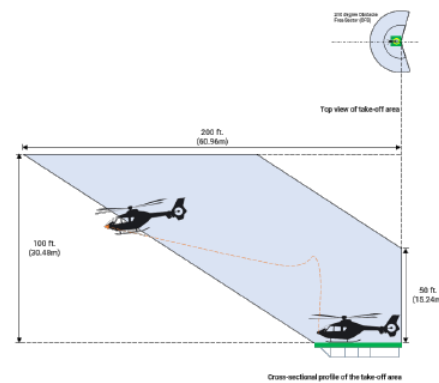


Figure 2: Example of Take-off Profile for use in CFD analysis

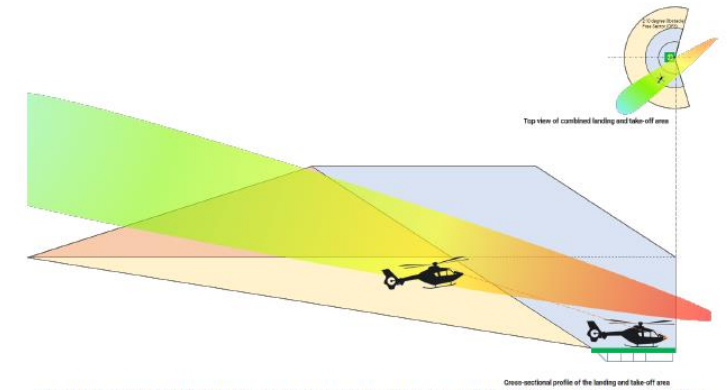


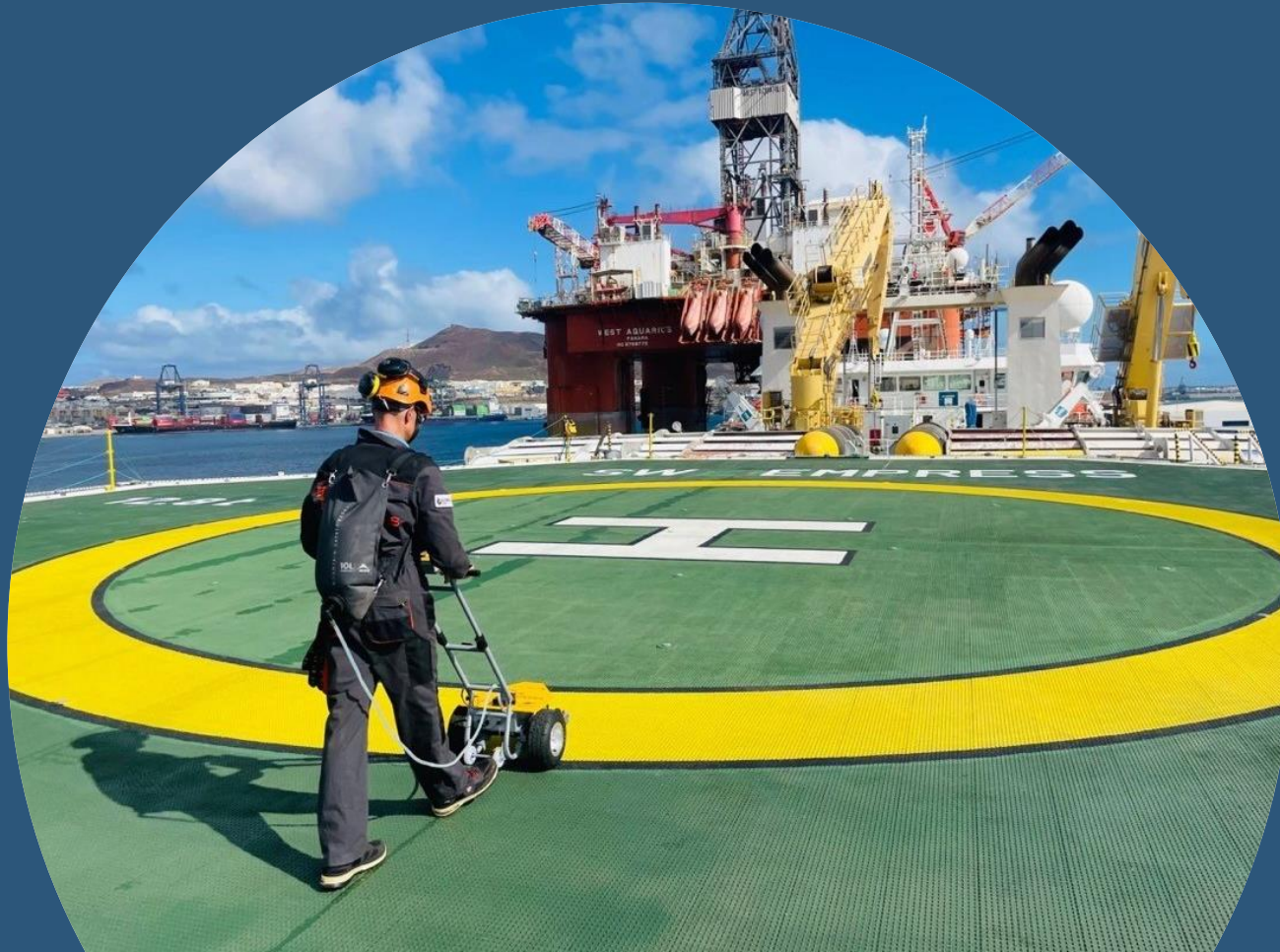
Figure 3: Example of Combined Approach and Take-off Profile for use in CFD analysis with hot-air dispersion plot

BI-WEEKLY HELIDECK COMMITTEE WORK

| Control | Control Activity | Safety Critical Equipment | Safety Critical Task | NUI | Proposed Text | Proposed Location of Reference | Reviewed? |
|---------|--|---|---|-----|---|---|-----------|
| 1.1.3.4 | Federal Agency Alert (Rogue Aircraft) | TBD | TBD | N/A | CFR Title 14 Chapter I Subchapter F Part 99 SECURITY CONTROL OF AIR TRAFFIC | | |
| 1.2.2.1 | Helicopter Preventive Maintenance Schedule and MEL | Air Operators General Maintenance Manual. | National Aviation Authorities Regulatory Requirements | N/A | CFR Title 14 Chapter I Subchapter G Part 135 Subpart J § 135.425 Maintenance, preventive maintenance, and alteration programs, and CFR Title 14 Chapter I Subchapter G Part 135 Subpart C § 135.179 Inoperable instruments and equipment. | | |
| 1.4.2.3 | HLO Communication | Helideck Operations Manual | TBD | N/A | When the flight crew initiates the 20 minute radio call and the helideck on the intended facility for landing is unavailable (e.g. a Prohibited Landing Marker is placed on the helideck, or Helideck Status Lights are switched ON), the HLO shall inform the pilot by radio that the helideck is unavailable for helicopter operations and the aircraft should return to base. If a helicopter is identified on final approach to the facility's helideck and radio communications to prevent a landing on the closed helideck are unsuccessful, the HLO shall light signals (see Par. 9.9) or hand signals (see ICAO Annex 2) to prevent the pilot from landing. | Add HSAC RP 163 Par 7.7.3.4 <i>Helideck Not Available for Helicopter Operations</i> | |
| 1.4.3.3 | Procedures in HLO Manual | [163] Appendix 3 Attachment 1 Par 5.1. Helideck Operations Manual | TBD | | Deploying and Securing a Prohibited Landing Marker (PLM). In case the helideck is considered temporarily unavailable for helicopter operations, a Prohibited Landing Marker (PLM) can be deployed solely or in addition to the use of Helideck Status Lights (when available). The procedure to deploy the PLM and the addition to the exercise schedule shall be part of the HOM. Caution: Deploying the PLM is a potentially hazardous activity due to the fact that improper deployment could cause the PLM to act as a sail and potentially pull personnel overboard. The PLM should be folded in a way that simplifies the deployment and minimizes the risk mentioned above. It is advised that the upwind ropes are secured to the helideck tie-down points before unfolding the remainder of the marker and securing the downwind ropes. The PLM should be secured tightly to the deck, minimizing slack in the ropes. Deploying and securing a PLM shall be part of the annual Helideck Team exercise schedule. Whenever a PLM is deployed or removed from the helideck, this shall result in the release or retraction of a NOTAM. Additionally, the helideck status shall be provided to the air operator in the daily status report (See Appendix 3 Attachment 6). | Update HSAC RP 163 Par 8.8.1 <i>Temporary Closing</i> | |
| 1.5.2.3 | Manual Wave Off Periodically Exercised | Helideck Operations Manual | [165] Par 20.1 TBD | N/A | The use of Hand Held Light Signals shall be part of the annual Helideck Team exercise schedule. | Update HSAC RP 163 Par 9.9.2 HLO Hand Held Light Signals | |
| 1.6.1.2 | Daily Flight Schedule Briefing | Helideck Operations Manual. | TBD | N/A | m. The Daily Flight Schedule is briefed to the helideck team and crane operators as a minimum. | Update HSAC RP 163 Par 9.1.1. <i>Helicopter Landing Officer (HLO) Responsibilities</i> | |
| 1.6.1.3 | Platform PA Announcement of Incoming Flights | Helideck Operations Manual, PA. | TBD | N/A | Following the 20 minute call a PA announcement will be made to alert all personnel that helicopter operations will commence, so all pre-landing activities can be completed prior to the 'Green Deck' call. | Update HSAC RP 163 Par 8.10.1 <i>Crane Operations</i> | |

FUTURE WORK

HSAC Helideck Committee



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DISCUSSION FUTURE WORK

- HeliOffshore MMHEL incorporation into HSAC RP 163
- Upon OPITO adoption into training library, incorporation of OPITO HOIT + Helideck Initial Emergency Response and Refueling Training into HSAC RP 163 par 12.1 Table 34 and 12.2 Helicopter Landing Officer (HLO) and Helideck Assistant (HDA)
- OPITO Helicopter Admin Training and CAP 437 Heli Admin Requirements Review for implications to HSAC RP 160 series.





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THANK YOU!



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<http://www.hsac.org/>