

## **Annex to Decision 2017/012/R**

### **'AMC/GM to Part-SPO — Amendment 9'**

The Annex to Decision 2014/018/R is hereby amended as follows:

The text of the amendment is arranged to show deleted, new or amended text as shown below:

1. deleted text is marked with ~~strike through~~;
2. new or amended text is highlighted in grey; and
3. an ellipsis (...) indicates that the remaining text is unchanged in front of or following the reflected amendment.

(...)

#### **GM3 SPO.OP.175 Ice and other contaminants — ground procedures**

##### **DE-ICING/ANTI-ICING BACKGROUND INFORMATION**

Further guidance material on this issue is given in the ICAO *Manual of Aircraft Ground De-icing/Anti-icing Operations* (Doc 9640) (hereinafter referred to as the ICAO *Manual of Aircraft Ground De-icing/Anti-icing Operations*).

(...)

- (c) Hold-over protection

(...)

- (4) ~~References to usable HoT tables may be found in the AEA 'Recommendations for de-icing/anti-icing of aircraft on the ground'.~~

(...)

#### **AMC2 SPO.IDE.A.190 Emergency locator transmitter (ELT)**

##### **TYPES OF ELT AND GENERAL TECHNICAL SPECIFICATIONS**

- (a) The ELT required by this provision should be one of the following:

- (1) Automatic Fixed (ELT(AF)). An automatically activated ELT that is permanently attached to an aircraft and is designed to aid search and rescue (SAR) teams in locating the crash site.
- (2) Automatic Portable (ELT(AP)). An automatically activated ELT, which is rigidly attached to an aircraft before a crash, but is readily removable from the aircraft after a crash. It functions as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored in the ELT case) attached to the ELT. The ELT can be tethered to a survivor or a life-raft. This type of ELT is intended to aid SAR teams in locating the crash site or survivor(s).

- (3) Automatic Deployable (ELT(AD)). An ELT that is rigidly attached to the aircraft before the crash and that is automatically ejected, deployed and activated by an impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site.
  - (4) Survival ELT (ELT(S)). An ELT that is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed either to be tethered to a life-raft or a survivor. A water-activated ELT(S) is not an ELT(AP).
- (b) To minimise the possibility of damage in the event of crash impact, the automatic ELT should be rigidly fixed to the aircraft structure, as far aft as is practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash.
- (c) Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III Communications Systems and should be registered with the national agency responsible for initiating search and rescue or other nominated agency.
- (...)

#### **AMC2 SPO.IDE.H.190 Emergency locator transmitter (ELT)**

##### **TYPES OF ELT AND GENERAL TECHNICAL SPECIFICATIONS**

- (a) The ELT required by this provision should be one of the following:
- (...)
- (4) Survival ELT (ELT(S)). An ELT that is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed either to be tethered to a life-raft or a survivor. A water-activated ELT(S) is not an ELT(AP).
- (...)

#### **AMC1 SPO.SPEC.HESLO.100 Standard operating procedures**

##### **STANDARD OPERATING PROCEDURES**

- (...)
- (b) Nature and complexity of the activity
- (1) Nature of the activity and exposure:  
Helicopter flights for the purpose of transporting external loads by different means, e.g. under slung, external pods or racks. These operations are usually performed as low level flights at a low height.
- (2) Complexity of the activity:  
The complexity of the activity varies with the size and the shape of the load, the length of the rope and characteristics of the pick-up and drop-off zones, the time per load cycle, etc.

**Table 1: HESLO types**

HESLO 1:	short line, 20 metres (m) or less
HESLO 2:	long line, more than 20 m
HESLO 3:	<p><b>logging</b></p> <p><b>Specialised sling load, such as:</b></p> <p>Logging, insulators and pullers, traverse mounting, spinning of fibre cable, ice and snow removal from power lines, sawing, geophysical surveys, cable laying onto the ground or into ditches, avalanche control, landslide control.</p>
HESLO 4:	<p><del>construction, wire stringing, cable laying</del></p> <p><b>Advanced sling load such as:</b></p> <p><del>tower erecting, wire stringing, disassembly of masts and towers.</del></p>
HESLO 5:	<del>heavy lift (mass of external load 1 500 kg or above)</del>

## (3) Operational environment and geographical area:

HESLO may be performed over any geographical area. Special attention should be given to:

- (i) hostile and congested;
- (ii) mountains;
- (iii) sea;
- (iv) jungle;
- (v) desert; and
- (vi) polar;
- (vii) lakes and river canyons; and
- (viii) environmentally sensitive areas (e.g. national parks, noise sensitive areas).

## (c) Equipment

## (1) The helicopter may be equipped with:

- (i) additional mirror(s) and/or video camera(s);
- (ii) a bubble window;

- (iii) supplementary hook(s) or multi-hook device(s); and
  - (iv) load data recorder (lifts, weights, torques, power, forces, shocks and electrical activities).
- (2) When conducting single-pilot Non-assisted vertical reference operations with no assistance of a task specialist or other crew member, may require additional engine monitoring in the pilot line of vision or an audio warning system is recommended.
- (3) All additional equipment used, e.g. ropes, cables, mechanical hooks, swivel hooks, nets, buckets, chainsaws, baskets, containers, should be manufactured according to applicable rules or recognised standards. The operator should be responsible for maintaining the serviceability of this equipment.
  - (4) Adequate radio communication equipment (e.g. VHF, UHF, FM) should be installed and serviceable in the helicopter for co-ordination with the task specialists involved in the operation.
  - (5) Task specialists involved in the operation should be equipped with hand-held communication equipment, protective helmets with integrated earphones and microphones, and the relevant personal protective equipment.
- (d) Crew members
- (1) Crew composition:
    - (i) The minimum flight crew as stated in the approved AFM. For operational or training purposes, an additional crew member may assist the pilot-in-command (PIC) in a single-pilot operation. In such a case:
      - (A) procedures are in place for a crew member to monitor the flight, especially during the departure, approach and HESLO cycle, to ensure that a safe flight path is maintained; and
      - (B) when a task specialist is tasked with assisting the pilot, the procedures according to which this assistance is taking place should be clearly defined.
    - (ii) For safety and/or operational purposes, task specialists should be instructed by the operator to fulfil specified tasks (e.g. to establish vertical reference).
  - (2) Pilot training for HESLO Pilot initial training
 

Before acting as unsupervised PIC, the pilot should demonstrate to the operator that he/she has the required skills and knowledge.

    - (i) Theoretical knowledge for HESLO 1:
      - (A) content of the operations manual (OM) including the relevant SOPs;
      - (B) AFM (limitations, emergencies performance, mass and balance, abnormal and emergency procedures, etc.);
      - (C) procedures for certain operations (e.g. short line, long line, construction, wire stringing or cable laying flying techniques), as required for the operation};
      - (D) load and site preparation including load rigging techniques and external load procedures;

- (E) special equipment used in the operation;
  - (F) training in human factor principles; and
  - (G) hazards and dangers.
- (ii) Theoretical knowledge for other HESLO levels should include the elements listed in point (i) above where additional knowledge to that of HESLO 1 is needed for the adequate HESLO level.
- (iii) Practical training defined in the operator's training programme:
- (A) Flight instruction provided by a HESLO instructor; and
  - (B) Flight under the supervision of a HESLO instructor. The supervision should take place during HESLO missions, from inside the helicopter and on-site.
- For the purpose of this AMC, a HESLO mission is defined as a flight or series of flights from point A to point B on a particular day and for commercial specialised operations, for a particular client.
- (3) Pilot experience
- (i) ~~For operations with a maximum external load mass of less than 1 500 kg, the PIC should have at least the following experience:~~
- Prior to commencing training:
- (A) ~~300 hours helicopter flight experience as PIC, which should be increased to 500 hours experience as PIC for mountain operations; and~~
  - (B) —10 hours flight experience on the helicopter type;
  - (C) For HESLO 2: At least 100 HESLO cycles;
  - (D) For HESLO 3: At least 500 HESLO cycles; and
  - (E) For HESLO 4: At least 1 000 flight hours on helicopters and 2 000 HESLO cycles, including experience as unsupervised PIC in HESLO 2 or HESLO 3.
- (ii) Before acting as PIC under the supervision of a HESLO instructor:
- (A) For HESLO 1: At least 5 hours and 50 HESLO cycles flight instruction;
  - (B) For HESLO 2: In addition to HESLO 1 training, at least 2 hours and 20 HESLO cycles flight instruction with a long line of more than 20 metres.
  - (C) For HESLO 3 and 4: A number of HESLO cycles flight instruction, as relevant to the activity to be performed and the required skills.
- (iii) Before acting as unsupervised PIC:
- (A) For HESLO 1, 300 hours helicopter flight experience as PIC; and
  - (B) For HESLO 1: At least 8 hours, 80 HESLO cycles and 5 HESLO missions;
  - (C) For HESLO 2: At least 5 hours, 50 HESLO cycles and 5 HESLO missions with long line of more than 20 metres;

- (D) For HESLO 3 and 4: A number of HESLO missions under the supervision of a HESLO instructor, as relevant to the activity to be performed and the required skills;
  - (E) For HESLO 3 and 4, 1530 hours on the helicopter type, performing HESLO 1 and 2 operations. Where a pilot has accomplished 50 hours in HESLO 1 and 2 operations, the 30 hours experience on the helicopter type may be reduced to 15 hours.
  - (F) At least 20 hours gained in an operational environment similar to the environment of intended operation (desert, sea, jungle, mountains, etc.).
- (ii) For operations with a maximum external load mass of 1 500 kg and above, the pilot in-command should have at least the following experience:
- Prior to commencing training:
    - (A) 1 000 hours helicopter flight experience as PIC, which should be increased to 1 500 hours experience as PIC for mountain operations;
    - (B) 10 hours flight experience on the helicopter type;
  - Before acting as PIC:
    - (C) 30 hours on the helicopter type, performing HESLO 1 and 2 operations. Where a pilot has accomplished 50 hours in HESLO 1 and 2 operations, the 30 hours experience on the helicopter type may be reduced to 15 hours.
    - (D) At least 20 hours gained in an operational environment similar to environment of intended operation (desert, sea, jungle, etc.).
- (iii) For HESLO 3 only, additionally to experience (i) or (ii):
- Prior to commencing training:
    - (A) At least qualified as PIC for HESLO 1 type;
    - (B) Minimum 500 HESLO cycles.
- (iv) For HESLO 4 only, additionally to (i) or (ii):
- Prior to commencing training:
    - (A) At least qualified as PIC for HESLO 2 or HESLO 3;
    - (B) Minimum 1000 flight hours on helicopters; and
    - (C) Minimum 3000 HESLO cycles.
- (4) Pilot proficiency: Before acting as unsupervised PIC, pilot proficiency has been assessed as sufficient for the intended operations and environment under the relevant HESLO type, by a HESLO instructor nominated by the operator.
- (45) Pilot recurrent training and checking at least every two years:
- (i) review of the load rigging techniques;
  - (ii) external load procedures;
  - (iii) review of the applicable flying techniques; and
  - (iv) review of human factor principles.

- (v) A pilot who has performed 20 hours of relevant HESLO within the past 12 months may not need any further flight training other than in accordance with Part-ORO and Part-FCL.

(e) Task specialists

Before acting as task specialist, he/she should demonstrate to the operator that he/she has been trained appropriately and has the required skill and knowledge.

(1) Initial training

- (i) The initial training of task specialists should include at least:
  - (A) behaviour in a rotor turning environment and training in ground safety and emergency procedures;
  - (B) procedures including load rigging, usage and conservation (replacement) of LLD;
  - (C) helicopter marshalling signals;
  - (D) radio communication;
  - (E) selection and preparation of pick-up and drop-off sites, dangers on working places (downwash, loose goods, third people);
  - (F) handling and safety of the third party;
  - (G) relevant training for the helicopter type;
  - (H) duties and responsibilities as described in the appropriate manual;
  - (I) perception and classification of flight obstacles (none, critical, danger), measures for safety; and
  - (J) human factor principles; and
  - (K) for task specialists seated in the cockpit and whose tasks are to assist the pilot, the relevant CRM training elements as specified in ORO.FC.115.

- (ii) The individual safety equipment appropriate to the operational environment and complexity of the activity should be described in the appropriate manual.

(2) Recurrent training

- (i) The annual recurrent training should include the items listed in the initial training as described in (e)(1) above.
- (ii) The operator should establish a formal qualification list for each individual task specialist.
- (iii) The operator should establish a system of record keeping that allows adequate storage and reliable traceability of:
  - (A) the initial and recurrent training;
  - (B) Qualifications (qualification list).

(3) Briefing of task specialists

Briefings on the organisation and coordination between the flight crew and task specialists involved in the operation should take place prior to each operation. These briefings should include at least the following:

- (i) location and size of pick-up and drop-off site, operating altitude;
  - (ii) location of refuelling site and procedures to be applied; ~~and~~
  - (iii) load sequence, danger areas, performance and limitations, emergency procedures; ~~;~~ and
  - (iv) for a task specialist who has not received the relevant elements of CRM training as specified in ORO.FC.115, the operator's crew coordination concept including relevant elements of CRM.
- (4) Responsibility of task specialists operating on the ground:
- (i) Task specialists operating on the ground are responsible for the safe organisation of the ground operation, including:
    - (A) adequate selection and preparation of the pick-up and drop-off points and load rigging;
    - (B) appropriate communication and assistance to the flight crew and other task specialists; and
    - (C) access restriction on the pick-up and drop-off site.
  - (ii) If more than one task specialist is required for a task, one should be nominated as leading the ground operations. He/she should act as ~~the main link between the~~ the flight crew and other task specialist(s) involved in the operation and is responsible for:
    - (A) task specialist ~~co-ordination~~ coordination and activities on the ground; and
    - (B) the safety of the working area (loading and fuelling).

(f) HESLO instructor

The HESLO instructor should be assigned by the operator on the basis of the following:

- (1) the HESLO instructor for pilots should:
  - (i) be suitably qualified as determined by the operator and have a minimum experience of 500 hours HESLO; ~~operations in the appropriate HESLO level on which instruction is to be provided~~
  - (ii) have at least 10 hours HESLO experience as unsupervised PIC in the appropriate HESLO level on which instruction, supervision and proficiency assessments are to be provided; and
  - (iii) ~~have attended the 'teaching and learning' part of the flight instructor or type rating instructor training, or have prior experience as an aerial work instructor subject to national rules as well as experience in instructing according to the flight instructor or type rating instructor training;~~
- (2) the HESLO instructor for task specialists should be suitably qualified as determined by the operator and have at least 2 years of experience in HESLO operations.

(g) Performance

- (1) Power margins for HESLO operations:
  - (i) HESLO 1 and 2

The mass of the helicopter should not exceed the maximum mass specified in accordance with SPO.POL.146(c)(1) at the pick-up or drop-off site, whichever is higher, as stated in the appropriate manual.

(ii) HESLO 3 and 4, 4 and 5

The mass of the helicopter should not exceed the maximum mass specified in accordance with SPO.POL.146(c)(1) at the pick-up or drop-off site, whichever is higher, as stated in the appropriate manual, and in the case of construction (montage) operations, reduced by 10% of the mass of the sling load capacity.

(h) Normal procedures

(1) Operating procedures:

HESLO should be performed in accordance with the appropriate manual and appropriate operating procedures. These procedures should include, for each type of operation:

- (i) crew individual safety equipment (e.g. helmet, fire-retardant suits);
- (ii) crew responsibilities;
- (iii) crew coordination and communication;
- (iv) selection and size of pick-up and drop-off sites;
- (v) selection of flight routes;
- (vi) fuel management in the air and on the ground;
- (vii) task management; and
- (viii) third party risk management.

(2) Ground procedures:

The operator should specify appropriate procedures, including:

- (i) use of ground equipment;
- (ii) load rigging;
- (iii) size and weight assessment of loads;
- (iv) attachment of suitably prepared loads to the helicopter;
- (v) two-way radio communication procedures;
- (vi) selection of suitable pick-up and drop-off sites;
- (vii) safety instructions for task specialists operating on the ground;
- (viii) helicopter performances information;
- (ix) fuel management on the ground;
- (x) responsibility, organisation and task management of other personnel on the ground involved in the operation;
- (xi) third party risk management; and

(xii) environmental protection.

(i) Emergency procedures

(1) Operating procedures for the flight crew:

In addition to the emergency procedures published in the AFM or OM, the operator should ensure that the flight crew:

- (i) is familiar with the appropriate emergency procedures;
- (ii) has appropriate knowledge of the emergency procedures for personnel on the ground involved in the operation; and
- (iii) reports emergencies as specified in the AFM or OM.

(2) Ground procedures:

The operator should ensure that the task specialist on the ground involved in the operation:

- (i) is familiar with the appropriate emergency procedures;
- (ii) has appropriate knowledge of the flight crew emergency procedures;
- (iii) reports emergencies as specified in the AFM or OM; and
- (iv) prevents, as far as possible, environmental pollution.

(j) Ground equipment

The operator should specify the use of ground equipment, such as fuel trucks, cables, straps, etc. in the AFM or OM, including at least:

- (1) minimum size of the operating site;
- (2) surface condition;
- (3) positioning of ground equipment on the operating site;
- (4) fuel handling;
- (5) environment protection plan; and
- (6) location and use of fire suppression equipment.

### **GM1 SPO.SPEC.HESLO.100 Standard operating procedures**

#### **PILOT INITIAL TRAINING**

The table below specifies summarises minimum training standards before starting the practical instructions.

**Table 1: Training minimum standards**

HESLO 1	<ul style="list-style-type: none"> <li>– CPL(H) or ATPL(H)</li> <li>– PPL(H) only for non-commercial operations</li> <li>– <del>Minimum 300 hours PIC (H)</del></li> <li>– Minimum 10 hours PIC on type</li> <li>– Type rating completed</li> <li>– HESLO ground instruction completed</li> </ul>
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	<ul style="list-style-type: none"> <li>– Task specialist syllabus reviewed</li> <li>– HESLO 1 flight instruction completed: Minimum 5 hours/50 HESLO cycles</li> <li>– HESLO 1 flights under supervision completed</li> <li>– Minimum experience 8 hours/80 HESLO cycles/5 HESLO missions</li> <li>– Minimum 300 hours PIC(H)</li> <li>– HESLO 1 proficiency</li> </ul>
HESLO 2	<ul style="list-style-type: none"> <li>– CPL(H) or ATPL(H)</li> <li>– PPL(H) only for non-commercial operations</li> <li>– HESLO level 1 completed</li> <li>– Type rating completed</li> <li>– Minimum 10 hours PIC on type</li> <li>– HESLO 2 ground instruction completed</li> <li>– Task specialist syllabus reviewed</li> <li>– Minimum 500 HESLO1 100 HESLO cycles</li> <li>– HESLO 2 flight instruction completed: Minimum 2 hours/20 HESLO cycles with long line</li> <li>– HESLO 2 flights under supervision completed</li> <li>– Minimum experience 5 hours/50 HESLO 2 cycles/5 HESLO 2 missions</li> <li>– HESLO 2 proficiency</li> </ul>
HESLO 2 Conversion	<ul style="list-style-type: none"> <li>– CPL(H) or ATPL(H)</li> <li>– PPL(H) only for non-commercial operations</li> <li>– HESLO level 3 completed</li> <li>– Type rating completed</li> <li>– Minimum 10 hours PIC on type</li> <li>– HESLO 2 ground instruction completed</li> <li>– Task specialist syllabus reviewed</li> </ul>
HESLO 3	<ul style="list-style-type: none"> <li>– CPL(H) or ATPL(H)</li> <li>– PPL(H) only for non-commercial operations</li> <li>– HESLO level 1 completed to 20m</li> <li>– Min. 500 HESLO cycles</li> <li>– Type rating completed</li> <li>– Minimum 10 hours PIC on type</li> <li>– HESLO 3 ground instruction completed</li> <li>– Task specialist syllabus reviewed</li> <li>– Practical Task specialist training for logging</li> </ul>

	<ul style="list-style-type: none"> <li>– HESLO 3 flight instruction completed</li> <li>– HESLO 3 flights under supervision completed</li> <li>– HESLO 3 proficiency</li> </ul>
HESLO 3 Conversion	<ul style="list-style-type: none"> <li>– CPL(H) or ATPL(H)</li> <li>– PPL(H) only for non-commercial operations</li> <li>– HESLO level 2 completed</li> <li>– Minimum 500 HESLO cycles</li> <li>– Type rating completed</li> <li>– Minimum 10 hours PIC on type</li> <li>– HESLO 3 ground instruction completed</li> <li>– Task specialist syllabus reviewed</li> <li>– Practical Task specialist training for logging</li> </ul>
HESLO 4	<ul style="list-style-type: none"> <li>– CPL(H) or ATPL(H)</li> <li>– PPL(H) only for non-commercial operations</li> <li>– Minimum 1 000 hours (H)</li> <li>– HESLO level 2 or 3 completed</li> <li>– Minimum 3 000 2 000 HESLO cycles</li> <li>– Type rating completed</li> <li>– Minimum 10 hours PIC on type</li> <li>– HESLO 4 ground instruction completed</li> <li>– Practical load preparation training</li> <li>– HESLO 4 flight instruction completed</li> <li>– HESLO 4 flights under supervision completed</li> <li>– HESLO 4 proficiency</li> </ul>
HESLO 5	<ul style="list-style-type: none"> <li>– CPL(H) or ATPL(H)</li> <li>– 1 000 h PIC (H)/ 1 500 h PIC (H) for mountain operations</li> <li>– Type rating completed</li> <li>– Appropriate HESLO level completed</li> <li>– HESLO 5 ground instruction completed</li> <li>– Task specialist syllabus reviewed</li> <li>– Practical load preparation training completed</li> </ul>

HESLO ground instruction, HESLO flight training, HESLO flights under supervision and HESLO proficiency assessments may be combined with the operator's conversion course.

#### **AMC1 SPO.SPEC.HEC.100 Standard operating procedures**

##### **STANDARD OPERATING PROCEDURES**

- (a) Before conducting any HEC operations, the operator should develop its SOPs taking into account the elements below.
- (b) Nature and complexity of the activity

(1) Nature of the activity and exposure:

~~HEC operations are usually performed at a low height.~~

- (i) ~~Helicopter operations for the purpose of transporting humans as external loads from/to aerodromes and/or operating sites. The operations are performed as low level flights.~~
- (ii) ~~The operator should only carry task specialists to a site if the level of danger would be too high for them to go there with another mean of transport or where no other means of transport exists. HEC flights should always be conducted with the minimum time of exposure for the task specialists.~~

(2) Complexity of the activity:

- (i) The complexity of the activity varies with the length of the rope and characteristics of the pick-up and drop-off zones, etc.

**Table 1: HEC levels**

HEC 1:	Sling or cable length is less or equal to 25 m  <del>Altitude is less or equal to 3 000 m</del>
HEC 2:	Sling or cable length is greater than 25m <del>less or equal to 50 m</del>  <del>Altitude is less or equal to 3 500 m</del>
HEC 3:	Sling or Cable length is unrestricted  <del>Altitude is unrestricted</del>

(3) Operational environment and geographical area:

HEC may be performed over any geographical area. Special attention should be given to:

- (i) hostile congested and non-congested environment;
- (ii) mountains;
- (iii) sea;
- (iv) jungle;
- (v) desert;
- (vi) arctic;
- (vii) lakes and river canyons; and
- (viii) environmentally sensitive areas (e.g. national parks, noise sensitive areas).

(c) Equipment

- (1) The helicopter may be equipped with:
  - (i) additional mirror(s) and/or video camera(s);
  - (ii) a bubble window;
  - (iii) supplementary hook(s) or multi-hook device(s); and
  - (iv) load data recorder (lifts, weights, torques, power, forces, shocks and electrical activities).
- (2) When conducting single-pilot Non-assisted vertical reference operations with no assistance of a task specialist or other crew member, should require additional engine monitoring in the pilot line of vision or an audio warning system is recommended.
- (3) All additional equipment used, e.g. ropes, cables, mechanical hooks, swivel hooks, nets, buckets, baskets, containers, should be manufactured according to officially recognised standards. The operator is responsible for maintaining the serviceability of this equipment.
- (4) Adequate radio communication equipment (e.g. VHF, UHF, FM) should be installed in the helicopter for co-ordination with the task specialist involved in the operation.
- (4) (5) Task specialists involved in the operation should be equipped with hand-held communication equipment, protective helmets with integrated earphones and microphones as well as personal protective equipment.

(d) Crew members

- (1) Crew composition:
  - (i) The minimum flight crew is stated in the approved AFM. For operational or training purposes, an additional qualified crew member may assist the PIC in a single-pilot operation. In such a case:
    - (A) procedures are in place for a member of the flight crew to monitor the flight, especially during the departure, approach and HEC operations, to ensure that a safe flight path is maintained; and
    - (B) when a task specialist is tasked with assisting the pilot, the procedures according to which this assistance is taking place should be clearly defined.
  - (ii) For safety and/or operational purposes, a task specialist may be required by the operator to fulfil the task (e.g. to establish vertical reference or to operate the release safety device for the belly rope).
- (2) Pilot initial training:

Before acting as PIC, the pilot should demonstrate to the operator that he/she has the required skills and knowledge, as follows:

- (i) Theoretical knowledge:
  - (A) load rigging techniques;
  - (B) external load procedures;
  - (C) site organisation and safety measures;

- (D) short line, long line, construction, wire stringing or cable laying flying techniques, as required for the operation.
- (ii) Pilot experience prior to commencing the training:
- (A) ~~1 000 hours helicopter flight experience as PIC, of which 500h should be gained in mountainous areas for training in mountain operations;~~
  - (B) 10 hours flight experience on the helicopter type;
  - (C) type rating completed;
  - (D) HESLO type 1 or 2 completed;
  - (E) relevant experience in the field of operation;
  - (F) training in human factor principles; and
  - (G) ground instruction completed (marshaller syllabus).
- (iii) Pilot experience prior to commencing unsupervised HEC flights:
- (A) HEC flight instruction completed.
  - (B) 1 000 hours helicopter flight experience as PIC.
  - (C) for mountain operations, 500 hours of flight experience as PIC in mountain operations.
  - (D) for HEC 2, HESLO type 2 completed.
- (3) Pilot proficiency prior to commencing unsupervised HEC flights:
- ~~Pilot proficiency has been assessed as sufficient for the intended operations and environment under the relevant HEC level, by a HEC instructor nominated by the operator.~~
- (4) Pilot recurrent training and checking at least every two years:
- (i) review of the sling technique;
  - (ii) external load procedures;
  - (iii) training in human factor principles; and
  - (iv) review of the applicable flying techniques, which should take place during a training flight if the pilot has not performed HEC or HHO operations within the past 24 months.
- (5) Conditions of HEC instruction:
- (i) Maximum sling length according to the level applicable:
    - (A) 1 task specialist (with radio) at pickup point;
    - (B) 1 task specialist (with radio) at drop off point/on the line;
    - (C) helicopter fitted with cargo mirror/bubble window;
    - (D) flight instruction DC/: Cycles DC/minimum 10 cycles which of 5 Human Cargo Sling; and
    - (E) flight instruction solo with onsite supervision/Cycles solo/minimum 10 cycles.

## (ii) HEC instructor:

The HEC instructor should be assigned by the operator on the basis of the following:

## (A) the HEC instructor for pilots should:

- ~~hold or have held flight instructor rating and should have a minimum experience of 100 cycles in HEC operations in the appropriate HEC level at HEC levels equal to or greater than that on which instruction, supervision and proficiency assessments are to be provided; and~~
- ~~have attended the 'teaching and learning' part of the flight instructor or type rating instructor training, or have prior experience as an aerial work instructor subject to national rules~~

## (B) the HEC instructor for task specialists should be suitably qualified as determined by the operator and have at least 2 years of experience in HEC operations as a task specialist.

## (e) Task specialists

Before acting as task specialists, they should demonstrate to the operator that they have been appropriately trained and have the required skills and knowledge including training on human factor principles.

(1) Task specialists should receive training relevant to their tasks ~~be trained to operate the system~~ including:

- (i) ~~montage fitting~~ and removal of system; and
- (ii) normal procedure.

~~For task specialists in charge of assisting the pilot, the relevant CRM training elements as specified in AMC1.ORM.FC.115.~~

## (2) Briefings

Briefings on the organisation and coordination between flight crew and task specialist involved in the operation should take place prior to each operation. These briefings should include at least the following:

- (i) location and size of pick-up and drop-off site, operating altitude;
- (ii) location of refuelling site and procedures to be applied; ~~and~~
- (iii) load sequence, danger areas, performance and limitations, emergency procedures; ~~and~~
- (iv) ~~for task specialists who have not received the relevant elements of CRM training as specified in AMC1.ORM.FC.115, the operator's crew coordination concept including relevant elements of crew resource management.~~

## (3) Recurrent training

- (i) The annual recurrent training should include the items listed in the initial training as described in (e)(1) above.
- (ii) The operator should establish a formal qualification list for each individual task specialist.

(iii) The operator should establish a system of record keeping that allows adequate storage and reliable traceability of:

- (A) the initial and recurrent training;
- (B) qualifications (qualification list).

(...)