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PETROLEUM CSG

HSE MANAGEMENT SYSTEM CONTROL

AVIATION OPERATIONS CONTROLS

Petroleum HSE Control No: PHSE-14-C01	
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TABLE OF CONTENTS

INTRODUCTION	3
Purpose	3
Application and Scope	3
Responsibility	3
 Aviation Operations Controls	 3
Control 1 – Aviation Operations Management	4
Control 2 – Requirements for aircraft operators	6
Control 3 – Aviation Activities	8
Control 4 – Aircraft and Aircraft Equipment Specifications	16
Control 5 – Flight Crew, Ground Crew and Passengers.....	19
Control 6 – Maintenance Activities.....	22
Control 7 – Airport, Heliport and Helideck Facilities	23
 References and Definitions.....	 25
Appendix A: Qualifications and Experience	27
Appendix B: Specific Requirements for Airborne Geophysical Surveys	28
Appendix C: Specific Requirements for Helicopter External Load Operations.....	30

<p style="text-align: center;">Petroleum</p>	<p style="text-align: center;">Health, Safety & Environment Management System</p> <p style="text-align: center;">Aviation Operations Controls</p>	
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INTRODUCTION

Purpose

The Petroleum Aviation Operations Controls define requirements for managing chartered aviation risks in Petroleum.

The Petroleum Aviation Operations Controls form part of the Petroleum HSE Management System and are established using industry best practices and guidelines and standards developed by OGP, IAGSA, and the Flight Safety Foundation.

Where a conflict exists between the requirements in the Aviation Operations Controls and applicable local aviation laws, the more stringent must be applied.

Application and Scope

Petroleum facilities, and Petroleum personnel and visitors using short-term and/or long-term chartered aircraft must comply with this Control. The Control excludes activities associated with scheduled commercial travel.

Responsibility

Unless otherwise stated, managers and supervisors responsible for Petroleum activities are accountable for the implementation of the Aviation Operations Controls specified in this document.

Petroleum personnel must comply with the requirements in the document, and the expectations detailed in [Petroleum HSE Management System](#).


AVIATION OPERATIONS CONTROLS

This document defines the requirements for managing aviation operations within Petroleum and provides direction to related Petroleum reference documentation.

The mandatory requirements of these Controls are signified by the use of the word “must”. The word “should” indicates that the primary intent is to comply with the full requirements, however there may be cases where compliance is neither possible nor practicable. In cases where “should” has been used in a requirement or a risk assessment has been conducted to demonstrate that a different control ensures the risk is tolerable, variation may be considered as compliance if the most Senior Manager of the operation in consultation with Petroleum Principal Aviation Specialist approves it based on an evaluation of the risk.

The remainder of this document describes the intent of each Control and provides a set of corresponding performance requirements.

<p style="text-align: center;">PHSE-14-C01</p>	<p style="text-align: center;">CONTROLLED DOCUMENT</p> <p style="text-align: center;">Page 3 of 33</p> <p style="text-align: center;"><small>Printed copies of this document are not controlled. To verify this copy is current, check the Petroleum Portal.</small></p>	<p style="text-align: center;">Rev. 6.1</p>
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CONTROL 1 – AVIATION OPERATIONS MANAGEMENT INTENT

To manage aviation activities in order to identify, assess and eliminate or minimize aviation related risks.

PERFORMANCE REQUIREMENTS

Aviation Management Procedure

- 1.1. Petroleum facilities and projects with aviation activities must develop and implement a procedure that is commensurate with the nature of the respective aviation activities.
- 1.2. The procedure must cover:
 - Compliance with the requirements in this Control and local aviation regulations. Where local regulations exceed any part of this Controls document, the regulations must take precedence.
 - Bridging documentation between the aircraft charter operators processes including an agreed Adverse Weather Policy stipulating when flying activities are allowed or prohibited.
- 1.3. The aviation management procedure and all Journey Management Plans must be reviewed and approved for issue by the Principal Aviation Specialist.

Roles, Responsibilities and Accountabilities

- 1.4. The responsible Petroleum line manager for the operation (Exploration/GGO Project Manager, Development Project Director or Production Unit Manager) is responsible and accountable for the following:
 - Establish systems to ensure full compliance with the requirements of this Controls document.
 - Approve an Adverse Weather Policy developed jointly with the aircraft operator.
 - Approving the aviation management procedure(s) as required in Petroleum Aviation Operations Control 1.1 and 1.2.
 - Formally assign single point accountability for aviation activities including interfacing with chartered aircraft operators.
 - Ensure appropriate line managers participate in aviation risk assessments.
 - Review and approve Aviation Operations Variance Requests relating to this document with the HSE Team Leader prior to dispatch to the Petroleum Principal Aviation Specialist.

- 1.5. The Petroleum Principal Aviation Specialist must be consulted for specialist advice regarding aviation activities conducted by Petroleum.
- 1.6. Petroleum offshore facilities must have a trained Helicopter Landing Officer (HLO) available for all helicopter movements with all relevant duties and responsibilities clearly outlined in a current and up-to-date HLO Manual. The Petroleum HLO is responsible and accountable for the following:
 - Manage helideck (or helipad) landing and takeoff operations.
 - Ensure compliance with a locally developed Petroleum Helicopter Landing Officer Manual.
 - Be present for all helicopter landing and takeoff operations.
 - Determine the number of Helideck Assistants required to support the HLO.
 - Ensure Helideck Assistants receive adequate training as required by this Controls document.
 - Ensure any installed refueling systems are in working order and the daily fuel checks have been completed and documented.
 - Inspect the helideck prior to arrival of the helicopter to ensure the helideck is clear of all obstructions and any debris and all cranes are stowed with power off and operators are out of the cab.
 - Maintain direct two-way radio communication with the flight crew and report a “Clear or Green Deck” to the flight crew ONLY when the approaching aircraft is in sight AND after the flight crew has confirmed the identity of the offshore platform.
 - Supervise the passenger transfer at all times but especially when rotors are running.
 - Ensure helideck crew wears appropriate Personal Protective Equipment (PPE) including a high visibility vest.
 - The HLO must remain in a safe location during takeoff and landing operations (an area/location unlikely to be impacted in the event of a

PHSE-14-C01	CONTROLLED DOCUMENT Page 4 of 33 <small>Printed copies of this document are not controlled. To verify this copy is current, check the Petroleum Portal.</small>	Rev. 6.1
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helicopter incident) at the facility, prepared to respond as required in the event of an incident.

- 1.7. The HLO must successfully complete an HLO training course. HLOs must receive recurrent training at least once every three years, or more frequent if required by local regulatory requirements.
- 1.8. Petroleum Helideck Assistants are responsible and accountable for the following:
 - Provide assistance to the HLO as directed.
 - Comply with the requirements defined in this Controls document.
- 1.9. Helideck Assistants shall receive formalized and documented training from an approved HLO, and where possible include participation in periodic emergency drills.
- 1.10. Petroleum owned and operated airfields must have personnel assigned the responsibility of providing oversight and management of the airfield and operating standards. Duties must include having a basic understanding of the local aviation regulatory system, certification requirements of the airfield and daily airfield reporting officer duties.

Aviation Risk Management

- 1.11. Before commencing operations for any new or existing aviation activity a documented assessment of operational risks and their respective mitigation shall be conducted in accordance with the [Petroleum Hazard and Risk Management Controls](#) and related procedures. Assessment must be conducted to assess aviation risks for:
 - Routine flights.
 - Non-routine flights.
 - Change to:
 - A routine flight.
 - Changes to regulatory or other requirements.
 - Changes to environmental and/or operational conditions.
- 1.12. Risk assessments must be conducted by a team that at a minimum includes line managers and the Principal Aviation Specialist (or designate), the aircraft operator, and other relevant personnel as required.

- 1.13. The outcome of risk assessments must be reviewed and approved by the Principal Aviation Specialist.

Approval, Selection, and Engagement of Aircraft Operators

- 1.14. The Principal Aviation Specialist must approve all chartered aircraft operating companies for Petroleum. The Principal Aviation Specialist must obtain final approval from the BHP Billiton Head of Group HSEC prior to engagement of a chartered aircraft operating company.
- 1.15. The tender process and award of all contracts, and changes to existing contracts regarding the use of chartered aircraft must require technical endorsement from the Petroleum Principal Aviation Specialist to ensure the appropriate specification, terms and conditions and written agreements are applied.
- 1.16. Engagement of aircraft operators must include a written agreement between Petroleum and the aircraft operator appropriate to the nature of task, incorporating as a minimum the requirements contained within this Control.

Selection and Engagement of Aviation Specialists

- 1.17. The selection and engagement of Aviation Specialists must be approved by the Petroleum Aviation Specialist.

Variations

- 1.18. In circumstances where the requirements of this Controls document cannot be met, a [Petroleum HSE Variance Form](#) must be completed and forwarded for review and approval by the Petroleum Principal Aviation Specialist, Vice President HSE, and the respective Division Presidents prior to commencing the aviation activity.

CONTROL 2 – REQUIREMENTS FOR AIRCRAFT OPERATORS

INTENT

This section specifies the minimum pre-qualification requirements for all aircraft operators.

PERFORMANCE REQUIREMENTS

Equipment, People and Systems

- 2.1. Aircraft operating companies chartered by Petroleum must carry equipment, employ personnel and establish management processes in accordance with the relevant requirements stated in the Petroleum Aviation Controls document.
- 2.2. Aircrew and flight scheduling personnel working for aircraft operating companies chartered by Petroleum must agree in writing to comply with the Petroleum Aviation Operations Controls.

Accreditation and Membership

- 2.3. Aircraft operating companies chartered by Petroleum must have an Air Operator's Certificate (AOC) issued by the recognized aviation regulatory authority with all operations conducted within the limits of the AOC.

Safety Management Systems

- 2.4. Aircraft operators must have a Safety Management System (SMS) commensurate with the size and complexity of their operation. The SMS must include:
 - Appointment of a Safety Officer;
 - Hazard identification and risk management;
 - Safety auditing and assessment;
 - Accident and incident reporting and investigation;
 - A process to identify deficiencies and implement remedial action.

Incident Notification

- 2.5. Aircraft operators must advise the Petroleum aviation single point of accountability (for their charter operation) and the Petroleum Principal Aviation Specialist of any incident, accident or non-standard occurrence related to the services provided to Petroleum that has, or potentially has, disrupted operations or jeopardized safety. Notification must be made verbally within 24 hours and in writing as soon as practicable. The

written report must include any proposed corrective actions with deadlines for completion.


- 2.6. Aircraft operators must advise Petroleum of any incident that results in a fatality, loss of an aircraft or damage to an aircraft with a potential repair cost of more than US\$100,000 irrespective of the charter or operational arrangements.

Adverse Weather Policy

- 2.7. The aircraft operator must establish and implement a documented Adverse Weather Policy which defines weather conditions that have the potential to make normal aircraft operations or the ability to provide suitable rescue and response capability.
- 2.8. The Policy must be endorsed by the Petroleum Principal Aviation Specialist and ensure there is a formalized process between the aircraft operator and Petroleum about when flying operations should be restricted or temporarily halted.

Insurance

- 2.9. In addition to regulatory requirements and any additional insurance cover required by Petroleum, each aircraft operator must as a minimum carry Combined Single Limit Aviation Third Party and Passenger Liability Insurance in respect of property damage, injury, illness or death in an amount appropriate to the type of aircraft and usage envisaged. The minimum monetary insurance level must be obtained from the Petroleum Principal Aviation Specialist.
- 2.10. The Petroleum Principal Aviation Specialist must be notified in writing about any cancellations or material changes to the aircraft operator's insurance policy within 30 days of the change.
- 2.11. Insurance must cover Petroleum, its subsidiaries and affiliated companies named as an additional insured.

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Sub-Chartering Aircraft

- 2.12. Sub-chartering by the aircraft operator from a third party for Petroleum flights must not be undertaken without a documented agreement with the contracting charter operator, and approval by the Petroleum Principal Aviation Specialist.
- 2.13. Regardless of ownership, aircraft must be operated and controlled in accordance with the provisions and limitations of the AOC under which they are being operated.
- 2.14. Aircraft owned and operated separately by numerous owners pooled for convenience on one AOC must comply with the relevant requirements in the Petroleum Aviation Operations Controls and must not be accepted by Petroleum without the written approval of the Petroleum Principal Aviation Specialist.

CONTROL 3 – AVIATION ACTIVITIES

INTENT

Controls that must be implemented by the aircraft operator and Petroleum personnel for all aviation activities.

PERFORMANCE REQUIREMENTS

Authority of Pilot-in-Command

3.1. The pilot-in-command is responsible for compliance with all aviation regulations and the requirements in this Controls document, and safety of the flight. Petroleum personnel have the authority to direct the pilot-in-command not to proceed with a flight if they feel safety may be compromised. However, a representative of Petroleum must not direct a pilot or aircraft operator to violate aviation regulations, this Controls document, or override a safety decision not to fly made by the pilot-in-command.

Journey Management Plans

3.2. Journey Management Plans must be prepared by Petroleum aviation single point of accountability for the intended flights. A single Journey Management Plan may be adequate for identified multiple routine flight routes and tasks. Individual Journey Management Plans must be established for all non-routine flights. The scope and terms specified in the Journey Management Plan must be reviewed by the site senior responsible line manager and the Petroleum Principal Aviation Specialist to confirm that these are current and applicable for the flight activities.

3.3. Journey management plans must take into consideration but not be limited to:

- The purpose and objectives of the flight.
- Aircraft type.
- Pilot qualifications and recent experience.
- Pilot flight and duty time limitations.
- Route details.
- Sector flight times.
- Hazards, weather and available daylight.
- Diversion airfields or landing sites.
- Potential for aircraft congestion on and around the airport or helicopter landing area.
- Emergency response resources.

3.4. Appropriate contingencies must be included in journey management plans to ensure flights can

be completed within the available time or that alternative arrangements are in place in the event of a delay en route.

Flight Sharing

3.5. Flight sharing (bus stopping between BHP Billiton Petroleum facilities, including contracted facilities (e.g. MODU's, construction vessels, etc.) is defined as a routine journey and considered acceptable practice provided:

- A risk assessment is completed;
- The facility Safety Case is reviewed;
- The resulting risk level is considered acceptable, and
- The Journey Management Plan is updated to include multiple stops.

3.6. Any flight sharing to a facility not specified in the Routine Journey Management Plan or not contracted to BHPB requires a Non-Routine Journey Management Plan, supporting risk assessment, and verification. Search, rescue, and emergency response resources must also be identified in the plan.

Emergency Response Plans

3.7. An emergency response plan commensurate with the flight being conducted must be established by the aircraft operator with involvement from Petroleum responsible line manager.

3.8. The plan must take into account:

- The roles and responsibilities of the Petroleum site representative (assigned with single point accountability), operator personnel and the airport/heliport operators.
- Documented lines of communications between Petroleum and the aircraft operator.
- Documented land before last light limitations.
- Exposure considerations.
- Local search and rescue (SAR) capabilities with special attention paid for night operation.

- Hazards associated with the surrounding environment.
 - Use of linked life rafts where practicable following a risk assessment.
- 3.9. The Plan must be exercised at least annually and if practicable, must be tested within 30 days of the start of a new operation. Tests and exercises must be designed to include:
- Worst case scenarios covering weather, last light and aircraft disposition.
 - Effectiveness of bridging documentation between the aircraft operator, other emergency response resources (e.g. SAR resources) and Petroleum.

Ground Procedures

- 3.10. The Operations Manual must include reference to ground handling and maneuvering of aircraft.

Flight Following

- 3.11. Aircraft flight-following must be provided and contact maintained at all times by whatever radio frequencies and methods are appropriate. Position reports must be transmitted by the flight crew at intervals of at least every 15 minutes and recorded by flight-following personnel (including at least the current aircraft position and present altitude).
- 3.12. Approved automatic satellite based position tracking systems may be used in lieu of the 15 minute radio position reports provided that such systems transmit position data at least every two minutes with greater frequency at lower altitudes and the aircraft position is continually monitored by an appropriate ground station.
- 3.13. Regardless of the systems used, information received from the aircraft must be monitored by an appropriate ground station that can initiate the emergency search and rescue response plan activated in the event of distress or loss of communications.

Aircraft Takeoff and Performance Standards

- 3.14. Multi-engine aircraft capable of sustaining a 1% net climb gradient above the route lowest safe altitude or 500 feet above the terrain in the area of operations with One Engine Inoperative (OEI) shall be used whenever the following conditions exist:
- When operating in a hostile environment
 - Any portion of the flight will be in instrument (non-visual) or night conditions

- When operating on extended over water flights.
- 3.15. Multi engine fixed wing aircraft must meet balanced field requirements so that following an engine failure on takeoff, the aircraft will be able to stop on the remaining runway or continue and climb achieving a net climb gradient greater than the takeoff path obstacle gradient.
- 3.16. Multi engine fixed wing aircraft that do not have flight manual balanced field performance charts must have loading restricted to ensure a net takeoff flight path to clear obstacles by not less than 35 feet to a height of 1,500 feet above the airfield, assuming the loss of an engine on achieving the published speed for best rate of climb (Vy) with retraction of the undercarriage, flaps fully retracted, and the propeller on the inoperative engine feathered.
- 3.17. For rotary wing aircraft, wherever possible multi engine helicopters must be operated in accordance with Category A Performance Class 1 such that if an engine fails the helicopter is able to land within the rejected takeoff area or to safely continue flight to an appropriate landing area at the minimum safe altitude.
- 3.18. Where Performance Class 1 cannot be practicably achieved on multi-engine helicopters, it is acceptable to operate to Category A Performance Class 2 such that if an engine fails the helicopter is able to safely continue flight at the minimum safe altitude, except that when the failure occurs early during the takeoff or late in the landing profiles, a forced landing may be required. Further, offshore helicopter flights must minimize exposure time over the helideck edge and be operated to Performance Class 2 or better at all times.
- 3.19. For operations to offshore installations and vessels, the aircraft operator must develop, train and adhere to operating procedures that minimize risk in the case of an engine failure during the critical stages of takeoff and landing.

Instrument and Night Flying Restrictions

- 3.20. Flights offshore must land at the final onshore destination at least 30 minutes prior to sunset.
- 3.21. Where instrument and night flying is required, it must first be risk assessed jointly with the operator and only be conducted in accordance with Standard Operating Procedures (SOPs) contained in their Operations Manual and subject to the following conditions:

- Flights conducted in Instrument Meteorological Conditions (IMC) by day and all flights at night must be flown in compliance with an Instrument Flight Plan in a multi-engine aircraft certified and equipped for flight under IFR with dual controls fitted.
 - Operated by two pilots who hold valid and current instrument and night flying ratings (for night flying) with the required minimum recent experience for both instrument and night flying in the same category and class of aircraft as the proposed flight.
 - Serviceable weather radar must be fitted to the aircraft as per [4.6](#). All offshore helicopters flown at night or under IFR shall be fitted with color weather radar having a minimum range scale of 2.5 nm with one half nm range scale graduations.
 - Serviceable autopilot or AFCS must be fitted to the aircraft and operated during the flight and in normal operations coupled during the flight and approach (DHC-6 Twin Otter, Beech 99, Beech 1900, Beech King Air 90/100/200, Embraer Banderante, and Fairchild Swearingen Metro III/IV fixed wing aircraft are exempt from this requirement).
 - Two ADF receivers must be fitted to the aircraft, but only if an NDB approach is the only approved instrument approach available.
 - Flights must be flown at or above published or calculated Minimum Enroute, Minimum Sector or Lowest Safe Altitudes for IFR flight.
 - Airplanes and helicopters are restricted to weights that permit the aircraft to maintain a minimum one-engine inoperative net climb gradient of 1 per cent at the Minimum Enroute, Minimum Sector or Lowest Safe Altitudes.
 - When Visual Meteorological Conditions (VMC) cannot be maintained below Minimum Enroute, Minimum Sector or Lowest Safe Altitudes any descent must only be conducted in accordance with published instrument approach or arrival procedures approved by the national aviation regulatory authority. Both pilots must be qualified and current, and the aircraft be fitted with serviceable approved equipment to fly the approach or arrival procedure.
 - IFR and night approach recency is to meet that of the local regulatory environment, but not less than 3 night takeoff and landings for each pilot in the preceding 90 days.
 - All offshore crews rostered for night support shall maintain a recency of 3 night deck landings every 90 days.
 - Night flights must only be operated to and/or from airports approved by the aviation regulatory authority and equipped for night operations.
- 3.22. Night flying must be risk assessed, considered operationally necessary, and approved prior to commencement. This includes night medical evacuations which must only be conducted in life threatening situations that cannot wait until first light as determined by the offshore installation manager in consultation with medical staff. Search and rescue availability, capability and survival times must be included in the risk assessment. The Petroleum Principal Aviation Specialist must be involved in night flying risk assessments and will determine the approval process on a case by case basis.
- 3.23. For new build facilities, a night validation flight must be conducted as close to operational start-up as practicable with the objective of validating helideck and platform lighting, and instrument/visual approaches to the platform in ambient surroundings. The night validation flight must be subject to a risk assessment and approval in accordance with Petroleum Aviation Operations Control [3.22](#).
- 3.24. Aircraft operating under Visual Flight Rules (VFR) must meet local regulatory requirements during the departure, enroute and destination legs. Local operating procedures developed for those areas where rapidly changing VFR conditions exist. Planned use of Special Visual Flight Rules (SVFR) procedures must only be used when endorsed by the Petroleum Principal Aviation Specialist.
- 3.25. Aircraft operations must have thunderstorm avoidance techniques outlined in the Aircraft Operator's Operations Manual.
- 3.26. Offshore helicopter operations must also comply with the following conditions:
- Offshore crew change and routine flights must be conducted during daylight hours with SAR considerations taken into account for flights nearing the end of daylight. Where there are limited hours of daylight during winter months, routine night flying may be unavoidable.
 - In such cases suitable night SAR capabilities must be available and all flights are to be conducted under Instrument Flight Rules by pilots who meet night instrument and recency requirements.

Aircraft Weight and Balance

3.27. Using actual weights, passengers, baggage and freight must be accurately documented on the aircraft manifest. Measures must be taken to ensure that effects of rain do not alter the weight prior to loading. Standard weights must not be used unless approved in writing by the Petroleum Principal Aviation Specialist. Prior to takeoff, the Pilot-in-Command (PIC) must ensure that fuel and oil requirements are correct, and that weight and center of gravity limits of the aircraft have been calculated and are within limits for the flight. Use of an approved load-sheet is acceptable for use and must be available in the cockpit at all times.

3.28. Bags weighing 50 lbs. (25 kg.) or greater must include a tag indicating "Heavy" and marked with the actual weight as shown in the example provided.



Helicopter to Offshore Shipborne, FPSO and Mobile Drilling Units Operations

3.29. The Pitch, Roll, and Heave of floating vessels shall be measured as close to the helideck level and centerline as possible to provide accurate readings. Floating vessels include Floating Production Storage Offload (FPSO), Mobile Drilling Unit (MODU), Diving Support Vessels (DSV), Derrick barges and seismic vessels.

3.30. This information must be communicated to inbound helicopters by the vessel or HLO and verified by the crew as being within the limits prior to landing.

3.31. The helicopter operator must have established limits for each of the above criteria specified in its Operations Manual for helicopter landing, shutdown, start-up and takeoff.

3.32. Helicopter-to-ship operations involving vessels not fitted with a helideck, must be conducted in accordance with the standards contained in the International Chamber of Shipping (ICS) 'Guide to Helicopter/Ship Operations'.

Simultaneous Multiple Helicopter Landing on the Same Helideck

3.33. Operations requiring the landing of a second helicopter to an offshore helideck must first be risk assessed and approved by the Petroleum Principal Aviation Specialist and a procedure is included in the aircraft operator's Standard Operating Procedures or Operations Manual.

Stabilized Approaches

3.34. Aircraft operators must document details pertaining to type-specific stabilized approach procedures in the relevant section of the Operations Manual including those pertaining to night offshore operations.

Mandatory Go-around Procedures

3.35. Aircraft operators must document mandatory no-fault go-around procedures in the relevant section of the Operations Manual, which must include the need to initiate a go-around maneuver whenever visual contact with the facility is lost past the final approach gate.

Flight Planning

3.36. Wherever practical, flights are to be conducted on an Instrument Flight Rules (IFR) flight plan filed with the relevant regulatory agency.

3.37. When not possible, use of Visual Flight Rules (VFR) flight plans is permitted but details must be filed with an appropriate regulatory agency, Aircraft Operator or Petroleum site representative (assigned with single point accountability) and flown under a documented flight following program.

Cruising Altitudes

3.38. Flights must comply with the ICAO cruising altitudes for both VFR and IFR flight unless circumstances, such as weather, demand non-standard procedures. Determination of cruising altitude by the Pilot-In-Command must consider utilization of radar controlled services.

3.39. Where known bird migratory routes are identified, practical attempts must be made to plan cruise altitudes greater than 3000 feet above ground level (AGL).

Fuel Requirements

3.40. In addition to operational holding fuel requirements, fuel loads shall cover fuel for the entire planned route including fuel used during start-up, taxi, en route, approach and transit to the

alternate destination (if required). Additional variable reserves of 10% of the total trip fuel and 30 minutes as fixed reserve are to be carried. The Pilot-in-Command will ensure that the quality of the fuel being uplifted is acceptable for operation of the aircraft.

- 3.41. Aircrews must have access to reliable weather information when determining fuel loads in pre-flight planning.
- 3.42. The aircraft operator must have procedures in place that require the Pilot-in-Command to ensure the required amount of fuel is on board the aircraft prior to each flight.
- 3.43. For offshore operations, in addition to any holding or alternate destination fuel requirements, helicopters must always carry as a minimum, sufficient fuel to reach the offshore destination and return to a land-based location suitable for a run-on landing in the event of an engine failure or a control malfunction, plus a minimum reserve limit of 20 minutes at normal cruise consumption rate.
- 3.44. When using a dedicated fuel source, a sample from the source must be taken and tested using a water test kit approved (examples of approved test kits include Shell water capsules or Valcon hydrokits). Samples must be stored in a sealable clear jar with a screw-top lid and retained until the completion of the daily flight activities.

Offshore Alternates

- 3.45. One way fuel computations and the use of offshore-only alternates must only be considered if the offshore destination has been approved for OEI landings and approval granted by the Petroleum Aviation Specialist.
- 3.46. Approval to use any offshore installation as an intermediate fuel stop must only be considered following a risk analysis and approval given by Petroleum Principal Aviation Specialist only after all other options have been considered.

Manifesting

- 3.47. A passenger and freight manifest must be completed for each flight and where applicable, for each sector. Details must include numbers and full names of passengers and crew, personal weights, baggage weights, freight details and weight, departure time, and the estimated time of arrival of the flight.
- 3.48. The manifest must always accurately reflect the occupants of an aircraft when in flight, a copy

accessible by flight following personnel at all times and carried by the pilot-in-command.

Cabin Baggage

- 3.49. Cabin baggage must be kept to a minimum. Personal items such as a book or bound magazine may be carried; however briefcases and larger items must be stored in a secured baggage area, overhead bin, underneath the seat in front or otherwise restrained.
- 3.50. Newspapers must not be carried inside the passenger cabin or in the vicinity of helicopters.
- 3.51. On helicopters traveling offshore, only soft cover books or magazines securely bound up to A4 or letter size are permitted as carry-on cabin baggage. Briefcases, laptop computers and newspapers are specifically prohibited as carry-on baggage and must be secured in the helicopter's baggage compartment.

Carriage of Freight

- 3.52. Normally all freight must be secured and isolated from the passenger compartment. However packaged freight may be carried in the cabin on a limited basis provided it is segregated from the passengers, placed forward of the passengers where practical, adequately restrained, does not block normal or emergency exits, or impede passenger access to those exits. Passenger baggage must not be carried inside the passenger cabin due to the difficulties in providing adequate restraint.

Dangerous Goods Cargo

- 3.53. The aircraft operator must have appropriate procedures and trained personnel for the carriage and acceptance of dangerous goods. Carriage of dangerous goods must comply with International Air Transport Association (IATA) guidance (or similar guidance such as Title 49 of the Code of Federal Regulations) on Dangerous Goods Regulations.
- 3.54. Aircrew must complete dangerous goods awareness training at intervals not exceeding two-years.
- 3.55. Dangerous Goods must be properly manifested separately and flight crew members must be advised of the contents and location prior to loading aboard the aircraft.

Drummed Fuel

- 3.56. The aircraft operator must have documented procedures covering at a minimum the requirements under this section.
- 3.57. Portable refueling units used with bladder or drum fuel stock at field locations must be fitted with Go-No-Go filters which close off the flow of fuel if water is detected in the fuel. Wherever possible, a water coalescer/separator must be fitted.
- 3.58. Fuel drums:
 - Should be lined with an approved epoxy liner.
 - Must be stored horizontally with bungs at 3 and 9 o'clock.
 - Should have minimal contact with the ground (using wooden slats or equivalent).
 - Should be covered where possible.
 - Must be tested and approved for use including allowing fuel drums to settle 1 hour for each 1 foot of fuel depth after the drums have been moved to the vertical. (Note: Drums should be identified by placard during the settling period indicating the time when settling will be completed).
- 3.59. Use of drummed fuel must be contingent on thorough sampling and testing procedures. The fuel must be checked for color, clarity and contaminants, and tested for water using a test kit (see Petroleum Aviation Operations Controls [3.44](#)).
- 3.60. Before fueling the aircraft, a small amount of fuel must be pumped into a container to remove any contaminants from the hose and nozzle.
- 3.61. Fuel stored in drums or bladders must not be used if the seals are broken or not tight; or if the shelf life has expired or the packaging date is greater than 12 months.

Offshore Refueling

- 3.62. Unless local operational requirements are greater, flight crewmembers must take (or personally witness) a fuel sample from the delivery nozzle prior to each refueling operation at all offshore locations.

Hot Refueling

- 3.63. Refueling a fixed wing aircraft with engines operating is prohibited.
- 3.64. The refueling of any aircraft must not be conducted with passengers onboard unless, in the

opinion of the pilot-in-command, it presents greater danger to the passengers if they disembark rather than remain onboard. In this case, passengers must be fully briefed on emergency egress procedures prior to commencing refueling operations. All occurrences of refueling with passengers onboard the aircraft must be immediately reported to the Petroleum Principal Aviation Specialist with a full explanation of the rationale behind the decision to retain the passengers onboard. (Note: Under no circumstances shall a passenger occupy the well seat of a Bell 212, 214, or 412 series aircraft with doors closed during ANY refueling operations).

- 3.65. Hot refueling of any aircraft must only be conducted when considered operationally necessary, approved by the Petroleum Aviation Specialist, and under controlled conditions (e.g. offshore or at contractor base where trained refueling personnel provide fuel). The following conditions must be adhered to during hot refueling:
 - A pilot must remain at the controls of the helicopter whenever the engine is operating regardless of whether the rotors are turning or not.
 - Only approved refueling installations can be used – refueling from portable containers/jerry cans is not permitted.
 - Fire fighting equipment must be available and manned.
 - Personnel involved in the refueling must be competent in the refueling and emergency procedures.
 - Radios must not to be used during refueling.
 - Anti-collision lights, radio altimeter, radar, transponder and DME equipment should be switched off.
 - Prior to removing the fuel cap and inserting the fuel nozzle or connecting the pressure hose into the aircraft fuel tank, grounding wires running from the fuel station and from the fuel hose to the aircraft must be connected.
 - When refueling is completed, the Pilot-in-Command must verify that all equipment is removed, the fuel cap has been securely replaced and the aircraft is properly configured for flight.
 - Correct fuel loads must be confirmed by the Pilot-in-Command prior to departure.

- Other than for offshore operations, refueling a helicopter with rotors turning and or engine(s) operating is only permitted when a condition exists which would prevent a successful restart of an engine, wind conditions prevent a safe shutdown and start up, or in emergency situations such as facility evacuation or medevac.
- 3.66. The aircraft operator must document in a procedure all aspects of hot refueling, including personnel training, sequence of aircraft grounding and duties of personnel (in addition to the pilot) required. At a minimum three copies of the procedure must be available for helicopter operations, one for refueling, one for pump shut-off and one for the fireguard.

Helideck Refueling System Inspections

- 3.67. If the offshore installation contains refueling equipment and storage, an inspection must be conducted separately and refueling procedures developed. Particular attention must be placed on daily sampling of the fuel prior to arrival of the helicopter as well as sampling procedures immediately prior to helicopter refueling.
- 3.68. Helideck refueling installations must be inspected initially, and annually thereafter by a qualified fuel specialist designated by the Petroleum Aviation Specialist or the aircraft operator. The inspection schedule shall include a review of refueling procedures that encompasses daily testing, sampling and sample retention practices. Records of inspections must be maintained.

Helideck Inspections

- 3.69. Prior to commencing operations to a new helideck, or with a new operator to an existing helideck, experienced and qualified personnel from the aircraft operator shall perform an inspection and brief all relevant offshore personnel in the safe operating practices and procedures for the helicopter type being used. The briefing should also include actions to be taken in the event of any helicopter emergency occurring on the helideck.
- 3.70. Helidecks must have an annual helideck inspection conducted by appropriately qualified aviation specialists or the aircraft operator. Documented findings and action plans resulting from any inspection shall be retained at least by the HLO.

Airfield Inspections

- 3.71. In addition to any regulatory required reviews, all Company owned and/or operated airfields should have a minimum of an annual operational control and safety review by qualified airfield specialists.

Airfield Bird Control

- 3.72. Where bird activity is known to exist, aircraft operators must use all available resources to minimize the risk of bird strike during all operations.

Security

- 3.73. Petroleum and the aircraft operator must implement security procedures to ensure that only approved and manifested personnel, baggage and freight are carried. Security checks must include, but not be limited to the use of metal detectors for passengers and x-ray equipment or manual searches to inspect personal baggage. Once passengers, baggage and freight have passed through the security process they must be quarantined to maintain security integrity.

- 3.74. The Aircraft operator must have effective security controls to prevent prohibited items and substances from being taken on board the aircraft. These security checks must cover all passengers and freight. Prohibited items and substances include:

- Alcohol.
- Dangerous Goods that would require a permit.
- Explosives.
- Flammable and combustible liquids and solids.
- Gases and pressure containers including aerosols.
- Illegal drugs and narcotics or other unlawful or unauthorized substances
- Infectious and radioactive materials.
- Ignition sources including lighters and matches.
- Magnetic materials.
- Oxidizers and corrosives.
- Poisons and other toxic substances.
- Weapons including firearms and knives.
- Other items or substances that would pose a hazard to personnel (Petroleum or the aircraft operator personnel).

<p>Petroleum</p>	<p align="center">Health, Safety & Environment Management System</p> <p align="center">Aviation Operations Controls</p>	
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- 3.75. Procedures must be implemented to ensure control of the following items:
- Electronic devices such as laptops, mobile phones, PDAs, CD players and MP3 players must be switched off and secured in checked baggage prior to security check.
 - Baggage must be secure. Plastic bags are not allowed for transportation of freight or personal baggage.
- 3.76. Procedures must be in place to identify and require removal of any intoxicated or disruptive passengers prior to their boarding the aircraft.
- 3.77. The helicopter operator must ensure that access to the helicopters prior to flights departing offshore is strictly controlled to prevent access by unauthorized personnel.
- 3.78. When loading or unloading passengers from helicopters with the rotors running, the pilot at the controls must only be carrying out essential cockpit duties that identify external hazards and passenger movement around the aircraft. This includes communication as required with the HLO.

Check In Security Away from the Operators Home Base

- 3.79. Anytime an aircraft is operating away from its home base that does not include a check-in system equal to or better than the system in place at the home base, the flight crew must check the manifest against each passenger and verify each passenger against a government issued form of photo identification.
- 3.80. Flight crews must further ask if passengers are carrying on their person or in their checked baggage any items prohibited by Petroleum. Baggage will be subject to search upon arrival at the offshore installation

Safety Briefing

- 3.81. Passengers must undergo a full aircraft specific safety briefing in accordance with the requirements in Petroleum Aviation Operations Control [5.30](#) through [5.35](#).

<p>PHSE-14-C01</p>	<p align="center">CONTROLLED DOCUMENT</p> <p align="center">Page 15 of 33</p> <p align="center"><small>Printed copies of this document are not controlled. To verify this copy is current, check the Petroleum Portal.</small></p>	<p align="center">Rev. 6.1</p>
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CONTROL 4 – AIRCRAFT AND AIRCRAFT EQUIPMENT SPECIFICATIONS

INTENT

To specify the minimum requirements for aircraft and aircraft equipment used for Petroleum aviation activities

PERFORMANCE REQUIREMENTS

Passenger carrying Aircraft

- 4.1. Aircraft carrying passengers for or on behalf of Petroleum must be multi-engine, fitted with dual controls and operated by two qualified pilots.
- 4.2. Petroleum rotary wing operations are to be conducted as follows:
 - For all offshore operations greater than 25 nautical miles offshore and for all night and IFR operations, medium or heavy twin-engine helicopters capable of flying under Instrument Flight Rules (IFR) and crewed by two pilots must be used.
 - For onshore operations and offshore operations up to 25 nautical miles, light twin-engine helicopters crewed by two pilots may be used.
- 4.3. Sideward facing seats must not be used on passenger carrying aircraft during takeoff and landing. (Note: This does not apply to the Bell 212, 214, or 412 series aircraft provided the well seats include regulatory approved shoulder restraints which are used and passengers are briefed on the importance of their use).

Single Engine Fixed Wing Aircraft

- 4.4. Single engine fixed wing aircraft must not be used to carry Petroleum personnel.
- 4.5. Single turbine-engine fixed wing aircraft may be used for non-passenger carrying Petroleum activities.

All Aircraft

- 4.6. Aircraft chartered by Petroleum must have the following equipment (except where indicated as optional):
 - Global Positioning System (GPS) (IFR TSO required for night and IFR operations).
 - Traffic Collision Avoidance System - Aircraft capable of being flown at night, under IFR, and contracted for more than six months must be fitted with a Traffic Collision Avoidance System (TCAS). If the aircraft is fitted with TCAS, the operator must have documented procedures

describing the action to be taken in the event of a TCAS alert.

- Terrain Awareness and Warning System - Aircraft that may be tasked to provide flight under IFR or at night and contracted for more than six months must be fitted with an approved and serviceable Class A Terrain Awareness and Warning System (TAWS) when an approved modification exists for the aircraft type. If the aircraft is fitted with TAWS, the aircraft operator must have documented procedures describing the action to be taken by aircrew in the event of a TAWS alert.
- CVR/FDR - Aircraft contracted for more than six months and certificated with a seating capacity of more than nine passenger seats shall be fitted with a Cockpit Voice Recorder and Flight Data Recorder when available for the aircraft type.
- Weather Radar – All aircraft contracted to be able to operate under IFR or at night shall be fitted with a serviceable weather radar. In the event the weather radar becomes unserviceable, the aircraft may be flown in Visual Meteorological Conditions (VMC) only and must not be flown in Instrument Meteorological Conditions (IMC), or at night unless the weather forecasts indicate there is no likelihood of thunderstorms, lightning, turbulence or icing.
- Radar Altimeter - Aircraft flown under IFR or at night must be fitted with a serviceable radar altimeter with audiovisual alert. If the radar altimeter becomes unserviceable, the aircraft may be flown under IFR by day in conditions that do not require an instrument approach.
- Two VHF transceivers and where VHF coverage is not assured, the aircraft must be fitted with one HF receiver.
- Mode C or S transponder.
- Two VOR/ILS.
- Instantaneous VSI.

- Public Address System – Passenger carrying aircraft must be fitted with a public address system of sufficient clarity and volume such that passengers must be capable of understanding all verbal messages from the pilots at all times during flight.
- High Visibility Pulse Lights - Aircraft contracted for more than six months operating in airspace without radar coverage and where the potential for conflicting traffic is assessed as being high must have high visibility pulse lights fitted. Potential conflicting activities include low level VFR flights and high density operations in uncontrolled airspace.
- Fuel low Level light - When available for the aircraft type, a fuel low level warning light must be fitted.
- At least one fire extinguisher.
- Engine Trend Monitoring - Where available, all turbine single engine aircraft contracted for more than six months must be fitted with a serviceable automatic electronic engine trend monitoring system. The aircraft operator must follow documented procedures to routinely download and analyze engine trend data.
- Automatic Positioning Tracking - Aircraft contracted in hostile environments must be equipped with an approved automatic satellite based position tracking system. The system must display and record time, position and altitude information based on the flight following requirements in Petroleum Aviation Operations Control [3.11](#) through to [3.13](#). The system components must include a cockpit distress function with corresponding audio at the base station, cockpit indication of functionality, satellite phone with text back-up, internet-based monitoring system and ability to adjust reporting intervals based on altitude.
- When available for the aircraft type, contracts that are for duration of three-years or greater and which specify individual aircraft are to have operational Flight Data Monitoring capability that is routinely used to assess operational approach and landing standards.
- External mirrors for situational awareness (optional).
- External loud hailer for passenger control (optional).
- New aircraft should be selected based on the latest certification standards.

Helicopter Airframe and Engine Vibration Monitoring System

- 4.7. Helicopters continuously chartered for more than six months must be fitted with a Health Usage Monitoring System (HUMS) or airframe and engine Vibration Monitoring Systems (VMS) where systems have been developed and approved for the helicopter type. The aircraft operator must follow documented procedures to routinely download and analyze HUMS or VMS data.

Offshore Helicopter Operations

- 4.8. Equipment for all offshore helicopters must include but is not limited to:
- Flotation System – The helicopter must be fitted with pop-out type flotation gear capable of being activated remotely by the flight crew as well as having a water-activated float switch when available for the aircraft type.
 - Pop Out Windows – When an approved modification exists, emergency pop-out windows must be installed.
 - Passenger Headsets – The helicopter must be fitted with noise attenuating headsets or ear defenders for each passenger. Where possible at least one two-way headset should be provided for coordination with passengers.
 - Radar Altimeter – The helicopter must be fitted with at least one radio altimeter with dual displays, both of which must be serviceable for any flight at night or flight conducted under IFR. This requirement supersedes what may be outlined in the regulatory approved MEL.
 - An approved TSO-C-126 waterproof VHF/UHF Emergency Locator Transmitter must be installed on the airframe of each helicopter (automatically deployable whenever possible) and in each life raft and personal beacons (EPIRB) in each crewmember's life vest.
 - Weather Radar – All offshore helicopters flown at night or under IFR shall be fitted with color weather radar having a minimum range scale of 2.5 nm with one half nm range scale graduations.
 - Flight Data Monitoring Program (FDMP) – The helicopter must be fitted with equipment capable of downloading operational data to an installed ground station which is routinely analyzed for variations, anomalies or non-compliance with standard procedures for all phases of flight operations.

- Emergency Exit Lighting – When an approved modification exists, an emergency exit lighting system is to be fitted to the aircraft.
- Underwater acoustic beacon that transmits when submerged. If the aircraft is equipped with a CVR, the beacon must be attached to that CVR.

Seat Belts with Upper Torso Restraint

- 4.9. All helicopter and single-engine airplane crew and passenger seats shall be fitted with upper torso restraints and worn by crew and passengers at all times.
- 4.10. Seat belt extensions are not authorized for seatbelts that include upper torso restraints.

Emergency Locator Transmitter

- 4.11. An Emergency Locator Transmitter (ELT) meeting the requirements of Technical Standard Order (TSO) 126 (406MHz) or equivalent shall be fitted to all contracted aircraft. The responsible party noted on ELT registration as the primary contact is also to be detailed in the aircraft operator’s Emergency Response Plan.

Survival Equipment

- 4.12. A survival pack containing sufficient food, water and survival equipment appropriate for the operating environment must be carried in the aircraft.
- 4.13. A minimum of one first aid kit must be carried on all aircraft.

Life jackets

- 4.14. Constant wear life vests approved by the appropriate aviation authority must be provided for each individual passenger on the helicopter. Passengers must have these jackets donned and properly fastened at all times during the flight. Where approved by the local authority, life vests with crotch strap designs are preferred.
- 4.15. For Gulf of Mexico operations, passengers must wear life jackets at all times during flight, including flights over land.

Re-breathers

- 4.16. Approved non-pressurized re-breathing equipment may only be used in the case of passengers having received training in its use with deployment and use also covered in pre-flight safety briefings.

Life rafts

- 4.17. Two approved life rafts that are reversible or self-righting, double chambered and capable of being tethered to the aircraft, shall be carried and be readily accessible in the event of ditching. Each life raft is to have an overload capacity that is equal or greater to the total occupants carried in the aircraft. When an approved modification exists, life rafts must be externally mounted on the helicopter and be deployable from either inside or outside the helicopter.

Survival suits

- 4.18. Survival suits certified for use by the local regulatory authority shall be provided to crews and passengers for helicopter offshore operations in hostile environments and when required by risk assessment.

Aircrew Survival Vests with EPIRB

- 4.19. Aircrew operating helicopters in hostile environment must wear a survival vest which at minimum contains a voice-capable GPS Emergency Position Indicating Radio Beacon (EPIRB).

Hoist Equipment

- 4.20. Role specific equipment including the hoist, lifting device, harnesses, PPE and associated tools must at a minimum to be maintained, tested and certified in accordance with the manufacturers approved maintenance program.
- 4.21. Night hoist operations must only be conducted in an aircraft that is specifically equipped to do the task (including auto-hover capability) and with a crew specifically trained in night hoist operations.
- 4.22. Hoist operations must be conducted by personnel that meet the requirements in Petroleum Aviation Operations Control [5.21](#) and [5.22](#).

CONTROL 5 – FLIGHT CREW, GROUND CREW AND PASSENGERS

INTENT

Aircraft flight and ground crew must meet and maintain qualifications and experience specified in this section. Controls for all passengers traveling on Petroleum chartered aircraft are also specified in this section.

PERFORMANCE REQUIREMENTS

Flight Crew Qualifications and Experience

- 5.1. Flight crew must meet the qualifications and experience requirements detailed in [Appendix A](#) and any additional requirements applicable to the type of flying being undertaken as determined by the risk assessment.
- 5.2. Procedures outlining duties and responsibilities of all crew members shall be prescribed by the aircraft operator in those cases where multi-crew operations are conducted.

Offshore Helicopter Flight Crew Requirements

- 5.3. Pilots (in command) must have a minimum 500 hours total time operating to fixed and mobile offshore platforms and vessels.
- 5.4. Co-pilots must have demonstrated recent experience and competence operating to fixed and mobile offshore platforms and vessels including landing at offshore facilities under normal and emergency conditions.
- 5.5. The helicopter contractor must have a comprehensive initial and recurrent offshore line training program for co-pilots that includes an annual line check specific to the offshore role.
- 5.6. The helicopter contractor must also regulate the occasions when inexperienced co-pilots may handle the aircraft controls, and the level of command supervision required (for example, Training, Line-training or nominated Captain).

Pilot recent experience

- 5.7. For all the above role requirements, recent experience is considered essential and pilots who have not operated under any of the relevant categories for periods in excess of a year must undertake refresher training.
- 5.8. Recency for offshore operations must include three rig takeoffs and landings within the preceding 90 days. When night flying is envisaged for normal or emergency operations, a satisfactory night flying background and night recency will be required. Recency for night

offshore operations must include three rig takeoffs and landings at night within the preceding 90 days to an offshore helideck.

- 5.9. Aircrew must have at least 25 hours of night offshore time before operating as pilot-in-command at night.

Training for Inclement Weather

- 5.10. Aircrew must be trained on the identification and recovery measures associated during microburst and wind shear phenomenon.
- 5.11. Aircrew operating aircraft in a cold weather environment (ground snow and ice) must undergo annual training (such as the free online course offered by [NASA aircraft on-line icing courses](#)) prior to the onset of the winter season that addresses:
 - Pre-takeoff inspections.
 - Anti-icing and de-icing including use of holdover time tables.
 - In-flight icing and associated hazards.
 - Cold weather operational takeoff, approach and landing.
 - Runway visibility, contamination and performance considerations.

Flight and Duty Limits

- 5.12. Unless more stringent limits are imposed by regulatory authorities, or the flight is conducted as a special role activity the following flight time limits must apply to each flight crew member:
 - 8 hours in any 24 hour period
 - 40 hours in any consecutive 7 day period
 - 70 hours in any consecutive 14 day period
 - 100 hours in any consecutive 28 day period
 - 1,000 hours in any consecutive 365 day period
- 5.13. For touring or crew rotation schedules, the duty day must not exceed 14 hours.
- 5.14. If duty times exceed 12 hours, a minimum 10 hour rest period must follow.

5.15. Flight crew on rotational rosters that arrive following overnight travel or after travel exceeding four time zones must not be rostered for duties until a 10 hour rest period has been met.

Fitness for Duty

5.16. The aircraft operator must have effective drug and alcohol, and fatigue management programs in place for its flight and ground crew. These programs must comply with local regulatory requirements and be consistent with the [Petroleum Drug and Alcohol Procedure](#).

Flight Check and Training Program

5.17. For contracts more than six months, crews operating aircraft at night or under IFR must attend initial and annual recurrent type specific simulator training or Flight Training Devices when reasonably available for that aircraft type.

5.18. In addition to receiving annual recurrent training to the standards of the appropriate civil aviation authorities, the following flight checks must be conducted on all flight crew members with at least one check completed not less than six months apart from the other checks:

- Instrument Proficiency Check (or Rating) – Annual (for night and IFR operations).
- Visual Proficiency Check – Annual.
- Line Route Check – Annual

5.19. Before commencing flight duties in a new location, all crew members shall receive a documented line check that includes orientation of local procedures and environment.

5.20. All flight crew (including cabin attendants) must have successfully completed Crew Resource Management (CRM) training at intervals not exceeding two years, which includes Threat and Error Management concepts. In the case of single pilot operated aircraft (where approved), completion of Aircrew Decision Making courses is acceptable.

Hoist Operations Experience and Training

5.21. Aircrew assigned to hoist operations must have completed an approved and documented training program reviewed by the Company aviation specialist personnel. To maintain currency, a minimum of 3 hoist cycles within the past 12 months must be part of the training schedule for all aircrew.

5.22. The aircraft operator must establish a documented training program and minimum qualification criteria for all personnel involved in hoist operations, including (but not limited to) the aircrew, hoist operator and down-the-wire swimmer (where applicable). The training program must include an initial competence course followed by annual refresher training.

Maintenance Personnel

5.23. Maintenance personnel must meet the minimum qualifications and experience detailed in [Appendix A](#).

5.24. The aircraft operator and/or aircraft maintenance service provider must establish a recurrent training program for maintenance personnel that is reviewed at least every three years. Training must:

- Ensure sufficient qualified and experienced maintenance personnel are available to perform the necessary maintenance tasks and perform supervisory and management duties.
- Include technical components for aircraft and systems being maintained, human factors in maintenance, and company maintenance documentation and procedures.
- Include training in proper use and documentation of Minimum Equipment Lists (MEL) items.
- Be conducted for maintenance personnel at least every three years.

5.25. Maintenance personnel must hold qualifications and endorsements recognized by the Aviation Regulatory Authority to conduct the necessary inspections and maintenance.

5.26. The aircraft operator or maintenance service provider must establish a fatigue management program to minimize the effects of acute and chronic fatigue among maintenance personnel, which must include maximum working hours, minimum rest periods, and roster schedules. Maintenance personnel must not exceed a 12 hour shift in any 24 hour period under normal circumstances.

5.27. Routine overnight maintenance should be avoided but in situations where it is required, routine overnight maintenance must be reviewed and approved by the Petroleum Principal Aviation Specialist.

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Helicopter Underwater Escape Training (HUET)

- 5.28. All flight crews and passengers shall complete a HUET course that includes use of a Modular Egress Training Simulator (METS) at least every four years unless local regulation requires greater frequency.
- 5.29. Equivalent courses such as cold water or tropical Basic Offshore Induction and Emergency Training (BOSIET/ TBOSIET) are an acceptable alternative to HUET.

Passengers and Passenger Briefing

- 5.30. Passengers must be briefed by a crew member before each flight or flight sector on a multi sector flight. The briefing must include but not be limited to:
 - General description of aircraft and specific avoid/danger areas.
 - A demonstration of use of the lifejackets in use in that helicopter.
 - A demonstration of the brace position to be used by passengers in the event of an emergency landing.
 - Means of communication between crew and passengers.
 - A demonstration of life raft deployment and boarding.
 - A demonstration of EPIRB/ELT deployment.
 - Instructions for not smoking in and around the aircraft, on the tarmac, or at any stage during the flight.
 - Boarding and disembarking instructions.
 - Cabin baggage restrictions.
 - Use and operation of oxygen masks, if applicable.
 - Location and use of normal and emergency exits and all life-saving equipment and any actions required on the part of the passengers.
 - Location of non-smoking and fasten seatbelt signs, and briefing cards.
 - Use of seat belts and shoulder harnesses.
 - Guidance on use of personal electronic devices in accordance with Petroleum Aviation Controls [3.75](#).
 - Passenger dress requirements (Operators shall require passengers to wear clothing and footwear appropriate to the environment being flown over regardless of the flight duration).

- Proper use of survival suits, including the need to have suits fully zipped with hoods and gloves ON during takeoff and landing (When survival suits are required to be worn).
- 5.31. When the first language in the area of operations is not English, the aircraft operator is to provide emergency exit decals and briefing in the local language as well as English.
- 5.32. For offshore helicopters, video briefing material and equipment for each aircraft type demonstrating all relevant safety information must be shown wherever possible.
- 5.33. In exceptional circumstances the actual aircraft used for an offshore flight may be configured differently to that shown in the video safety briefing. In such cases a verbal briefing covering the differences between the actual aircraft and the one shown in the video above must be provided to all passengers prior to departure.
- 5.34. The aircraft must be provided with safety briefing cards for each seat. The cards must be in English as well as the appropriate language(s) for the operational area and these cards must be specific to the type and cabin configuration of aircraft used.
- 5.35. Passengers must be briefed after any sudden descent, return to base, or any other event that may cause concern.

Caps and Other Headgear Around Helicopter

- 5.36. Wearing caps or other headgear in or around the helicopter is prohibited. This does not apply to flight crewmembers when manning their appropriate stations inside the aircraft; flight crewmembers conducting an aircraft inspection so long as the rotors are not turning; and anytime flight crewmembers are outside the aircraft wearing a cap underneath their communication headset.

<p>PHSE-14-C01</p>	<p style="text-align: center;">CONTROLLED DOCUMENT</p> <p style="text-align: center;">Page 21 of 33</p> <p style="text-align: center; font-size: small;">Printed copies of this document are not controlled. To verify this copy is current, check the Petroleum Portal.</p>	<p style="text-align: right;">Rev. 6.1</p>
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CONTROL 6 – MAINTENANCE ACTIVITIES

INTENT

Aircraft and aircraft equipment must be maintained in accordance with the controls in this section.

PERFORMANCE REQUIREMENTS

Aircraft Maintenance

- 6.1. Aircraft (fixed wing and rotary) used for Petroleum flights must be maintained by an approved maintenance organization and therefore must be compliant with all relevant manufacturer issued Mandatory Alert Service Bulletins (ASB) and Airworthiness Directives (ADs) issued by the Aviation Regulatory Authority of the manufactures country of origin or by the country where the aircraft is registered. Aircraft must also be within the manufacturer’s airworthiness limitations, inspection schedules, overhaul schedules, calendar retirement dates and be compliant with all mandatory safety bulletins. Petroleum may require compliance with the manufacturer’s recommended safety bulletins.
- 6.2. Aircraft must be maintained in an airworthy condition by approved, trained and competent staff, in accordance with a maintenance program approved by the Regulator. The aircraft operator must have a formal system for the control and repair of deferred defects which must be based on an approved Minimum Equipment List (MEL) system, documented in the operator’s approved maintenance manual and include target time limitation for repair of defects.

Minimum Equipment Lists

- 6.3. All equipment installed on an aircraft should be operational unless operated in accordance with an approved MEL, or otherwise as approved by the appropriate civil aviation authority under an established program for deferred defects. Such programs shall not be contrary to the Type Data Certificate or equivalent.
- 6.4. Unserviceable equipment covered by the MEL must be removed from the aircraft or marked by placards until removed or made serviceable and an entry made in the aircraft technical or defects log.

Operators Approved Maintenance Manual

- 6.5. Aircraft operators who are not using the manufacturers approved maintenance and inspection manuals must provide a manual for the maintenance and inspection that has been approved by the governing Aviation Regulatory Authority. Maintenance activities must be conducted in accordance with this Controls document and, as a minimum, must contain:
 - Roles and responsibilities of all personnel;
 - Training procedures;
 - Available facilities;
 - Current list of all aircraft;
 - Inspection procedures.

Maintenance Equipment

- 6.6. Aircraft maintenance equipment must be periodically inspected, tested and tagged to ensure serviceability.

Spare Parts

- 6.7. Aircraft spare parts must be genuine, conform to FAA-approved (or equivalent) design data, traceable to the original manufacturer, procured from a supplier approved by the charter aircraft operator and listed in their Quality Assurance program, and stored in an enclosed secure area free from dust, moisture or any other agent that may compromise its integrity and serviceability. There must be clear definition and segregation of aircraft serviceable and non-serviceable parts.
- 6.8. Items in the stores area must be listed on an inventory and must be fully tagged with any expiry dates clearly noted.

Maintenance Schedule Changes

- 6.9. Any changes to the manufacturer’s recommended maintenance schedule must be subject to a formal change management process which documents the justification for the change and clearly records the approval for such change.

CONTROL 7 – AIRPORT, HELIPORT AND HELIDECK FACILITIES

INTENT

Airports, heliports and helideck facilities must have the design specifications outlined in this section.

PERFORMANCE REQUIREMENTS

Airfield and Onshore Helipad Design

- 7.1. Where local guidance is not available, ICAO Annex 14 Aerodromes, Volume I ('Aerodrome Design and Operation') and ICAO Annex 14, Volume II ('Heliports') are to be used for design considerations when constructing (or major rework) permanent long-term Company owned and operated airfields and helipads supporting production operations.
- 7.2. Other factors such as prevailing winds, effect of turbine exhaust, structures that could cause turbulence or change of wind direction or velocity over the helideck, and location of Petroleum facility in relation to the proposed airfield or helipad departure and approach splays must also be included in the initial design.
- 7.3. Petroleum owned and operated airfields should be designed and constructed with the following features:
 - A perimeter fence aimed at preventing livestock, animals and itinerant pedestrian traffic.
 - When required, active bird control shall be conducted and the presence of birds recorded on a periodic basis. These controls should ensure that birds are dispersed or removed in accordance with local wildlife regulatory standards. Seeding grass, open waste disposal and water ponds should be restricted to remove attractions for birds.
- 7.4. Prior to commencement of operations, aircraft operators must conduct a landing site assessment and incorporate the findings into the operational risk assessment required in Aviation Control 1.11.
- 7.5. Parking apron areas at Petroleum owned and operated airfields must be assessed by the aircraft operator as being suitable for operation of their aircraft type along with consideration of other transient aircraft, helicopter operations, refueling considerations and Pavement Classification Number (PCN). Methods and controls (e.g. painted lines where practical or ground marshallers) that ensure aircraft avoid obstacles

when maneuvering within the parking apron, must be implemented.

Crash Boxes

- 7.6. Crash boxes must be accessible to personnel at the airfield, helipad, or helideck. The contents of the crash box must be tailored to the environment and aircraft type, but at a minimum must include:
 - Rescue axe
 - Bolt cutters
 - Crowbar
 - Grab Hook
 - Hacksaw and six spare blades
 - Fire resistant blanket
 - Fire resistant gloves
 - Adjustable wrench

Rescue and Fire Fighting

- 7.7. Petroleum owned and operated helipads or airfields must have appropriate rescue and fire fighting resources (including equipment and trained personnel) commensurate with the potential risk.

Weather Reporting Facilities

- 7.8. Airfields, helipads, and helidecks used by Petroleum must be fitted with the means to obtain accurate weather data which must be provided to the aircrew by a trained weather observer. Minimum requirements include relaying the following information to the flight crew:
 - Wind direction and speed
 - Temperature
 - Barometric pressure
 - Cloud ceiling height and visibility
- 7.9. As an alternative, a certified Automated Weather Observation System (AWOS) at the destination site may satisfy the above requirements.
- 7.10. Weather data monitoring and reporting equipment must be calibrated and records of calibration must be kept in a register.

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Shipborne, FPSO and Mobile Drilling Unit Operations

7.11. The ship, Floating Production Storage & Offloading (FPSO) and MODU must have properly installed and calibrated equipment to provide pitch, roll, heave, and yaw information to the helicopter flight crew to determine that the deck movement is within the safe operating capabilities of the helicopter.

Helideck Design and Construction

- 7.12. Design of new helidecks must include advice from the Petroleum Principal Aviation Specialist.
- 7.13. Helidecks on all new-build offshore production facilities must be built according to U.K. CAP 437 (Offshore Helicopter Landing Areas – Guidance on Standards).
- 7.14. In all cases, helidecks must be built to accommodate the largest helicopter intended to serve the facility. Regardless of local regulations, the size of the Load Bearing Area (LBA) of the helideck must not be less than the overall length of the largest helicopter intended to serve the facility. The overall length must be equal to the distance between the tips of the main and tail rotor while turning (D). Bow mounted helidecks on FPSOs may require larger than normal diameter decks up to 1.5D due to PRH considerations.

Passenger Terminal Area

- 7.15. Airports and heliports must have a waiting area for passengers offering security, basic amenities, protection from the elements, and a barrier from the aircraft movement area.
- 7.16. Separation between incoming and outgoing passengers should be designated.
- 7.17. Written safety material that reinforces key aircraft safety information should be displayed in the waiting area, which may also serve for video briefing and check-in process.
- 7.18. All passenger movements to and from the designated aircraft movement area are to be conducted under the control of a designated Passenger Control Officer (PCO) or Helideck Landing Officer (HLO) who are in a position to signal or communicate with the crew at all times. The PCO can be provided by the Company or the aircraft operator, and if required may be a crew member in a multi-crew operation.
- 7.19. If not a crew member of the aircraft, the PCO and HLO position must be identified by a distinguishing vest.

Designated Freight Areas


7.20. Petroleum owned airfields, helipads, and helidecks must have a designated and secure freight area that provides a controlled environment clear of the aircraft movement area and public thoroughfare.

Hangar Facilities

- 7.21. Hangar facilities suitable for the level of activity performed must be accessible for aircraft operating on all long-term contracts. Long-term field operations, particularly in high rainfall, arctic or desert environments, must at a minimum have sheltered arrangements for the conduct of scheduled and non-scheduled field aircraft servicing.
- 7.22. Hangars must be kept clean and tidy and free of all associated hazards. Hangars must be fitted with fire extinguishers and fire alarms which are regularly tested according to relevant fire regulations and records of such tests must be made available upon request.

Fuel Storage Facilities and Delivery Systems

- 7.23. Fuel delivery systems including portable systems are to be fitted with water blocking filtration of the Go No-Go types. Filter canisters are to be marked with the next date of change or inspection cycle. All filters must be replaced at nominated pressure differentials as annotated on the filter housing or as recommended by the manufacturer, but as a minimum will be replaced annually.
- 7.24. Steel tanks must be lined with an approved epoxy liner unless the tanks are constructed of stainless steel.
- 7.25. New-build fuel systems must have stainless steel plumbing and stainless steel connection welds.
- 7.26. When installing fuel tanks at Petroleum owned or operated facilities, a slope at the base with a sump at the tank low point for sampling purposes, must be specified in the design and installation scope.
- 7.27. Prior to testing and approval for use, all fuel storage facilities must be allowed to settle 1 hour for each 1 foot of fuel depth after the tanks have been re-supplied.
- 7.28. Fuel systems should be identified by placard during the settling period indicating the time when settling will be completed.

Petroleum	Health, Safety & Environment Management System Aviation Operations Controls	 bhpbilliton resourcing the future
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REFERENCES AND DEFINITIONS

References

- [OGP](#) and [HSAC](#) Helideck Checklists
- [OGP](#) and [HSAC](#) Offshore Refueling Checklists
- [Petroleum HSE Variance Form](#)
- [Petroleum Hazard and Risk Management Controls](#)
- [Petroleum Drug and Alcohol Procedure](#)

Definitions

For general terms and definitions, refer to Petroleum Glossary.

Petroleum specific terms and definitions used in this Controls document are provided below:

AGL – Above Ground Level.

AOC – Air Operator Certificate.

BOSIET – (Cold water) Basic Offshore Induction and Emergency Training. See TBOSIET.

Clear Deck / Green Deck – The Helideck is clear and all cranes are stowed with power off and operators out of the cab.

FPSO – Floating Production, Storage and Offloading.

HCA – Helicopter Certification Agency.

HAD – Helideck Assistant.

HF – High Frequency.

HLO – Helicopter Landing Officer.

Hostile Environment – An environment in which a successful emergency landing cannot be assured, or the occupants of the aircraft cannot be adequately protected from the elements, or search and rescue response/capability cannot be provided consistent with the anticipated exposure.

HSAC – Helicopter Safety Advisory Conference (www.hsac.org).

HSE – Health, Safety and Environment.

HUET – Helicopter Underwater Escape Training.

ICUS – In Command Under Supervision.

IFR – Instrument Flight Rules.

ILS – Instrument Landing System.

LBA – Load Bearing Area.

MODU – Mobile Drilling Unit.

Non-Routine Flight – A flight by an approved charter aircraft operator that is not 'Routine' and includes the following situations:

- Flights between locations not having regular scheduled flights.
- Flights during non-daylight hours.
- Flights conducted for non-routine tasks (e.g. uncommon or unusual activities).

Offshore Alternate – For planning purposes prior to departure, an offshore facility capable of accommodating landing of the helicopter in-use, for the purpose of serving as an alternate site in order to meet minimum fuel requirements.

OGP – The International Association of Oil & Gas Producers (www.ogp.org.uk).

PHSE-14-C01	CONTROLLED DOCUMENT Page 25 of 33 <small>Printed copies of this document are not controlled. To verify this copy is current, check the Petroleum Portal.</small>	Rev. 6.1
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<p>Petroleum</p>	<p>Health, Safety & Environment Management System</p> <p>Aviation Operations Controls</p>	
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Petroleum – BHP Billiton Petroleum.

Petroleum Approved – Reviewed and approved by the Principal Aviation Specialist or designate.

Routine Flight – A flight by an approved charter aircraft operator that is:

- Scheduled and regular.
- Between the normal operating base and a Petroleum facility with aircraft landing facilities.
- Conducted during daylight hours.
- Conducted for regular tasks (e.g. scheduled personnel transport, on a day to day frequency).

SAR – Search and Rescue.

Shall or **Must** – Means a mandatory requirement.

Should – Means that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation may be considered as compliance if the most Senior Manager of the operation in consultation with Petroleum Principal Aviation Specialist approves it based on an evaluation of the risk.

TBOSIET – Tropical water Basic Offshore Induction and Emergency Training.

UK CAP 437 – A Document published by the UK Civil Aviation Authority entitled: “Offshore Helicopter Landing Areas – Guidance on Standards” (www.caa.co.uk).

VHF – Very High Frequency.

VOR – VHF Omni Directional Range navigation system.

VSI – Vertical Speed Indicator.

<p>PHSE-14-C01</p>	<p>CONTROLLED DOCUMENT</p> <p>Page 26 of 33</p> <p>Printed copies of this document are not controlled. To verify this copy is current, check the Petroleum Portal.</p>	<p>Rev. 6.1</p>
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APPENDIX A: QUALIFICATIONS AND EXPERIENCE

Aircrew

Crew Type	Qualifications & Experience	>5700 KG Multi-Engine	< 5700KG Multi-Engine (1)	Single Engine
Captain	License	ATP/ATPL	CPL	CPL
	Instrument Rating	Command, multi-engine		Not required
	Total Hours	3000	2500	2000
	Total Command	2500	1500	1500
	Total Command Multi-Engine	500	500	N/A
	Total Command on type (2)	100	100	100
	Experience in topographical area	One year experience in area similar to specified in contract (arctic, offshore, high density altitude mountainous, jungle, international operations etc)		
Co-Pilot	License	CPL	CPL	CPL
	Instrument Rating	Command	Co-Pilot	
	Total Hours	500	250	250
	Total Multi-Engine	100	50	
	Total on type	50	10	10
Both Captain and Co-Pilot	Total hours previous 90-days (3)	50-hours, 10 on aircraft type.		
	Night recency previous 90-days	3 night takeoff and landings		
	CRM/ADM initial and refresher	Every 2-years		
	Dangerous Goods Awareness	Every 2-years		
	Accident and Violation record	2-years accident free for human error causes, subject to review by Petroleum.		

Maintenance Personnel

Qualifications & Experience	Chief Engineer	Line Engineer
Total time on aircraft	5-years	2-years
Engine/airframe/avionics rating (where appropriate)	Yes	Yes
Accident and Violation record	2-years accident free for human error causes, subject to review by Petroleum.	

Notes:

- (1) Includes following type series: King Air 300, Twin Otter, Beech 1900, CASA 212, Metro III/23 and Dornier 228.
- (2) Competency-Based Training (CBT) reviewed and endorsed by Petroleum Principal Aviation Specialist may be used in lieu of 100-hours.
- (3) If not met, a non-revenue check-flight by qualified company check pilot is required.

APPENDIX B: SPECIFIC REQUIREMENTS FOR AIRBORNE GEOPHYSICAL SURVEYS

INTENT

In addition to the requirements in this Controls document, the following provisions apply for all airborne geophysical surveys.

Accreditation and Membership

B.1. Operators engaged in geophysical flying operations for Petroleum must be accredited members of International Airborne Geophysics Safety Association (IAGSA) including compliance with the IAGSA Safety Manual except where it is more restrictive within these Aviation Controls.

Risk Assessment

B.2. Prior to any airborne geophysical survey work, a risk assessment must be conducted. The risk assessment must involve as a minimum, the Aircraft Operator, the Petroleum operations senior line manager, the Petroleum site representative (assigned with line accountability) and the Petroleum Principal Aviation Specialist.

Minimum Survey Height

B.3. The minimum survey height is defined as the height above obstacle level. In a tropical environment the jungle canopy would be the datum, as opposed to a ground level datum in desert conditions. The minimum heights are as follows:

- Fixed Wing - 100 meters.
- Rotary Wing - 60 meters.

B.4. Minimum obstacle clearance of underslung or 'towed' objects is 50 meters.

B.5. If a survey is to be conducted at less than the prescribed minimums it must only be flown after completing a detailed assessment of operational risks and approved by the Petroleum Principal Aviation Specialist.

Minimum Survey Speed (fixed wing and rotary)

B.6. For each fixed wing aircraft type, the minimum safe survey speed is calculated to be the greater of:

- 130 per cent of clean stall speed (V_S);
- 110 per cent of best single engine rate of climb speed (V_{YSE} if applicable);
- Minimum safe single engine speed (V_{SSE} , if published).

B.7. With the exception of taking off and landing with an externally towed bird, helicopters must be flown at a speed and height combination outside of the 'avoid area' of the height-velocity diagram as published in the helicopters' approved flight manual.

Fuel Reserves

B.8. For airborne geophysical surveys using an airplane or a helicopter, a minimum fixed fuel reserve of 30 minutes flying time at cruise consumption rate is required for all survey operations. If during deployment to and from the survey area an aircraft is flown under IFR conditions, a variable reserve of 10 per cent must be calculated. Where the local regulatory authority requires higher reserves these amounts must be used.

Equipment Specifications

B.9. Non-manufacturer approved modifications fitted to the aircraft must be certified by the relevant aviation regulatory authority.

B.10. The aircraft must include the following serviceable equipment:

- Radar Altimeter;
- Shoulder Harness for all occupants;
- Clear, unscratched and serviceable canopy;
- For external load carrying, a weak link, attaching towed or underslung instrumentation to the aircraft;
- Appropriate securing mechanism for additional survey instrumentation (GPS/CDI);
- Life Raft - if flight is beyond autorotative or gliding distance from land.

Terrain Awareness and Warning System

B.11. Aircraft engaged on airborne geophysical survey operations are exempt from the Terrain Awareness and Warning System (TAWS) requirement stated in Aviation Operations Control [4.6](#).

Towed Survey Devices

B.12. Prior to commencing operations using a towed survey device:

- The basis of design for the survey device must be available for the risk assessment;
- The consequences for survey device aerodynamics following a component failure of the survey device in-flight must be assessed, documented and form part of the risk assessment;
- The maximum safe towing speed of the survey device must be confirmed and form part of the flight plan;
- A formal procedure must be in place for maintenance and pre / post flight inspections of the survey device.

Pilot survey experience

B.13. Captains operating both fixed and rotary wing aircraft must have the following experience:

- Successful completion of geophysical training program, and where applicable, a mountain flying course.
- 300 hours experience in airborne geophysical operations (including 100 hours in Command or In Command Under Supervision (ICUS)).
- 50 hours Command (or ICUS) on geophysical survey in the contract aircraft type.
- 10 hours Command (or ICUS) in the contract aircraft type conducting geophysical operations within the preceding 90 days, or successful completion of a geophysical line check of at least two hours (excluding ferry time) within the preceding 90 days.

Co-Pilot survey experience

B.14. Co-pilots operating both fixed and rotary wing aircraft must have the following experience:

- Successful completion of geophysical training program and, where applicable, a mountain flying course.
- 10 hours on low level survey operations.

Pilot Flight Times

B.15. Due to the fatiguing nature of geophysical flying the following flight hour limitations must be observed:

- For **Single Pilot Crew operations:**
 - 5 hours in any 24 consecutive hour period on actual survey (transit time excluded)

- 40 hours in any 7 consecutive day period (including transit time)
- 70 hours in any 14 consecutive day period
- 100 hours in any 28 consecutive day period
- 1,000 hours in any 365 consecutive day period

- For **Two Pilot Crew operations:**

- 7 hours in any 24 consecutive hour period on actual survey (transit time excluded)
- 40 hours in any 7 consecutive day period
- 70 hours in any 14 consecutive day period
- 120 hours in any 28 consecutive day period
- 1,200 hours in any 365 consecutive day period

Search and Rescue Plans

B.16. For local flight service holding SAR for aircraft on survey, liaison between the operator and the Flight Service agency responsible for the survey location must outline the intended area of operations and methods by which position reports can be given. Scheduled 'ops normal' calls must be made at least every 30 minutes with the position of the aircraft. Details of the ground party supporting the operation, and methods by which they can be contacted, must be registered with Flight Service prior to the operation.

B.17. Aircraft engaged in geophysical operations must be in regular contact with an appropriate organization holding Search and Rescue responsibility. Any flight following system, including Satellite/VHF automatic flight following, must be complemented by continual monitoring using a responsible person. A SAR plan must be established, and daily SAR briefings must be given prior to any flying activity.

B.18. A base camp responsible for flight following aircraft on survey must establish a comprehensive radio net between the base camp and the aircraft for the duration of the exercise. Where terrain or geophysical equipment prevent constant radio contact, provision must be made for 'ops normal' calls every 30 minutes. In the event that flying a line is greater than 30 minutes in duration, the call must be made at the completion of each line.

APPENDIX C: SPECIFIC REQUIREMENTS FOR HELICOPTER EXTERNAL LOAD OPERATIONS

INTENT

In addition to the requirements in this Controls document, the following provisions apply for all helicopter external load operations.

Risk Assessment

C.1. Prior to any external load operations, a risk assessment must be conducted. The risk assessment must involve as a minimum, the Aircraft Operator, the Petroleum operations senior line manager, the Petroleum site representative (assigned with line accountability) and the Petroleum Principal Aviation Specialist.

Fuel Reserves

C.2. For helicopter external load operations, a minimum fuel reserve of 20 minutes calculated at average fuel consumption rate for the lifting operation must be carried.

Hot Refueling

- C.3. Hot refueling of helicopters is permitted during external load operations to maximize lift loads through operating with minimal fuel loads, subject to the following conditions:
- The procedure for hot refueling must be clearly laid down in the Company Operations Manual and all personnel involved thoroughly briefed prior to conduct.
 - The pilot must remain at the controls of the helicopter at all times with refueling conducted by suitably trained ground personnel.
 - Hot refueling from 'jerry' cans is not permitted at any time.

Helicopter External Load Operations

- C.4. External load operations must only be conducted in an aircraft for which a supplement to the aircraft flight manual, specifying operating criteria, has been approved by the aircraft manufacturer.
- C.5. Passengers are prohibited from travel on helicopters during external load operations, including transit with an empty line attached.
- C.6. If the helicopter is used for passenger operations without a load at any time, seating restraints must meet the relevant requirements in Petroleum Aviation Operations Control [4.3](#), [4.8](#), [4.9](#) and [4.10](#).
- C.7. Petroleum personnel must not be considered as 'essential crew' during external load operations.
- C.8. Applicable V_{NE} (Velocity Never Exceed) speeds must be briefed and understood by all aircrew prior to commencement of operations. If aircraft

Air Speed Indicator (ASI) is calibrated in different units of measurement than the documented V_{NE} speeds, a separate risk assessment must be conducted and reviewed with the Petroleum Principal Aviation Specialist, prior to start.

C.9. Safe transit speeds, maximum angle of bank, maximum allowable rate of descent and general handling associated with stable load operations must be briefed and understood by all aircrew prior to commencement of operations.

Helicopter External Load Aircraft Transit

- C.10. Transit during long-line operations with a load attached must be in accordance with limits specified in the aircraft Flight Manual and Company Operations Manual.
- C.11. During operations where the aircraft is flown with a long line attached but no load, measures must be taken to ensure fouling of the aircraft's dynamic systems and rotors by the line cannot occur. These measures must include detailing the requirement for weights to be attached at the end of the line, nominating safe transit speeds, stipulating maximum angle of bank limits and general handling techniques in accordance with an assessment of operational risks approved by the Petroleum Principal Aviation Specialist. Pre takeoff checks, designed to ensure aircrew involved in repetitive loads are aware of when the line is attached, are to be implemented.
- C.12. Transit with a short stop (less than 50 feet) and no load attached is not permitted.

Helicopter External Load Ground Procedures

- C.13. The helicopter operator in consultation with the local Petroleum site supervisor must ensure that documented procedures are available and are complied with in relation to loading areas and the interaction between the helicopter and ground personnel. These procedures must include but are not limited to:
- Size and characteristics of loading areas and helipads.
 - Minimum distances from obstructions and non-essential personnel.
 - Need for ground personnel to wear appropriate Personal Protective Equipment (PPE) including

hard hats with chin straps, impact resistant goggles, gloves and high visibility vests.

- Non-manufacturer approved modifications fitted to the aircraft must be certified by the relevant aviation regulatory authority.

Lifting Equipment

- Personnel movement around the helicopter.
 - Access to the loading areas including restriction on personnel not directly associated with the lifting operation in the vicinity of the loading area and helipads.
 - Control of debris and general housekeeping in the loading area and helipads.
 - Communications means between the pilot and ground crew.
 - Build up of loads by qualified personnel and notification of load details (including the accurate weights) to the pilot.
 - Selection and use of lifting equipment appropriate for the task (long or short-line, baskets, nets, hooks and shackles).
 - Inspection and serviceability of lifting equipment;
 - Load hook up and detachment is conducted by appropriately qualified personnel.
 - Emergency procedures including clear ways on the helicopter's departure and approach paths.
 - Refueling.
 - Specified competency requirements for aircrew and ground crew engaged in external load activities including the requirements to work in operational terrain and environmental conditions must be documented by the aircraft operator.
- C.14. Positive continuous communication and flight following must be maintained with the aircraft either by ground support crew or designated flight following personnel. Scheduled "operations normal" calls should be transmitted every 15 minutes, but must not exceed 30-minutes.

- C.16. Lifting equipment (cables, lines, straps, baskets, swivels, clevises etc) must be inspected by appropriately qualified personnel on a daily basis prior to flight. Any signs of wear, fraying, corrosion, kinks or deterioration should result in the equipment being discontinued for use.
- C.17. Slings must be serviceable steel, Kevlar, or other synthetic cables inspected and maintained in accordance with a suitable servicing schedule that documents current and traceable load test certification for each cable. Copies of the servicing schedule are to be made available to the aircraft operator's representatives in the field. Furthermore, each cable must have the swaging collar embossed with the length, diameter and rated strength of the cable.
- C.18. Synthetic cables must be sufficiently weighted to ensure they do not interfere with the main or tail rotor at any time.
- C.19. The shackles used to connect the cable to the aircraft must conform to specific Flight Manual supplements regarding the diameter of the shackle rings and their use with respective hook types on the aircraft. The shackles and swivels must be serviceable with no evidence of corrosion.

Prevention of inadvertent load release

Helicopter External Load Equipment

- C.15. The aircraft must possess the following serviceable equipment:
- External mirrors to enable view of aircraft cargo hook area.
 - Manual and electrical cable release (cockpit) and external manual release (hook).
 - Fuel Low Level warning light.
 - A means to prevent cable entanglement with the aft skid tubes.
 - Remote engine torque indicating gauge, remote fire warning and caution lights (long-line, single-pilot operations only).
 - Load meter with remote indicator (long line only) that is accessible by the pilot.

- C.20. In order to mitigate the risk of inadvertent release of a load, the following additional precautions must be in place and strictly adhered to:
- Wherever possible, all aircraft of a similar type in the helicopter operator's fleet must have standardized controls, including the position of the load release button (especially when located on the cyclic and collective controls).
 - Ensure that switches/buttons normally used for trim release and/or radio or intercom transmission are not used to release the load.
 - Electrical release switches must be guarded or mechanically protected whenever and wherever possible.
 - The electrical system to release the load must be disarmed during enroute flight, provided the circuit breaker is not used for this purpose.
 - Whenever non-standard conditions within company operations or equipment exist, ensure Differences Training is developed, provided, and

documented for all pilots prior to the conduct of any external load operations.

Use of helmets

C.21. Flying helmets, manufactured to appropriate industry standards, must be worn by all aircrew for all Petroleum external load/long-line operations. Ground crew must wear hard hats, complete with chinstraps.

Pilot External Load Qualifications and Experience

C.22. As long-line and external load operations demand recency requirements greater than those for general flying, the following are minimum requirements in addition to the experience and qualifications detailed in [Appendix A](#):

- Regulatory External Load endorsement or log book certification (if applicable).
- Successful completion of Company Long Line/External Load training program.
- 200 hours external load or long-lining operations, whichever applicable.
- One hour in the preceding 30 days conducting long-line/external load operations on the contracted aircraft type, or
- Long-line/external load base check with an approved Check and Training Captain in the preceding 90 days and the appropriate amount of ground school.
- The helicopter operator must have procedures in place to ensure the competency of the pilot to conduct long line/external load operations under environmental and terrain conditions that will be experienced on the Petroleum operations.
- The long line training program tailored to vertical reference is only required for contracts using lines in excess of 50 feet. The training program must include a discussion on the use and care of cables, correct flying techniques associated with lifting and dropping cables and loads, and the dangers associated with these activities. Further discussion regarding ground crew operations, emergency procedures and aircraft performance aspects must be conducted. Flight time must be devoted to deployment of loads in operational sized areas using various cable lengths and simulated emergencies from the seat occupied during load lifting.

Pilot Flight Times

C.23. Due to the fatiguing nature of external load flying, the following flight hour limitations are to be

observed for repetitive external loads only (3 or more per hour). Where external load frequency is less than 3 per hour normal daily flight time of 8 hours may be applied to both single and two pilot operations, as follows:

- For **Single Pilot Crew operations**:
 - 3 hour maximum flight time per sortie, followed by a 30 minute rest break (*Hot refueling does not constitute a rest break*).
 - 6 hour maximum flight time per calendar day.
- For **Two Pilot Crew Operations**:
 - 5 hour maximum flight time per sortie, followed by a 60 minute rest break (*Hot refueling does not constitute a rest break*).
 - 8 hour maximum flight time per calendar day.
 - Total accumulated flight time must not exceed the limits in Petroleum Aviation Operations Control [5.12](#) through to [5.15](#).

Ground Crew

C.24. The pilot-in-command of an aircraft engaged in external load operations is responsible for ensuring all personnel involved in the operation are suitably briefed and all company specified precautions are in place prior to commencement of operations. Actions in the event of any emergency must be discussed thoroughly with all personnel prior to the first sortie.

C.25. Where concern is raised in relation to the experience and competence of the ground crew supporting the operation, the Petroleum single point of accountability for that aircraft operation must be notified immediately. Where applicable, ground crew training and supervision must be arranged prior to the conduct of the external load operation.

C.26. The Company Operations Manual must include instructions to pilots and other company personnel involved in the conduct of external load operations, specifically detailing all normal and emergency procedures. This manual must form the basis for all briefings on-site by the pilot.

C.27. Whenever the helicopter engine(s) is running, a pilot must remain at the controls of the helicopter. The pilot must not leave the controls unattended with the aircraft under power under any circumstances, even to assist in activities such as load attachment or hot refueling.

<p>Petroleum</p>	<p>Health, Safety & Environment Management System</p> <p>Aviation Operations Controls</p>	
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Search and Rescue Plans

C.28. Aircraft engaged in external load operations must be in regular contact with an appropriate organization holding Search and Rescue responsibility. A SAR plan must be established and briefed to all appropriate personnel prior to contract start. The flight following for an aircraft may be held through either the local flight service or through the Base Camp. Operations normal calls must be made every 30 minutes.

<p>PHSE-14-C01</p>	<p>CONTROLLED DOCUMENT</p> <p>Page 33 of 33</p> <p>Printed copies of this document are not controlled. To verify this copy is current, check the Petroleum Portal.</p>	<p>Rev. 6.1</p>
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