Interim guidance on night operations

A review of all night offshore aviation accidents was conducted on behalf of the OGP Aviation Sub-Committee, based on data collected between 1990 and 2007. It found that the night offshore accident rate was 8.4 per 100k flight hours compared to the total rate of 1.6 per 100k flight hours. This large disparity prompted the formation of a Night Operations Working Group to study risk reduction measures. This resulting guidance provides an overview of the principal controls considered necessary for night operations, with particular emphasis placed on night offshore helicopter activities, both for routine planned flights and those conducted in the event of an emergency.

The guidance provided is presented in a risk-based format to emphasise the connection between threats, associated controls and applicable recovery/mitigation measures (summarised in Figure One). In the interest of brevity, common controls are not duplicated for each threat. The guidance is presented at a level that OGP Members can use, where applicable, in their risk assessment process, thereby establishing clear expectations with regard to management of night aviation risk with their contracted aircraft operators.

OGP Members and air operators are encouraged to risk-assess controls to the level of detail necessary for their individual operations.

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Figure 1: Risk-based schematic of night operations controls & recovery measures

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1 For reference: the International Civil Aviation Organisation define ‘night’ as the ‘hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be prescribed by the appropriate authority. (Civil twilight ends in the evening when the centre of the sun’s disc is 6 degrees below the horizon and begins in the morning when the centre of the sun’s disc is 6 degrees below the horizon.)
Common controls

Common controls that apply to all threats associated with night operations.

Control 1.1 Night IFR flight

Flights flown at night should be conducted in compliance with Instrument Flight Rule (IFR) procedures using IFR certified multi-engine aircraft.

For those operations where night can only be conducted under Visual Flight Rules (VFR), the aircraft operator should conduct an appropriate risk assessment.

Control 1.2 Night IFR qualified crew

Flights flown at night should be flown using two pilots, type rated on the aircraft type in use, who hold valid and current instrument and night flying ratings. The issue of fatigue should be considered when rostering crew to both night stand-by and actual night flights (see AMG Section 5.6).

Control 1.3 Pilot night experience

Pilots should have 25 hours night time experience before operating as Pilot-in-Command at night. In the case of offshore operations, the 25 hours should be offshore time. They should have both also completed, within the last 12 months, initial or recurrent night proficiency training (see AMG Section 8.1.7 and Control 1.4). When rostering crews for night operations, the ‘pairing’ of crew should be specifically considered to avoid, whenever practical, a crew having low total or recent night experience.

Control 1.4 Pilot night recency

All pilots assigned to night operations should retain night recency of not less than three night cycles in the preceding 90-days. A night cycle consists of a stabilised approach, landing and take-off.

For offshore operations, night recency is to be conducted to an offshore helideck.

Use of a simulator of the same type and series being flown may be used if agreed by the OGP Member’s Aviation Advisor provided the device has the capability of simulating the approach and landing to an offshore helideck. In addition the specific device to be used must be approved for that use by national authorities.

In extreme latitudes, where night time is limited during summer months, a ‘summer alleviation’ to this requirement may be agreed by the OGP Member’s Aviation Advisor.

Control 1.5 Night ground training

Air operators engaged in night offshore activities should conduct annual ground training on night offshore operations for pilots.

Control 1.6 Emergency Night Flight Policy

An Emergency Night Flight Policy should be established in all circumstances when night flights can reasonably be expected to be requested in response to medical, weather or other emergencies. OGP Members, in consultation with the air operator, should develop, using a risk assessment methodology, a documented night medevac/emergency policy. This should be issued to both parties and have a suitable level of authorisation to request such flights. In recognition of their higher risk, night offshore emergency flights should only be requested in genuinely life-threatening situations where the risk of waiting until first light is considered to outweigh the risk of an emergency night flight. Once the cause of the emergency is over, subsequent flights, such as for re-manning, should be conducted under the Non-Emergency Night Flight Policy. Pilots should be rostered for night stand-by duty in accordance with the principles in AMG Section 5.6.6.

Control 1.7 Non-Emergency Night Flight Policy

The scheduling of non-emergency night flights should only be undertaken after a risk assessment by the OGP Member Company that considers in-particular the effectiveness of the Emergency Response/Search and Rescue (SAR) capability. Non-emergency night winching should be avoided (see AMG Appendix 9).
2 Weather – controls

Weather conditions force the aircraft to deviate from original flight path and result in an aircraft accident.

Control 2.1 Adverse weather policy
When weather conditions have the potential to question the ability to provide a suitable SAR capability, an Adverse Weather Policy should be developed to provide a formalised process between the aircraft operator and the Company to communicate when night flying operations should be restricted or temporarily halted. The policy should consider the potentially higher risk of night operations and the greater SAR challenges. Limitations at night, for example for sea states or for pitch, roll and heave of floating helidecks, will normally be more restrictive than during daytime (See AMG Appendix 6).

Control 2.2 Weather reporting
Destination weather reporting should follow the requirements outlined in AMG Appendix 6.3.4. Wind indicating systems should be illuminated.

Control 2.3 Weather radar
All aircraft contracted to be able to operate at night should be fitted with colour weather radar. In the event the weather radar becomes unserviceable, the aircraft should not be flown at night in IMC and only if the weather forecasts indicate there is no likelihood of thunderstorms, lightning, turbulence or icing.

3 Disorientation – controls

Handling pilot becomes disorientated and results in aircraft accident.

Control 3.1 Standard Operating Procedures
The air operator is to have documented CRM/Standard Operating Procedures (SOPs) pertaining to night operations which should include stabilised approach criteria and a clear missed approach/go-around procedure (see also Control 6.1). Challenge and response checklists should be used that reflect these procedures and clearly define each pilot’s responsibilities. SOPs for day IFR and night operations should not differ.

Control 3.2 Simulator training
Crews operating any aircraft at night should attend initial and recurrent type specific simulator training or Flight Training Devices when reasonably available for that aircraft type (see AMG Section 8.1.2.2).

Use of simulators for crews operating offshore at night should incorporate dedicated night operations to offshore facilities and include:
- stabilised approaches;
- instrument approach procedures;
- missed approaches/go-arounds;
- emergency procedures;
- simulation of subtle crew incapacitation;
- visual to instrument recoveries; and
- other known flight occurrences unique to the offshore environment.
4 Helideck collision – controls

Aircraft impacts helideck structure resulting in an accident.

Control 4.1 Helideck obstacle clearances
For helidecks requiring a night capability, ICAO Annex 14 Volume II ‘Heliports’ should be used in design considerations, construction or major rework for helipad size and obstacle determination. Practical application of this standard for offshore operations is referenced by CAP 437 ‘Offshore Helicopter Landing Areas’.

Control 4.2 Helideck lights & management
All new helidecks, or those in for major refurbishment, should have helideck illumination designed to meet the requirements of ICAO Annex 14 Volume II ‘Heliports’ (again CAP 437 ‘Offshore Helicopter Landing Areas’ details practical implementation). It should be noted that the ‘green’ perimeter lights are a considerable enhancement to safety. Deck lighting should be maintained with Helideck Landing Officers (HLOs) and aircrew being diligent to report deficiencies. HLOs and other personnel should be acquainted with, and equipped for, the extra hazards of night operations.

Control 4.3 Helideck night validation flights
Helideck acceptance for new facilities should take into account night lighting. Dedicated night validation flights, commanded by a training captain and accompanied only by personnel considered essential for the validation, should be conducted to all new-build platforms and when any major change has been made that might affect night illumination. The objective of the validation flight is to confirm suitability of helideck obstacle illumination, platform lighting, and instrument/visual approaches to the platform in ambient surroundings, with any deficiencies being rectified prior to routine night helicopter operations.

5 Controlled Flight Into Terrain/Water (CFIT/W) – controls

An airworthy aircraft under the control of crew is flown into the ground (or water) resulting in an accident.

Control 5.1 AFCS/Autopilot
Aircraft operated at night should be fitted with a serviceable autopilot or AFCS with the associate crew responsibilities clearly defined in the operator’s SOPs. All helicopters expected to conduct SAR or hoist-operations at night should have an auto-hover capability (see AMG Appendix 9).

Control 5.2 TAWS/AVAD
Aircraft that may be tasked to provide flight at night and on long-term contract should be fitted with an approved and serviceable Class A Terrain Awareness and Warning System (TAWS) or AVAD capability with appropriate voice warnings compatible with offshore approach procedures. The operator should have corresponding procedures outlining the action to be taken by the crew in the event of an alert.

Control 5.3 Radalt/IVSI
All aircraft flown at night should be equipped with at least one radio altimeter with dual displays with visual and audio warnings. Both displays should be serviceable for any flight at night or conducted under IFR irrespective of any allowances offered by the approved Minimum Equipment List (MEL).
Furthermore aircraft operated at night should be fitted with two instantaneous vertical speed indicators.
6  Loss of control - controls

A crew loses control of an airworthy aircraft and results in an accident.

Control 6.1  Stabilised approaches
Aircraft operators are to detail type-specific stabilised approach and mandatory go-around procedures in the relevant section of the Operations Manual (Ref: Flight Safety Foundation ALAR Briefing Note 7.1).

Control 6.2  Use of automation
Aircraft operators should reference use of automation in the relevant section of the Operations Manual, considering both the benefits and associated hazards.

Control 6.3  Flight Operations Quality Assurance (FOQA)/Flight Data Monitoring (FDM)
Long-term contracts should require a FOQA/FDM capability that is routinely used to assess, among other things, approach and landing standards. Night approaches and landing should also be trended separately.

7  Recovery measures

Mitigating defenses in the event of an aircraft accident.

Control 7.1  Emergency response/Search & Rescue (SAR) plans
Emergency response and SAR capability/performance should be considered for night helicopter activity, with particular focus when operating in hostile environments and the Adverse Weather Policy. As a minimum there should be consideration of the estimated survival times of personnel given environmental conditions and mitigating measures (such as survival suits etc.) and the availability, readiness and effectiveness of available night SAR resources and estimated rescue times (see AMG Appendices 6 and 12). Where a SAR helicopter capability is provided they should be operated by trained SAR crews and equipped with a full night hoisting/auto-hover capability (see AMG Appendix 9).

Control 7.2  Helicopter emergency exit marking systems
Emergency exit lighting (such as HEELS or EXIS) should be fitted to helicopters engaged in night operations and be automatically activated following the flooding of the aircraft (see AMG Section 10.3.4).

Control 7.3  Aircraft flotation system
Offshore helicopters should be fitted with an emergency flotation system. Automatic inflation systems should be installed. The certified float sea state capability should be a factor in the Adverse Weather Policy.

Control 7.4  Externally mounted liferafts
Liferafts should be carried, and where a suitable approved modification exists, these should be externally mounted and able to be deployed internally or externally.

Control 7.5  Survival equipment
For night operations, life-jackets should be equipped with an integral light. Immersion suits approved by the local regulatory authority should be provided to crews and passengers for helicopter offshore operations in hostile environments and/or when required by a risk assessment. Other equipment such as a 're-breather' self breathing device (or other emergency air devices) or personal locator beacon may be required by a risk assessment. Passengers and crew should be trained in the use of this equipment and helicopter underwater escape (see AMG Section 8).

Control 7.6  Satellite flight following
Where possible an approved satellite tracking system should be provided to augment the flight following system. Satellite reporting intervals should be at least at two-minute intervals with higher reporting frequencies encouraged at lower levels. This may be used in lieu of the scheduled radio transmissions where suitable procedures exist to ensure data is monitored.
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