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Advisory Circular

Subject: Operations Control Center (OCC) for Helicopter Air Ambulance (HAA) Operations

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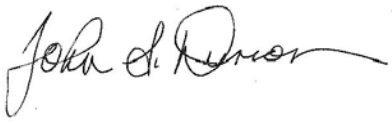
Helicopters provide a means of transporting people in urgent need of medical assistance. These operations are unique due to the nature of the flights. Though a helicopter air ambulance (HAA) flight is not to be conducted as an emergency operation, it supports, in the most effective manner, the rapid transportation of patients with life-threatening illnesses or injuries. Each year, thousands of patients are transported by helicopter while being attended by medical personnel trained to respond to their critical medical needs. Therefore, HAAs are equipped with medical monitoring and support systems not found in transport helicopters, to ensure patient care requirements are met en route.

The Federal Aviation Administration (FAA) issued a Final Rule in 2014: Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations. The 2014 HAA rule package codifies most requirements, formerly contained in Operations Specification (OpSpec) A021, in Title 14 of the Code of Federal Regulations (14 CFR) Part 135 Subpart L, Helicopter Air Ambulance Equipment, Operations, and Training.

Part 135 subpart L requires those conducting HAA operations with 10 or more HAAs to establish an Operations Control Center (OCC) staffed with appropriately trained Operations Control Specialists (OCS).

This advisory circular (AC) provides information and guidance material specifically applicable to HAA OCCs and OCS. It contains information that will assist HAA operators, including existing part 135 operators considering becoming an HAA operator and those considering initiating new HAA operations, in the establishment of an OCC.



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CHAPTER 1. GENERAL

1.1 Purpose. This advisory circular (AC) provides information and recommendations to assist helicopter air ambulance (HAA) operators with the development, implementation, and integration of an Operations Control Center (OCC). By requiring larger HAA operators (per Title 14 of the Code of Federal Regulations (14 CFR) part 135, § 135.619) and encouraging smaller HAA operators to implement OCCs and operational control procedures, the Federal Aviation Administration (FAA) intends to further increase HAA safety through the implementation of OCCs.

1.2 Cancellation. AC 120-96, Integration of Operations Control Centers into Helicopter Emergency Medical Services Operations, dated May 5, 2008, is canceled.

1.3 Objective. This AC provides advice and identifies best practices for HAA OCC implementation and operation. It is based on multiple sources, including the HAA final rule published in 2014.

1.4 Audience. This AC is for existing and prospective part 135 certificate holders intending to conduct HAA operations, their employees, employees of associated medical and communications services, and FAA principal inspectors (PI) with oversight responsibility for HAA certificate holders.

1.5 Related 14 CFR Parts. Title 14 CFR parts 1, 27, 29, 43, 61, 65, 91, 119, 120, 135, and 157.

1.6 Definitions/Abbreviations.

1. Accident/Incident Plan (AIP)/Post-Accident/Incident Plan (PAIP). Emergency response procedures that should be used as a basis for training or for reference in the event of a mishap or other emergency.
2. Advisory Circular (AC). Provides guidance materials to the aviation community. This guidance can be methods, procedures, and practices acceptable to the Administrator for complying with regulations and grant requirements.
3. Aeromedical Director. A licensed medical professional associated with an HAA operation, ultimately responsible for patient care during transport. The Aeromedical Director has no operational control authority or influence over decisionmaking related to conduct of flights.
4. Air Ambulance. An aircraft used in air ambulance operations. The aircraft need not be used exclusively as an air ambulance aircraft, and the medical equipment need not be permanently installed.
5. Air Ambulance Operations. Air transportation of a person with a health condition that requires attending medical personnel, as determined by a health care provider; transportation of human organs or tissue; or holding out to the public as willing to provide air transportation to a person with a health condition that requires attending medical personnel or transplant organs

including, but not limited to, advertising, solicitation, or association with a hospital or medical care provider.

6. Air Medical Resource Management (AMRM). A dynamic process including pilots, medical personnel (including hospital personnel involved in HAA operations), maintenance technicians, operational support personnel, and management staff that optimizes human–machine interfaces and related interpersonal issues with maximum focus on communication skills and team-building curricula (refer to the current edition of AC 00-64, Air Medical Resource Management).
7. Certificate-Holding District Office (CHDO). The FAA Flight Standards Service (AFS) CHDO with responsibility for compliance oversight of an air carrier's certificate, charged with the overall inspection and surveillance of that certificate holder's operations (refer to part 1, § 1.2).
8. Code of Federal Regulations (CFR).
9. Communications Specialist (CS). An individual trained and qualified by the certificate holder, or their designee, to receive and coordinate one or more of a range of activities, including but not limited to receiving flight requests for HAA operations; communications with medical, emergency response, and other HAA organizations; and communications with HAA pilots. The definition of job responsibilities and task performance and delivery of appropriate training for CS has been identified as an HAA industry best practice (see Chapter 7).
10. Crew Resource Management (CRM). The use of all the available resources, information, equipment, and people to achieve safe and efficient flight operations; approved CRM training is required for flightcrews in accordance with § 135.330 (refer to § 135.330 and the current edition of AC 120-51, Crew Resource Management Training).
11. Datalink. A general term referring to a variety of technologies used to transmit and receive data between on-aircraft systems and off-aircraft systems and between ground-based systems.
12. Extended Overwater Operation. Per § 1.1, with respect to helicopters, an operation over water at a horizontal distance of more than 50 nautical miles (NM) from the nearest shoreline or from the nearest offshore heliport structure.
13. Flight Monitoring. Active contact with an aircraft throughout all of the phases of a flight (including time on the ground) either through voice radio contact with the pilot or through automated flight monitoring systems. This is considered a best practice in the HAA industry.
14. Flight Locating. The HAA part 135 certificate holder is required by regulation to use flight locating procedures meeting, at minimum, the standards established by § 135.79 unless an FAA flight plan is filed and activated. Flight locating may be overshadowed by HAA flight monitoring operations, even where it is not required by regulation. Additional means for monitoring each

HAA flight operation, such as satellite tracking, Automatic Dependent Surveillance-Broadcast (ADS-B), etc., is recommended as an HAA industry best practice.

15. Flight Standards District Office (FSDO).

16. General Operations Manual (GOM). Required to be compiled (§ 135.21) to include, at minimum, sections mandated by regulation, (§ 135.23) including visual flight rules (VFR) flight planning procedures (§ 135.615) and an FAA-approved preflight risk analysis (§ 135.617). The operator's GOM must be accepted by the FAA, and though it may contain procedures and programs approved by the FAA, these required approvals of individual sections do not supersede the overall acceptance requirements of the manual.

17. Geographic Information System (GIS). A collection of computer hardware, software, and geographic data designed to efficiently capture, store, manage, map, analyze, and display geographically referenced information.

18. Helicopter Air Ambulance (HAA). A helicopter, defined for the purposes of § 135.619, that is identified in the operator's OpSpecs. It need not be used exclusively as an HAA. HAA-specific equipment need not be permanently installed.

19. Helicopter Air Ambulance (HAA) Operation. A flight or sequence of flights with a patient, donor organ, human tissue, or medical personnel on board for the purpose of medical transportation conducted by a part 135 certificate holder authorized by the Administrator to conduct HAA operations. An HAA operation also includes, but is not limited to:

    - Flights conducted with medical personnel aboard to position the helicopter at a site where a patient, donor organ, or human tissue will be picked up;
    - Flights conducted with medical personnel aboard to reposition the helicopter after completing transportation of the patient, donor organ, or human tissue transport; and
    - Flights initiated with medical personnel aboard with the intent to transport a patient, donor organ, or human tissue that are terminated due to weather or other reasons (refer to § 135.601).

20. Helicopter Emergency Medical Service (HEMS). This is an obsolete term. The FAA and industry are transitioning to the term HAA for enhanced accuracy. HAA flights do not constitute an emergency flight and must be conducted with due regard for all regulatory requirements. Replacement of the term HEMS with HAA will take place over the next several years as each relevant document is updated. The term HAA will be used exclusively throughout this document.

21. Helicopter Landing Area (also Heliport or Landing Zone (LZ)). An area of land or water or a structure used or intended to be used for the landing and takeoff of helicopters. Operations Specification (OpSpec) A021 grants latitude

to a helicopter operator for landing site selection as well as the authority to land on appropriate sites during both day and night in HAA operations (refer to § 1.1; the current edition of AC 150/5390-2, Heliport Design; and OpSpec A021).

22. Helicopter Night Vision Goggle Operations (HNVGO). That portion of a flight that occurs during the time period from one hour after sunset to one hour before sunrise where the pilot maintains visual surface reference using night vision goggles (NVG) in an aircraft that is approved for such operations (refer to part 61, § 61.1). HNVGOs conducted under part 135 must be authorized by the issuance of OpSpec A050. Any HAA operation with HNVGO must also comply with OpSpec A050.
23. Helicopter Terrain Awareness and Warning System (HTAWS). A terrain and obstacle database-driven awareness and warning system configured specifically for a helicopter's operating environment. This system correlates the aircraft's position, altitude, direction of flight, and speed with digital obstacle and terrain maps.
24. Inadvertent Instrument Meteorological Condition (IIMC). An emergency condition when an aircraft inadvertently transitions from visual meteorological conditions (VMC) into instrument meteorological conditions (IMC).
25. Instrument Flight Rules (IFR). Operations when weather conditions are below the minimum for flight under VFR.
26. Instrument Meteorological Conditions (IMC). Meteorological conditions expressed in terms of visibility, distance from clouds, and ceiling that are less than that specified for VFR, requiring a flight to be conducted under IFR.
27. Landing Zone (LZ). See subparagraph 1-6u, Helicopter Landing Area.
28. Local Flying Area (LFA). A geographic area of not more than 50 NM in any direction from a location designated by an HAA operator and approved by the FAA in OpSpec A021 (refer to § 135.609(b)(1)).
29. Medical Personnel. Medical personnel, as opposed to flightcrew members, are considered passengers for part 135 purposes (refer to § 135.601). Medical personnel are individuals with medical training and medical responsibilities carried aboard an HAA during flights or flight segments and typically include flight nurses, paramedics, respiratory specialists, neonatal specialists, physicians, and other medically-trained specialists (refer to § 135.601(b)(2)).
30. Mountainous. Designated mountainous areas, as listed in 14 CFR part 95.
31. Night Vision Goggles (NVG). An NVG is a Night Vision Imaging System (NVIS) appliance worn by crewmembers that enhances the ability to maintain visual surface reference under low-light flight conditions.
32. Night Vision Imaging System (NVIS). An approved light amplification appliance enhancing visual sensitivity in low-light conditions combined with specialized lighting systems that are type certificate (TC) approved for the

type of helicopter in which it is installed and are compatible with NVGs being used in that helicopter.

33. Non-Mountainous. Areas other than mountainous areas, as listed in part 95 (refer to § 135.601).

34. Operations Control Center (OCC). An OCC is a dedicated facility staffed by trained HAA Operations Control Specialist (OCS) (see subparagraph 1-6ii, Operations Control Specialist (OCS)). The OCC is further described in § 135.619. OCC functional responsibilities include a wide range of safety-related items detailed in § 135.619(a).

Note: OCCs are required for certificate holders authorized to conduct HAA operations with 10 or more HAA-capable helicopters assigned to their OpSpecs, and are strongly encouraged for all operators (refer to § 135.619).

35. Operations Control Specialist (OCS). An individual within the OCC who provides operational support for the certificate holder's air ambulance operations and is both initially and recurrently trained, as specified in § 135.619(d) and (f). An OCS interfaces with the HAA pilot(s) prior to each flight request acceptance, and as necessary, during flight.

36. Operations Specification (OpSpec). Issued by the FAA to specify the commercial air transportation operations it has authorized the certificate holder to carry out. OpSpec A021 authorizes HAA service. Before OpSpec A021 can be issued, the operator must meet the regulatory requirements of Part 135, Subpart L, Helicopter Air Ambulance Equipment, Operations, and Training Requirements.

37. Overwater Flight. Operation of a rotorcraft beyond autorotational distance from the shoreline (see subparagraph 1-6ww, Shoreline).

38. Patient. A person under medical treatment. For the purposes of this definition, donor organs or human tissue are not patients, but are explicitly included under HAA operations, regulations, and practices. They are treated in the same manner as people under medical treatment.

39. Pilot in Command (PIC). The PIC of an aircraft is directly responsible for and is the final authority for the operation of that aircraft.

40. Principal Avionics Inspector (PAI). The inspector at the CHDO specifically responsible for aviation safety inspection and oversight of an HAA operator, with respect to avionics.

41. Principal Maintenance Inspector (PMI). The inspector at the CHDO specifically responsible for aviation safety inspection and oversight of an HAA operator, with respect to maintenance.

42. Principal Operations Inspector (POI). The inspector at the CHDO specifically responsible for aviation safety inspection and oversight of an HAA operator, with respect to operations.

43. Residual Risk. Residual risk is the safety risk that exists after all controls have been implemented or exhausted and verified (to ensure that the risk acceptance is in accordance with a pre-existing documented risk analysis procedure).
44. Response Scene. Unimproved ad hoc LZ sites and other off-airport and off-heliport site locations where HAA flight landings are authorized under the authority of OpSpec A021.
45. Risk Analysis. Risk Analysis is a formal documented risk identification, assessment or rating, and mitigation methodology used to guide HAA decisionmaking. The terms “risk assessment” and “risk analysis” should not be used interchangeably (see subparagraph 1-6tt, Risk Assessment).
46. Risk Assessment. Risk assessment is the rating of the probability of a hazard occurring and the severity of the outcome.
47. Safety Management System (SMS). An SMS is a formal, top-down approach to managing risk. It is a system to manage safety, including the necessary organizational structures, accountabilities, policies, and procedures. Implementing an SMS can provide useful tools to the HAA operator for complying with the requirements of § 135.617. Additional information and resources on SMS can be found in the current edition of AC 120-92, Safety Management Systems for Aviation Service Providers.
48. Second in Command (SIC).
49. Shoreline. Land adjacent to the water of an ocean, sea, lake, pond, river, or tidal basin that is above the high-water mark at which a rotorcraft could be landed safely. This does not include land areas unsuitable for landing, such as vertical cliffs or land intermittently under water (refer to § 135.168). Additional information is available in 14 CFR part 136, § 136.1.
50. Standard Operating Procedures (SOP). An established or prescribed method to be followed routinely for the performance of a designated operation or in a designated situation and is used to guide training to meet such contingencies.
51. Suitable Offshore Heliport Structure. A heliport structure that can support the size and weight of the rotorcraft being operated where a safe landing can be made.
52. Supplemental Type Certificate (STC). A TC issued when an applicant has received approval to modify an aircraft from its original design.

1.7 Related Source Material. This identifies published documents that are applicable to HAA operations.

Note: Current editions of ACs can be found on the FAA Web site at http://www.faa.gov/regulations_policies/advisory_circulars. Current editions of FAA handbooks can be found on the FAA Web site at http://www.faa.gov/regulations_policies/handbooks_manuals.

1.7.1 ACs (current editions):

1. AC 00-6, Aviation Weather.
2. AC 00-64, Air Medical Resource Management.
3. AC 27-1, Certification of Normal Category Rotorcraft.
4. AC 29-2, Certification of Transport Category Rotorcraft.
5. AC 91.21-1, Use of Portable Electronic Devices Aboard Aircraft.
6. AC 91-32, Safety In and Around Helicopters.
7. AC 120-27, Aircraft Weight and Balance Control.
8. AC 120-49, Certification of Air Carriers.
9. AC 120-51, Crew Resource Management Training.
10. AC 120-92, Safety Management Systems for Aviation Service Providers.
11. AC 135-5, Maintenance Program Approval for Carry-On Oxygen Equipment for Medical Purposes.
12. AC 135-14, Helicopter Air Ambulance Operations.
13. AC 150/5390-2, Heliport Design.
14. AC 150/5230-4, Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports.

1.7.2 Orders (current editions):

1. Order 8040.4, Safety Risk Management Policy.
2. Order 8900.1 Volume 3, Chapter 65.

1.7.3 Handbooks and Manuals (current editions):

1. FAA-H-8083-16, Instrument Procedures Handbook.
2. FAA-H-8083-21, Rotorcraft Flying Handbook.
3. FAA-H-8083-25, Pilot’s Handbook of Aeronautical Knowledge.
4. Airman’s Information Manual (AIM).

1.7.4 Pamphlets (current editions):

1. DOT/FAA/PM-86/45, Aeronautical Decision Making for Helicopter Pilots.
2. DOT/FAA/DS-88/7, Risk Management for Air Ambulance Helicopter Operators.
3. Federal Aviation Administration Safety Team (FAASTeam) Library, Flying in Flat Light and White Out Conditions.

4. National EMS Pilots Association (NEMSPA), Preparing a Landing Zone. NEMSPA is located in Layton, UT, 84041-9128, telephone 877-668-0430.
5. Helicopter Association International (HAI). HAI is located at 1920 Ballenger Avenue, Alexandria, VA, 22314-2898, telephone 703-683-4646. Check their Web site for other documents and links to resources, including their Fly Neighborly Guide.
6. The National Fire Protection Association (NFPA) is located at 1 Batterymarch Park, Quincy, MA, 02169-7471, telephone 617-770-3000. They have many publications about fire protection. The 400 series may be the most helpful. For example, the current edition of NFPA 418, Standard for Heliports, has fire standards for heliports.
7. Air Ambulance Guidelines published by both the Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) and the American Medical Association's (AMA) Commission on Emergency Medical Services.
8. The National Association of Air Medical Communications Specialists (NAACS) is located at PO Box 19240, Topeka, KS, 66619, telephone 877-396-2227. Check their Web site for links to resources, including training courses.
9. Special Airworthiness Information Bulletin (SAIB) SW-10-43, Non-Aviation Transmitters. (Includes, for example, 800 megahertz (MHz) radios used to communicate with hospitals.)
10. Policy Letter (PL) ASW-2001-01, Certification Guidelines for Compliance to the Requirements for Electro-Magnetic Compatibility (EMC) Testing for Equipment Known to Have a High Potential for Interference when Installed on Rotorcraft with Electronic Controls that Provide Critical Functions.
11. DOT/FAA/AR-99/50, High Intensity Radiated Fields (HIRF) Risk Analysis.
12. TSO-C194, Helicopter Terrain Awareness and Warning System (HTAWS).
13. International Civil Aviation Organization (ICAO) Doc 9977-AN/489, Manual on Civil Aviation Jet Fuel Supply.
14. RTCA Inc. DO-160, Environmental Conditions and Test Procedures for Airborne Equipment.
15. RTCA Inc. DO-178, Software Considerations in Airborne Systems and Equipment Certification.
16. RTCA Inc. DO-254, Design Assurance Guidance for Airborne Electronic Hardware.
17. RTCA Inc. DO-309, Minimum Operational Performance Standards (MOPS) for Helicopter Terrain Awareness and Warning System (HTAWS) Airborne Equipment.

1.7.5 OpSpecs/Management Specifications (MSpecs) (current editions):

1. OpSpec/MSpec A005—Exemptions and Deviations.
2. OpSpec A008—Operational Control.
3. MSpec A008—Flight Management.
4. OpSpec/MSpec A010—Aviation Weather Information.
5. OpSpec A021—Air Ambulance Operations—Helicopter.
6. OpSpec A050—Helicopter Night Vision Goggle Operations (HNVGO).
7. OpSpec/MSpec A061—Use of Electronic Flight Bag.
8. OpSpec/MSpec A096—Actual Passenger and Baggage Weight Problem for All Aircraft.
9. OpSpec/MSpec A097—Small Cabin Aircraft Passenger and Baggage Weight Problem.
10. OpSpec/MSpec D085—Aircraft Listing.

CHAPTER 2. OPERATIONS CONTROL CENTER (OCC) FUNCTIONS

2.1 Regulatory Requirements. After April 22, 2016, Title 14 of the Code of Federal Regulations (14 CFR) part 135 § 135.619 requires certificate holders authorized to conduct helicopter air ambulance (HAA) operations, with 10 or more HAAs assigned to the certificate holder's operations specifications (OpSpecs), to have an OCC staffed by appropriately trained OCS. The Federal Aviation Administration (FAA) also encourages smaller operators not required by regulation to establish an OCC as an additional safety enhancement.

2.1.1 General. This chapter provides recommendations to assist HAA operators with identifying best practices for implementing OCCs and operations control procedures. It is also intended to encourage and enable operators without a regulatory requirement to establish and operate an OCC to attain the operational benefits of an OCC.

2.1.2 Public Aircraft Operations. Government entities conducting eligible public aircraft operations (PAO) under Title 49 of the United States Code (49 U.S.C.) §§ 40102(a)(41) and 40125 for an associated government function are also highly encouraged to establish OCCs and adopt enhanced operational control procedures reflecting concepts in §§ 135.617 and 135.619. For more information on the eligibility requirements to conduct PAO, refer to the current edition of AC 00-1.1, Public Aircraft Operations.

2.2 Core Concepts—OCC and Operations Control Procedures. There are three core concepts and one recommendation that define an effective OCC and enhanced operations control procedures:

2.2.1 Joint Flight Safety Responsibility. The first core concept is joint flight safety responsibility for each HAA operation. The joint flight safety responsibility concept requires that at least one qualified ground staff member, in addition to the pilot in command (PIC), is actively involved in reviewing the PIC risk analysis in accordance with the required risk analysis program (refer to § 135.617). When an OCC is required by regulation, or where an OCC has been voluntarily established and is listed on OpSpec A021, it must be staffed with OCS who participate in the duties and responsibilities listed in § 135.619(a) and who continue to provide safety input to the conduct of the flight by monitoring factors affecting flight safety before and during the flight (refer to § 135.619). The qualified OCS on the ground also provides additional Crew Resource Management (CRM) support for pilots during high-workload situations or emergencies.

2.2.2 Written Standard Operating Procedures (SOP). The second core concept is the development and implementation of documented SOPs that are used to guide training and to standardize operations performance. The process of developing SOPs requires critical thinking and review of established procedures. If this process is conducted with personnel who serve in the OCC, the organization will likely discover differences in how individuals perform certain tasks or processes, and best practices can be identified and implemented. Standardization of written operations control procedures reflects the same

concerns that mandate the use of checklists on the flight deck. These SOPs may be contained in a GOM or be standalone documents.

2.2.2.1 Documentation. SOPs are documented so they can be referenced and performed the same way each time. The detail and scope of this documentation should reflect the size and complexity of each HAA operation. SOPs may be accessed either electronically or via hard copy (refer to OpSpec/Management Specification (MSpec) A025 for in-flight use of electronic documentation). Regardless of the primary method for accessing SOPs, a backup independent set of procedures should be readily available, especially in times of high-workload situations such as abnormal or emergency operations.

2.2.2.2 Electronic Media. Though the industry is moving toward a less paper-dependent environment, a truly paperless environment has yet to be achieved. A key technology (e.g., a local area network (LAN) or workstation) may fail in conjunction with an emergency or could even be the cause of emergency or abnormal operations. Technology failures may render electronic access to SOPs unavailable. Therefore, hardcopy or backup electronic versions of all critical SOPs should be housed in non-volatile memory that can be accessed on a computer that is independent from networked workstations or computers. These backup copies should be maintained and be readily available for use during abnormal situations.

2.2.3 Leveraging Technology and Communication. The third core concept of OCCs and enhanced operations control procedures is to leverage technology and communication to enhance safety and efficiency. This includes providing an enhanced level of situational awareness to the PIC, OCS, and other individuals. An OCC can leverage technology to provide communication and safety benefits to HAA operations. For example, an OCC may be able to acquire weather information for situational awareness purposes from non-aviation locations which do not feed into the National Weather Service (NWS) database. This information may come from a variety of weather feeds available at the OCC, including non-aviation sources such as telephone calls, local TV stations, etc. These non-standard weather sources should be used to enhance situational awareness, and "No-Go" decisionmaking only. Such non-NWS/FAA-approved sources may not be used for "Go" decisions.

2.2.4 Provision of Situational Awareness Information. In addition to the regulatory requirements, the operator should establish and document procedures for acquiring and providing situational awareness information to the PIC via the OCS and other individuals and capabilities as appropriate. This is an example of the use of leveraging technology and communications to reduce risk in HAA operations.

2.3 OCC Models. OCCs may take on many possible physical configurations depending on the size and scope of the HAA operator. The OCC provides a physical location where the OCS and any other personnel can access information technologies to assist the PIC.

2.3.1 Locations. Some OCCs may be co-located with a communications center that normally receives flight requests, passes the flight request to the HAA pilot, performs flight monitoring, etc. Other OCCs may be located at one location and have one or more remotely sited communications centers that communicate flight information to the OCC through various means.

2.3.2 Communication. Several key concepts should be considered regardless of the physical relationship between the OCC and communications centers.

2.3.2.1 Direct communications capabilities between the OCC and the PIC, through the communications center if necessary, is essential. This allows the OCS to receive early notification of a pending flight and begin processes such as reviewing weather in the proposed flight area as part of the risk analysis concurrence requirement.

2.3.2.2 The OCS must provide two-way communication with the HAA pilot. This may be direct communication, or through established procedures, via relay through the communications center. The OCS must have the means available to immediately communicate hazards such as deteriorating weather to the HAA pilot. The OCS must also possess a means of verifying risk analysis data for flight diversions that may have been considered at the beginning of an HAA operation.

2.4 OCC Facilities.

2.4.1 Hardware and Software Resources. A well-functioning OCC should have available the following hardware and software resources:

1. Enabling technologies (to include LANs, Internet access, and digital signature capabilities for form completion);
2. Database for determining pilot currency, qualifications, and rest and duty status to be used during preflight risk analysis;
3. Aircraft situational displays (ASD) depicting the status of all certificate holder HAA aircraft;
4. Aviation weather analysis tools (to include textual, graphical, and Geographic Information System (GIS)-enabled);
5. Notice to Airmen (NOTAM) tools (both textual and graphical);
6. Air traffic flow tools (to include temporary flight restrictions (TFR), special use airspace, special areas of operation, military operations airspace, high density and congested airspace, warning areas, and weather watch boxes);
7. Communication tools (to include telephones, email, datalink, radio (aircraft and first responders, including Voice over Internet Protocol (VoIP) capabilities), satellite communications (SATCOM) and advanced communication consoles);

8. Non-aviation situational awareness tools such as the Federal Highway Administration (FHWA) Meteorological Assimilation Data Ingest System (MADIS), Internet capable of accessing weather cams, or TV capable of receiving cable news channels. These types of tools should be only used for situational awareness and for making a "No-Go" decision; and
9. In the event of a national security emergency or local disaster, news, Web sites, and phone lines (both landlines and mobile phones) may become inoperative due to the sheer volume of people trying to simultaneously access these resources. Therefore, a TV may be the best means of acquiring information regarding where to send aircraft, where not to send aircraft, and where an accident is located if it is one of the operator's own aircraft.

2.4.2 Adapting OCC Facilities and Capabilities to Smaller Operators. Smaller (fewer than 10 HAAs) operators are not required by regulation to have an OCC staffed by an OCS. However, regardless of the size of the organization, operations control concepts should be carefully planned and implemented to avoid unintended gaps or errors that may result in actions or omissions that would be detrimental to safety. The following guidelines are provided to assist the operator in avoiding such failures. If an OCC is not required and the operator chooses to voluntarily implement a similar capability or function, the operator's applicable governing policies and procedures (and details of training specialists in operations control subject matter) should be established and documented by the operator in their General Operations Manuals (GOM) or other permissible forms of documentation. This documentation system must be acceptable to the principal operations inspector (POI) just as any other process or procedure documented in the operator's manual system.

2.4.2.1 The operator must demonstrate that operational control and PIC responsibility and authority is maintained, and safety is not compromised as a result of the delegation of duties and responsibilities to the non-required individuals staffing that non-regulatory function.

2.4.2.2 Smaller operators may choose to incorporate this function within their operations control organization. Staff members providing OCS-type services within such an organization should receive the training required by § 135.619(d) and (f).

2.4.2.3 Create SOPs appropriate for the size and complexity of the operation. A small operator, using SOPs that are founded in the concepts used within larger organizations, may increase the safety of their HAA operations with minimal expense.

2.5 OCC Physical Space Design Considerations. The following human factors and physical space considerations should be taken into account when designing the layout of an OCC.

1. Physical Room Layout. Interpersonal communication, visual lines of sight, and the auditory profile of a room are key considerations when designing the physical layout of an OCC.
2. Size of Room. The room should be small enough for individuals to be able to see and hear discussions within the room for situational awareness. However, the room should not be so loud as to hamper communication.
3. Visual Lines of Sight. Personnel should be able to see their colleagues. Walls that segregate personnel are undesirable.
4. Pods. Pod-type workstation areas, where one to four OCC personnel work in small work groups, easily provide for the interactions and load shedding that may be necessary when abnormal or emergency situations develop.
5. Physical Workstation Areas. Because OCC personnel often work long shifts and sit for extended periods of time, the design of physical workstation areas is important.
6. Chairs. Chairs should be comfortable. High-backed chairs that rock, swivel, and have wheels are preferable.
7. Main Desk Surface Area. The main horizontal surface plan of the desk or workstation should not be too high or too low. Workstations that are adjustable to allow for sitting and standing are ideal. There should be ample desk surface area to comfortably spread out work materials.
8. Shelving and Storage. There should be ample shelving to aid in keeping items off the desk surface area. There should also be ample enclosed filing and storage capacity. This will allow for ease of accessibility to SOPs, the Post-Accident/Incident Plan (PAIP), etc. Shelving and filing containing items such as these should be centrally located and clearly labeled.

2.6 OCC Technology and Design Considerations.

2.6.1 Failure and Redundancy Considerations for Both Systems and Processes. As technology increasingly becomes an essential part of flight operations, failure becomes a greater concern. For example, the temporary failure of an OCC's LAN may render most of an OCC's functionality inoperative (e.g., phone system, communication console, email, Internet access, ASDs, weather systems, data link, radios, etc.). Thus, it is important to plan for technology failures and design redundant systems and processes to ensure that the end results provided by contingency systems remain the same. In addition to planning for temporary or less-severe failures and outages, severe technology failures should also be expected and prepared for by the development of an OCC information technology (IT) disaster recovery plan. This plan should be documented, and OCC staff should periodically practice contingency operations so they are prepared for such an eventuality.

2.6.2 Common Technology Interruptions. Common technology interruptions that should be planned for when developing, implementing, and integrating an OCC include:

- Electrical power outages (localized to the building, the local area, or to a broader geographic area),
- LAN outages, and
- Internet Service Provider (ISP) or ISP connectivity outages.

2.6.3 Key Redundancy Considerations for Hardware and Infrastructure. The following considerations should be taken into account when designing redundancy into OCC systems:

2.6.4 ISP Connectivity. Software applications used by OCCs are increasingly becoming Web-based. This means that if an OCC loses its connectivity to the Internet, any Web-based applications become inoperative. Therefore, the FAA recommends that an OCC maintain at least two wholly independent connections to the Internet. The physical connections should enter the facility at physically opposite ends of the building, and they should be provided by two wholly independent companies. For example, two connections from the local telecommunications service providers will both become unavailable if the local telephone company's network switch goes down. Ideally, these connections should also be load-balanced with automatic failover.

2.6.5 Server Location. Ideally, OCC servers should be located in a secure data center that is hardened to protect against potential threats (e.g., flooding, hurricanes, tornados, etc.). If a hardened data center is not economically viable, then servers should be located in a secure location, preferably temperature controlled and shielded from fire sprinkler systems.

2.6.6 Servers. Ideally, servers should be redundant with automatic failover and be Redundant Array of Independent Drives (RAID) configured.

2.6.7 Workstations. Workstations should be standardized for full interoperability so that any staff member can perform their duties at any workstation. For example, either an OCS or a communications specialist (CS) should be able to comfortably work at the same workstation on alternate shifts. Additionally, an OCC should maintain at least one "hot spare" workstation for immediate use, in case one of the workstations normally in use becomes inoperative.

2.6.8 Uninterruptible Power Supply (UPS). All workstations, servers, switches, and other key infrastructure should have UPS batteries in the power supply chain. The sustainable uptime of various UPS configurations is a cost consideration: the longer the time, the higher the cost. A good middle ground approach may be to install stronger UPS units on vital infrastructure and lighter UPS units on less critical infrastructure. As an example, a good plan may be to install three-hour UPS units on key servers and two workstations, and then install 30-minute UPS units on remaining workstations. It is also worthwhile discussing interruption restoration priorities with the utility companies so they are aware of the critical nature of the HAA operation and could plan restoration priorities accordingly.

Note: Ensure all staff members and supervisors are aware of VoIP system redundancy characteristics, including whether or not the phone system is operational when the local ISP network is inoperative.

2.6.9 Key Redundancy Considerations—Processes. OCC SOPs should include alternate processes that provide an equivalent level of safe operations during abnormal conditions. For example, if an OCC LAN or local workstation fails, then phone numbers and radio frequencies that are accessed electronically may become unavailable. Therefore, a key process for which redundancy is required is an alternate means of accessing phone numbers. The following are basic core processes for which alternate (redundant) processes should be developed. While the list below may look as if it is hardware centric, the list is actually process centric; many processes are now hardware-dependent.

2.6.10 Phones and Communication. Mobile phones may provide a temporary workaround for inoperative main phone systems and radios.

2.6.11 Phone Numbers. A hard copy set of all phone numbers should be kept at each workstation. If the LAN or local workstation fails, all phone numbers that are generally accessed electronically may become inaccessible.

2.6.12 Internet Access. Laptop computers with cellular data modems may provide temporary Internet connectivity while primary connectivity is down.

2.6.13 Flight Monitoring. Flight monitoring, (§ 135.619(a)(3)) processes often rely on electronic applications such as ASDs or specialized communication gear (radio, data link, SATCOM, etc.). In turn, these specialized flight monitoring technologies often rely on Internet and/or LAN connectivity somewhere in the data chain to transmit the aircraft location information to personnel responsible for flight monitoring functions. Therefore, it is important that an operator identifies alternate flight locating procedures in the event that the primary flight monitoring application and procedures become inoperative. Alternate flight monitoring processes generally call for alternate means of communication to track the aircraft (e.g., communication with outstations, hospitals, law enforcement, other aircraft, air traffic control (ATC), Flight Service Station (FSS), etc.).

2.6.14 IT Support Staff and Processes. An OCC's technology infrastructure requires IT support staff for ongoing maintenance and support.

2.6.14.1 An OCC requires IT support to repair inoperative items, including on-call support for critical items that require immediate repair. IT support can be achieved via in-house support staff or external outsourced support staff.

2.6.14.2 An OCC will require an SOP for reporting and tracking inoperative technology resources. Helpdesk ticket software applications can be acquired relatively inexpensively.

2.6.14.3 Information Security (INFOSEC) SOPs should be developed to protect the OCC IT infrastructure from damage, both malicious and unintentional.

2.6.14.4 Various IT industry best practices should be put in place by an OCC's IT support staff in order to provide the OCC with business continuity in the event of an IT failure or interruption. Typical IT SOPs provide for information failover, backup, recovery, restoration, and reconstruction. Each of these processes is distinct and requires SOPs to be in place prior to a technology failure event.

1. "Failover" refers to seamless data and process continuity as one system fails (e.g., a hard drive) and a redundant system immediately provides resource continuity despite the failure of the first system.
2. "Backup" refers to the process of preparing a copy of data for later use in the event that the original operational data becomes lost or unusable.
3. "Recovery" refers to the process of recovering data that has been lost from a system.
4. "Restoration" refers to the act of restoring data to an otherwise functioning system.
5. "Reconstruction" refers to the act of reconstructing a software application that has become unusable and needs to be rebuilt from the ground-up.

2.7 Emergency and Abnormal Operations. HAA operators should prepare in advance procedures that most effectively leverage OCC resources during abnormal or emergency operations.

2.7.1 Partial or Full Loss of Function of an OCC. These procedures should address how to effectively manage the partial or full shutdown of an OCC and operational control procedures during partial shutdown events such as power failure, loss of connectivity with the primary ISP, or a complete OCC shutdown event that requires evacuation of the OCC or renders the OCC inaccessible (e.g., fire, earthquake, tornado, flood, etc.).

2.7.2 Total Shutdown of an OCC. In the event of a total shutdown of the OCC, alternate locations for relocation of the OCC should be preplanned and "go-kits" containing laptop computers and other essential equipment should be immediately available for the OCS to "grab and go" should an emergency evacuation be necessary.

2.7.3 Unavailable Facilities. The operator should consider situations where no local facilities are available for re-location of the OCC. In such cases, procedures should be available for maintaining flight monitoring and other processes assigned to the OCC involving flights already airborne, and if mitigation measures to recover functionality fail, the operator should consider invoking a temporary moratorium on launching any new flights during an event that requires temporary shutdown of the OCC. This might include the temporary transfer of OCC duties to other OCC facilities or to mobile resources until an alternate OCC facility is established.

CHAPTER 3. OPERATIONS CONTROL SPECIALISTS (OCS) DUTIES AND RESPONSIBILITIES

3.1 OCS Duties. Each certificate holder must describe in its General Operations Manual (GOM) the duties and responsibilities of an OCS, including preflight risk mitigation strategies and risk control measures, and the use of a shift change checklist. The level of operational control authority delegated to the OCS should also be clearly defined in the certificate holder's Manual and/or described in Operations Specifications (OpSpec) A008. Per Title 14 of the Code of Federal Regulations (14 CFR) part 135, § 135.619, the minimum duties of an OCS include:

3.1.1 Communications. Ideally, the OCS should be able to communicate, via radio or other means, directly with the helicopter air ambulance (HAA) pilot in order to provide weather advisories and notifications to the pilot if any other factors affecting the overall safety of the flight arise and any mitigation strategies that may be available. If the OCS is routinely unable to communicate directly with pilots, a secondary means, such as relay through a communications center staffed by trained communications specialist (CS), must be available. These procedures should be incorporated into the certificate holder's Manual or other written standard operating procedure (SOP).

3.1.2 Weather Reporting. The OCS provides pilots with weather briefings, to include current and forecast weather along the planned route of flight. While the OCS may obtain weather from non-National Weather Service (NWS) sources to aid in situational awareness, only information derived from the NWS or other FAA-approved sources should be relayed to the HAA pilot for use in making a "Go" decision. This information provided may be relayed to the HAA pilot by an appropriately trained CS.

- The certificate holder should authorize each OCS to exercise operational control to direct the pilot to decline, divert, abort, or reroute the flight. The OCS should never provide an opinion to the pilot suggesting that a flight can be initiated or completed when weather is a factor. Likewise, in the opinion of the pilot, whenever a flight should not be initiated or continued due to weather or other safety factors, the OCS should not suggest or direct otherwise.
- One principle employed by several operators is the "advise, suggest, direct" concept. This means the OCS should advise the HAA pilot of any potential hazards along proposed routes, suggest possible mitigation strategies, and in the absence of any effective mitigation strategies, have the operational control authority to direct the HAA pilot to decline the flight, divert the flight, or terminate the flight.

3.1.3 Monitor the Progress of the Flight. The OCS is required to monitor the progress of each HAA flight. This may be accomplished through a variety of means, including satellite tracking, position reports, etc. Weather conditions in the area(s) of operation should be monitored with respect to each HAA flight's progress, and a documented method should be established to communicate adverse or unforecast deteriorating weather conditions to the HAA pilot. In the event the OCS cannot directly monitor a flight's progress via satellite or other graphic means, certificate holders should have established procedures for monitoring the flight via position reports or other means.

3.1.4 Preflight Risk Analysis. Risk Analysis procedures, principles, and policies are documented and are the subject of training by HAA operators. Multiple people with defined and documented roles and who receive specific training are typically involved in an FAA-approved HAA flight operations risk analysis program.

3.1.5 Risk Analysis. Risk analysis is an iterative risk assessment, mitigation, and reassessment process. Risk assessment is one key element of the broader risk analysis process. The risk assessment process should identify hazards, the probability of their occurrence, and the likely severity of the outcome should a hazard occur.

3.1.6 Risk Mitigation. Risk mitigation and its effectiveness in reducing risk is an essential component of the risk analysis program. If the risk assessment rates an individual risk element highly, mitigations may be advisable. Risk mitigations should be preplanned and preapproved, not assembled at the time of need, as unintended consequences may result. Following application of an effective mitigation, the associated individual and total residual risk factor should be reassessed. This risk mitigation/re-assessment cycle should be repeated until all higher risks are effectively mitigated. Risks that remain high must either be acknowledged and accepted in accordance with the operator's risk analysis program, or the proposed original flight operation or proposed flight operation modification should be declined.

3.1.7 Risk Threshold. Each individual risk element is weighed against an operator's individual risk threshold and aggregated (combined risk scores remaining after application of approved mitigation strategies) into a total risk which, in turn, is weighed against the operator's predetermined aggregate risk threshold. If the final aggregate residual risk and/or individual risk elements exceed the operator's predetermined thresholds, approval of a higher level of operator management (above the OCS) is required. If this approval cannot be obtained, the flight should be refused (refer to §§ 135.615 and 135.617(a)(5)). Section 135.617 requires HAA operators to have an FAA-approved and documented risk analysis program that includes procedures for elevating the final post mitigation residual risk to a higher management level for approval when the total risk exceeds a predetermined threshold.

3.1.8 Participation Requirements. By regulation, the OCS must participate in the preflight risk analysis required by § 135.617. This section contains a brief description of the minimum participation requirements. HAA operators are encouraged to include in their risk analysis program any other requirements they deem appropriate to enhance safety.

3.1.8.1 The OCS must ensure the pilot has completed all required items on the preflight risk analysis worksheet. Procedures for determining the minimum items to be completed on the risk analysis should be detailed in the certificate holder's approved risk analysis program. Risk analysis is discussed in detail in the current version of AC 135-14, Helicopter Air Ambulance Operations.

3.1.8.2 The OCS must confirm and verify all entries on the preflight risk analysis worksheet. The process of confirming and verifying the risk analysis entries

should be documented in each certificate holder's Manual or approved risk analysis program.

3.1.8.3 The OCS must assist the pilot in mitigating any identified risks prior to takeoff and during flight if conditions change unexpectedly.

3.1.8.4 Risk mitigation strategies offered by the OCS should be offered in the form of suggested options that are previously validated by the operator. Risk mitigation strategies made on an ad hoc basis may result in unintended consequences. It's important to note that the pilot in command (PIC) makes the final decision whether or not a recommended risk mitigation strategy is acceptable for the circumstances at hand. Conversely, the OCS is expected to evaluate mitigation strategies proposed by the PIC and determine their adequacy. The OCS should have the authority to direct the PIC to decline or abort a flight if the proposed risk mitigation is inadequate or inappropriate for the circumstances or if the residual risk remains excessive.

3.1.8.5 Certificate holders are encouraged to document when mitigation strategies are employed and their effect on the safe conduct of a flight.

3.1.8.6 The OCS must acknowledge, in writing, specifying the date and time that the preflight risk analysis worksheet has been accurately completed and that, according to their professional judgment, the flight can be conducted safely.

3.1.8.7 The method of this acknowledgement may be in any manner specified by the certificate holder in their approved risk analysis program. A signature is not required. This acknowledgement may be on the same risk analysis worksheet the PIC completes or on a separate record as long as the record contains the date and time of the acknowledgment, enough information to identify the PIC, the date of flight, the route of flight, that the preflight analysis worksheet has been accurately completed and that, according to the professional judgment of the OCS, the flight may be conducted safely, and any other information deemed appropriate by the certificate holder. The method of acknowledgement may be in writing, electronic, etc., as specified in the approved risk analysis program.

Note: Electronic signature safeguards and data security techniques are evolving rapidly. Discuss this section with your principal operations inspector (POI) at the time of implementation planning (refer to the current edition of AC 120-78, Acceptance and Use of Electronic Signatures, Electronic Recordkeeping Systems, and Electronic Manuals, for more details regarding electronic signatures).

3.1.8.8 When an OCS, in their professional opinion, cannot concur that a flight can be conducted safely, the OCS should direct the PIC not to accept the flight. If the OCS observes a change in the risk analysis factors during the course of an HAA operation, the OCS should advise the PIC, recommend possible

mitigation strategies, and if the risk becomes unacceptable, direct the PIC to divert or abort the flight. This OCS authority should be documented in the certificate holder's risk analysis program and GOM.

3.1.9 Emergency Assistance Capabilities. In addition to those duties required by regulation, the OCS can play an important role in providing emergency assistance to PICs during emergency situations such as an encounter with inadvertent instrument meteorological conditions (IIMC). In many circumstances, the OCS may be able to observe aircraft position and maintain communications with the PIC when the aircraft is below air traffic control (ATC) radar and communications coverage. Under these circumstances, the OCC may need to relay information to ATC regarding an aircraft declaring an emergency and the pilot's intentions. Additionally, the only means by which the PIC may be able to receive accurate weather information or route recommendations to escape severe or deteriorating weather may be through the OCS.

3.2 OCS Shift Change/Relief Procedures. In accordance with § 135.619(c), certificate holders must develop a shift change checklist to be used by OCS personnel during OCS shift changes. Procedures for briefing the on-coming OCS of HAA operations currently in progress and those expecting to begin shortly should be developed, documented, and trained. A similar checklist should be available when relief is being provided to an on-duty OCS for breaks, etc. These checklists should, at a minimum, contain:

1. Active HAA operations.
2. Any HAA operations being conducted with a risk level higher than "low" or that required management review that employed risk mitigation strategies.
3. Weather affecting possible flight areas including but not limited to a review of current surface analysis, radar/radar summary, surface prognostic charts, and other information deemed appropriate.
4. Available flight monitoring procedures.
5. Temporary flight restrictions (TFR).
6. Pertinent Notices to Airmen (NOTAMS).
7. Any technology anomalies.
8. Any new flight operations policies, manual changes, etc., that have taken effect since the on-coming OCS' last shift.
9. Human factors affecting any HAA pilot, OCS, CS, or other company personnel that could affect operations.
10. Helicopter maintenance status.

3.3 CS/OCS Interfaces. Some HAA operators consider it a best practice for OCS to pass routine, non-critical information to the PIC through the communications center in order to ensure all parties (OCC, pilot, and communications center personnel) are aware of information being provided and of any possible route deviations, etc., that might occur as a result of OCS suggestions or direction.

3.3.1 Direct Communications. In all cases where the OCS is performing a task listed in § 135.619(a) and needs information from or wishes to pass information to the pilot, the OCS normally will communicate directly with the PIC. This direct communications link is crucial when the matter is time-critical or requires technical discourse to achieve a consensus position regarding risk analysis or weather options. It is recommended that the OCS advise the communications center as soon as it is feasible of the nature of the communication and any impacts it might have on the HAA operation.

3.3.2 Non-Normal Event. The OCC should be notified by the CS any time the CS becomes aware of an out of the ordinary event during an HAA operation. Such events include diversions, precautionary landings, or any other event deemed appropriate by the certificate holder. These notification processes should be documented in the certificate holder's Manual or SOP.

3.4 Accident/Incident Procedures. Procedures should be documented for the OCS to follow in the event of an overdue aircraft or if an aircraft is known to have been involved in an accident or incident. This should include procedures for notification of appropriate company personnel and for notification of emergency medical service (EMS), fire, and police, if necessary, in the area where the aircraft is believed to be located. It is recommended that a listing of all EMS, fire, police dispatch centers, and their phone numbers for the areas where HAA operations are normally conducted be maintained at the OCS work station. The OCS may delegate some Post-Accident/Incident Plan (PAIP) local contact tasks to the CS. This option should be noted as such in the PAIP documentation.

CHAPTER 4. OPERATIONS CONTROL SPECIALIST (OCS) TRAINING

4.1 Helicopter Air Ambulance (HAA) OCS Training. Title 14 of the Code of Federal Regulations (14 CFR) part 135, § 135.619(d) establishes the requirement and § 135.619(f) establishes the minimum training required for HAA certificate holders operating 10 or more HAAs. Certificate holders operating fewer than 10 HAAs are encouraged to use the same training.

4.1.1 OCS Experience. Preferably, although not required, HAA OCS should be trained helicopter pilots and ideally be highly experienced HAA pilots.

4.1.2 Initial Training. Before performing the duties of an OCS, each person must satisfactorily complete the certificate holder's Federal Aviation Administration (FAA)-approved OCS initial training program. Initial training must include a minimum of 80 hours of training on the topics required by § 135.619(f).

4.1.3 Recurrent Training. Every 12 months after satisfactory completion of initial training, each OCS must complete a minimum of 40 hours of recurrent training.

4.2 OCS Prior Experience. A certificate holder may reduce the regulatory requirement of 80 hours of initial training provided the individual has certain prior experience. The training may be reduced as appropriate, but by no more than 40 hours. While the number of training hours may be reduced, all topics listed in § 135.619(f) must still be covered in training. It is recommended that the certificate holder perform a pretraining evaluation to determine which training topic hours may be reduced for persons who have obtained, prior to beginning initial training, a total of at least 2 years of experience during the last 5 years in any one or combination of the following areas:

- Military aircraft operations as a pilot, flight navigator, or meteorologist;
- Air carrier operations as a pilot, Flight Engineer (FE), certified aircraft dispatcher, or meteorologist; or
- Aircraft operations as an air traffic controller or flight service specialist.

Note: Prior experience as a communications specialist (CS) is not a qualifying source of prior experience.

4.3 Training Requirements. OCS regulatory training requirements are specified in § 135.619(f). Other requirements, as determined by the Administrator to ensure safe operations, may be added depending upon individual HAA operator circumstances.

4.3.1 Training Program Approval. The OCS training program, as required by § 135.619, must be approved by the certificate holder's principal operations inspector (POI). The required training topics are discussed in paragraph 4-4. Should the operator decide to use contract training resources, the training should be conducted through a 14 CFR part 142 training center or another certificate holder in accordance with § 135.324, and the operator as well as the POI must approve the training curriculum and testing.

4.3.2 Training Elements. In addition to classroom or computer-based initial training, it is recommended that, after the OCS candidate has passed the knowledge test, initial training include scenario-based, one-on-one supervised, and coached on-the-job training (OJT) leading to the practical test. It must be understood that, in the case of OJT, the OCS acting as trainer must be aware of and is responsible for all actions taken by the OCS candidate under their direct and continuous supervision. Recurrent training should include periodic abnormal/emergency procedures drills. Recurrent training and testing must be accomplished before the end of the twelfth calendar month since the last test was accomplished.

4.3.3 Training and Testing Personnel Experience. Those persons authorized by the certificate holder to conduct OCS training and testing should be experienced OCS personnel or other persons deemed appropriate and knowledgeable by the certificate holder. Initial OJT may be conducted only by specifically designated and current OCS personnel. This authorization should be shown by position or individual name in the approved OCS training program.

4.3.4 Allocation of Training Hours. While the training hours specified in § 135.619 must be adhered to, the number of hours dedicated to each topic may be determined by the operator. The operator should develop the training curriculum and training hours based upon the full 80 hour requirements of § 135.619. The training program for OCS would be approved on the basis of the full 80 hours, with an approved means for reducing (but not eliminating) the hours dedicated to each topic based upon the OCS candidate's prior experience. One method of determining training hours needed for various topics may be the completion of a knowledge assessment by the prospective OCS. This assessment would help determine the depth of knowledge the prospective OCS has with the various topics. The results of the knowledge assessment could be used to allocate training hours appropriately to ensure an adequate depth of knowledge across all subject areas.

4.4 Training Topics. Each certificate holder must have an FAA-approved OCS training program that covers at minimum the following topics:

4.4.1 Aviation Weather. To include:

1. General meteorology;
2. Prevailing weather;
3. Adverse and deteriorating weather;
4. Windshear;
5. Icing conditions;
6. Use of aviation weather products;
7. Available sources of information; and
8. Weather minimums.

4.4.2 Navigation. To include:

1. Navigational Aids (NAVAID);
2. Instrument approach procedures (IAP);
3. Navigational publications; and
4. Navigation techniques.

4.4.3 Flight Monitoring. To include:

1. Available flight monitoring procedures; and
2. Alternate flight monitoring procedures.

4.4.4 Air Traffic Control (ATC). To include:

1. Airspace;
2. ATC procedures;
3. Aeronautical charts; and
4. Aeronautical data sources.

4.4.5 Aviation Communication. To include:

1. Available aircraft communications systems;
2. Normal communication procedures;
3. Abnormal communication procedures; and
4. Emergency communication procedures.

4.4.6 Aircraft Systems. To include:

1. Communications systems;
2. Navigation systems;
3. Surveillance systems;
4. Fueling systems;
5. Specialized systems;
6. General maintenance requirements; and
7. Minimum equipment lists (MEL).

4.4.7 Aircraft Limitations and Performance. To include:

1. Aircraft operational limitations;
2. Aircraft performance;

3. Weight and Balance (W&B) procedures and limitations; and
4. Landing zone (LZ) and landing facility requirements.

4.4.8 Aviation Policy and Regulations. To include:

1. Title 14 CFR Parts 1, 27, 29, 61, 71, 91, and 135;
2. Title 49 of the Code of Federal Regulations (49 CFR) Part 830;
3. Company operations specifications (OpSpecs);
4. Company general operations policies;
5. Enhanced operational control policies;
6. Aeronautical decisionmaking and risk management;
7. Lost aircraft procedures; and
8. Emergency and search and rescue procedures, including plotting coordinates in degrees, minutes, seconds format, and degrees, decimal minutes format.

4.4.9 Crew Resource Management (CRM). To include:

1. Concepts and practical application;
2. Risk management and risk mitigation; and
3. Preflight risk analysis procedures required under § 135.617.

4.4.10 Local Flying Area (LFA) Orientation. To include:

1. Terrain features;
2. Obstructions;
3. Weather phenomena for local area;
4. Airspace and ATC facilities;
5. Heliports, airports, LZs, and fuel facilities;
6. Instrument approaches;
7. Predominant air traffic flow;
8. Landmarks and cultural features, including areas prone to flat-light, whiteout, and brownout conditions; and
9. Local aviation and safety resources and contact information.

4.5 Methods of Instructional Delivery. The method of instructional delivery is at the discretion of the HAA operator. While classroom instruction is a preferred method for many topics, others may find it more appropriate to conduct training on some subject areas via computer-based training or some similar method.

4.5.1 OJT. OJT may be conducted and counted toward the required training hours. Those topics for which OJT are to be used should be clearly identified in the certificate holder's approved training program. Regardless of whether or not OJT is used to satisfy the training requirements of § 135.619, it is highly recommended that newly trained OCS personnel work under the supervision of an experienced OCS for a period of time after the completion of initial training.

4.5.2 Recurrent Training. For recurrent training, certificate holders may also use ongoing training such as monthly training modules and abnormal/emergency procedures drills as long as the required hours and topics are accomplished within the 12-month training period. The required annual testing, however, must be accomplished before the end of the twelfth month. Such a training method and the tracking mechanism the operator will use to ensure the training has been completed should be documented in the approved OCS training program.

4.6 Testing. OCS must pass an FAA-approved knowledge and practical test given by the certificate holder on topics required in § 135.619(f). The certificate holder is responsible for developing this knowledge and practical test. The test must cover all topics and must be FAA-approved. The FAA approval is context-sensitive, depending upon the operating environment and the operator's organizational structure. The POI must assess the adequacy of the operator's proposed testing methods to ensure an adequate assessment of the individual's ability is accomplished.

4.6.1 Failure to Complete Recurrent Training. If an OCS fails to satisfactorily complete recurrent training and testing within the preceding 12 months, the individual may not perform OCS duties until the training and testing is accomplished. There is no provision for a grace period. Requalification of OCS following a lapse may be accomplished by satisfactorily completing the recurrent training and testing. The duration of a lapse between previous qualification and requalification via the above training and testing must be determined and justified by the certificate holder.

4.6.2 Retesting. It is recommended that an individual be required to score a minimum of 80% in any initial or recurrent OCS testing, and that the test be corrected to 100% through topical review with the OCS instructor for each element missed. In the event of a test failure (scoring less than 80%), the OCS retest must be preceded by retraining in the subject areas failed; retesting should cover all areas in § 135.619(f). In the event a retest is required after an initial failure, it is recommended that a different version of the test be used during the retest. The knowledge test must be satisfactorily completed and corrected to 100% before the practical test is administered. Failure of the practical test does not require reapplication of the knowledge test, however, a failure of a subsequent practical retest indicates a serious knowledge deficiency and should require the individual to undergo requalification training and retesting.

4.6.3 Test Formats. The knowledge test may be oral, written, or a combination of oral and written, and should be accomplished before the practical portion of the test. The practical portion of the test should evaluate the real-time application of all OCS procedures as well as the use of all normally available and used equipment, computer programs, and other

technology used by the OCS with special emphasis on new technology and areas of previously identified systemic issues. The method(s) of testing to be used by the certificate holder should be documented in the approved training program.

4.6.4 Annual Recurrent Testing. Certificate holders must describe, in its General Operations Manual (GOM) or approved OCS training program, OCS training and testing procedures, including procedures for retesting after failure and requalification training following an extended absence. As there is no regulatory requirement for requalification training and testing, the operator may define the term beyond which requalification is required and the training requirements to achieve requalification (recommended to be between 40 and 80 hours). Minimum test scores (80% recommended) as well as procedures for correcting all tests to 100% should be contained in the approved OCS training program.

4.7 Training Records. The certificate holder must maintain a training record for each OCS employed for the duration of that individual's employment and for 90 calendar-days thereafter. The training record must include a chronological log for each training course, including the number of training hours and the examination dates and results. These records may be stored in paper form or electronically at the discretion of the certificate holder. Certificate holders should be aware that electronic recordkeeping requirements may apply.

CHAPTER 5. OPERATIONS CONTROL SPECIALIST (OCS) DUTY TIME LIMITATIONS

5.1 OCS Duty Time Limitations. Each certificate holder must establish the daily duty period for an OCS so that it begins at a time that allows that person to become thoroughly familiar with operational considerations, including existing and anticipated weather conditions in the area of operations, helicopter operations in progress, and helicopter maintenance status, before performing duties associated with any helicopter air ambulance (HAA) operation.

5.1.1 Duty Period. The OCS must remain on duty until relieved by another qualified OCS or until each HAA monitored by that person has completed its flight or gone beyond that person's jurisdiction.

5.1.2 Hours on Duty. Except in cases where circumstances or emergency conditions beyond the control of the certificate holder, such as a natural disaster, civil curfew, personal crisis, or other situation that prevents relieving personnel from arriving at the Operations Control Center (OCC), require otherwise:

- No certificate holder may schedule an OCS for more than 10 consecutive hours of duty;
- If an OCS is scheduled for more than 10 hours of duty in 24 consecutive hours, the certificate holder must provide that person a rest period of at least 8 hours at or before the end of 10 hours of duty;
- If an OCS is on duty for more than 10 consecutive hours, the certificate holder must provide that person a rest period of at least 8 hours before that person's next duty period; and
- Each OCS must be relieved of all duty with the certificate holder for at least 24 consecutive hours during any 7 consecutive days.

CHAPTER 6. DRUG AND ALCOHOL TESTING REQUIREMENTS.

6.1 Drug and Alcohol Testing Requirements. Operations Control Specialists (OCS) must be tested for drugs and alcohol according to the certificate holder's drug and alcohol testing program administered under Title 14 of the Code of Federal Regulations (14 CFR) part 120. OCS are also required to be trained on the certificate holder's Employee Assistance Program (EAP) in accordance with part 120, § 120.115.

CHAPTER 7. COMMUNICATIONS SPECIALISTS (CS) DUTIES AND TRAINING

7.1 General. CS serve a limited role in the helicopter air ambulance (HAA) industry. Title 14 of the Code of Federal Regulations (14 CFR) part 135, § 135.619 defines duties and responsibilities of the Operations Control Specialist (OCS) and effectively limits the CS role to tasks not performed by the OCS.

7.2 CS Duties. This chapter provides guidance on CS duties and related training topics that will assist operators in the establishment of an effective CS training program. A properly trained and tested CS may be assigned the following duties:

7.2.1 Flight Requests. Receive flight requests from customers (hospitals, emergency medical service (EMS) agencies, etc.). Certificate holders are encouraged to establish written procedures outlining the information to be obtained from the customer, including pickup point and destination, patient weight(s), if available, ground communications contacts, and any pertinent information required by the medical personnel. A pilot in command (PIC) should not be given patient information other than patient weight during the flight notification to avoid influencing the pilot's "Go" or "No-Go" decision.

7.2.2 Prior Refusal/Rejection of Flight Requests. Collect information regarding prior refusals or rejections of a flight request from the requestor. This information is required for the risk analysis process in accordance with § 135.617 and is most easily acquired when receiving a flight request. Though the regulation does not require any further information beyond whether or not the flight request had been previously declined, the informational foundation upon which the risk analysis process will be performed is greatly enhanced when the reason for declining the flight is known (e.g., the impact on flight risk analysis of a request declined due to an aircraft out of service differs substantially from being declined because the weather exceeded the previous operator's comfort level or weather limitations). The CS will include this information when passing the flight request to the PIC or to the OCS, as prescribed by the operator's procedures. Certificate holders are encouraged to have a checklist and documented procedure for obtaining this and other pertinent information from the requestor.

7.2.3 Coordination. In some cases, certificate holders may find it advantageous for the CS to notify the Operations Control Center (OCC) of the content of a flight request in addition to, or instead of, the pilot. The CS should provide the flight request details as soon as it is feasible to facilitate the risk analysis. This process should be documented and should be included in CS training.

7.2.4 Communication. Provide communication relay between the OCS and the pilot in flight. In some localities, and due to communications system limitations, some HAA operations require a communication relay between airborne flights and the OCC. In these cases, the CS provides that relay function. Relaying of information, including risk analysis data between the HAA pilot and the OCC, is especially important when an unplanned diversion is required or requested by the customer while en route and the HAA pilot can't communicate directly with the OCC.

7.2.5 Recording and Relaying of Flight Position. Though the OCC must monitor the progress of each HAA flight in accordance with § 135.619(a)(3), a CS may maintain a secondary awareness (a "second set of eyes") of the current location of each HAA flight operation within the geographic area served. Though the OCC in most HAA operations accomplishes flight monitoring through satellite tracking of their aircraft, some rely upon receipt of position reports received from the HAA pilot and relayed through the CS. The certificate holder may find it useful for the CS to maintain a log of position reports or satellite tracking in hardcopy or separate from the online information technology (IT) system. This ensures continuity of flight monitoring in the event of technology failure and to enable the OCS to maintain continuity of flight monitoring in the event of a disruption in the OCC's ability to continuously monitor flights.

7.2.6 Unplanned Events. Advise the OCC of unplanned events during an HAA operation. The CS may advise the OCC of observed unplanned events during an HAA operation, including diversions, precautionary landings, or any other event deemed appropriate by the certificate holder.

7.2.7 Post-Accident/Incident Plan (PAIP). Procedures should be documented for the CS to follow at the direction of the OCS in the event of an overdue aircraft or if an aircraft is known to have been involved in an accident or incident. This should include procedures for notification of appropriate company personnel, and when directed, procedures for notification of local EMS, fire, and police, if necessary, in the area where the aircraft is believed to be located. It is recommended that a current listing of all EMS, fire, police dispatch centers, and their phone numbers for the areas where HAA operations are normally conducted be maintained at the CS work station in duplicate of those maintained in the OCC.

7.2.8 Miscellaneous. Other duties, except OCS duties in accordance with § 135.619(a), deemed necessary and appropriate by the certificate holder.

7.3 CS Training. Effective training is essential because the CS not only receives flight requests, but may also interface with the pilot and the OCS. CS may be employed by the HAA operator, a hospital, an ambulance dispatch center, or local law enforcement entities (e.g., local public safety or 911 dispatchers). Regardless by whom they are employed, all CS should be trained by the certificate holder, or by a designee approved by the operator, in their duties and responsibilities in accordance with the certificate holder's training program. The certificate holder remains responsible for the quality and effectiveness of training provided by a designee and should conduct testing and/or observation to ensure the CS is able to adequately perform CS duties and responsibilities. CS are not permitted to engage in OCS duties and responsibilities, including operational control, which remain the exclusive domain of the on-duty OCS or other persons who may exercise operational control authority.

7.3.1 Limits of Duties and Responsibilities. It cannot be overemphasized that any training provided to the CS should include the limits of the CS' duties and responsibilities and the OCS duties and responsibilities that must not be performed by the CS. For instance, a CS may engage in relaying information to and from pilots (in the same manner as

transoceanic flights frequently communicate with ARINC (an internationally recognized communication company), who acts as a relay for requests and responses to and from air traffic control (ATC) or an operator's maintenance control department, etc., transferring information and requests between the pilot and the OCS, and may perform secondary flight monitoring to back up the OCS who performs primary flight monitoring). The CS may not be authorized to gather weather information and provide a weather briefing to a pilot in flight. Likewise, the CS should never engage in the review of risk analyses or the preparation of a weather briefing for a pilot nor the authorization of an HAA flight operation.

7.3.2 Recurrent Training. Recurrent training should also be conducted annually.

7.3.3 Emergency/Abnormal Event Training. The certificate holder may find it valuable to train and test some remote communications center staff, including CS and OCS, in accordance with § 135.619(d) so these individuals are prepared to take over OCC duties such as flight monitoring should an emergency or abnormal event (fire, earthquake, tornado, flood, power failure, etc.) occur that causes normal OCC operations to be temporarily discontinued. The limits of the CS responsibility during such a time should be clearly documented in company manuals or standard operating procedures (SOP) and appropriate training provided.

Note: It is recommended that such an event be drilled periodically (perhaps every 6 months) under supervision from a certificate holder OCC representative. Procedures should also be established, much like those for the OCC, to continue communications center operations in a contingency mode after an emergency or abnormal condition arises that may cause a shutdown of the CS facilities.

7.3.4 Training Records. Appropriate records of the training should be maintained by the certificate holder.

7.4 Duty Periods. Stressful conditions may develop in communications centers during periods of high activity. Because of this, the certificate holder should consider fatigue and cumulative stress when formulating CS schedules. Due consideration should also be given to scheduling breaks. When possible, a relief CS should be available to take over for a CS when unplanned breaks are required, and a process should be documented for a briefing to be given to the person providing that relief.

7.5 Shift Change Procedures. Certificate holders are encouraged to develop a written shift change briefing to ensure continuity of safe operations. This briefing should include, at a minimum:

- Procedures for ensuring the on-coming CS is aware of all HAA operations currently in progress and those already scheduled and expected to begin momentarily.
- Any HAA operations being conducted with a risk level that exceeded the lowest rating category and required management review or those that employed risk mitigation strategies.

- Any IT (communications media) anomalies.
- Any new flight operations policies, manual revisions, or bulletins, etc., that have taken effect since the on-coming CS' last shift.

7.6 Drug Testing Requirements. CS are not, in general, subject to drug testing under 14 CFR part 120, § 120.105 unless they are also acting as an OCS. Certificate holders should be aware that, if any OCS duty or authority is delegated to a CS who has been fully trained as an OCS, they will be subject to drug testing, as required by § 120.105, regardless of their employment relationship with the certificate holder.

Advisory Circular Feedback Form

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by contacting the Air Transportation Division (AFS-200) or the Flight Standards Directives Management Officer.

Subject: AC 120-96A, Operations Control Center (OCC) for Helicopter Air Ambulance (HAA) Operations

Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

_____

_____

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

_____

_____

☐ Other comments:

_____

_____

☐ I would like to discuss the above. Please contact me.

Submitted by: _____ Date: _____