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BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

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In the Matter of	)	
	)	
Establishment of Audio Visual Warning System as New Subpart T to Part 87 of the Commission's Rules and Regulations To Authorize Advanced Audio Visual Warning Systems for Antenna Structures and other Air Navigation Obstacles	)	**RM-** _____

RM-11596

To: The Commission

PETITION FOR RULEMAKING OF OCAS, INC.

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Federal Communications Commission
Office of the Secretary

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EXECUTIVE SUMMARY

OCAS, Inc. requests the Commission initiate a rulemaking proceeding to establish a new Subpart T, Audio Visual Warning Systems ("AVWS"), under Part 87 of its Rules to permit owners and operators of antenna structures and other air navigation obstacles to secure authority to operate advanced AVWS stations as an alternative to the "always-on" antenna structure lighting typically deployed at antenna structures and other air navigation hazards.

OCAS, Inc. is the initial developer of AVWS technology. It has installed over 40 systems worldwide, presently in Norway, Canada, Germany and the United States (principally with the Federal Government). The OCAS System (alternatively referred to as "OCAS®") is designed and engineered to be deployed on or near air navigation obstacles such as electrical transmission lines, telecommunications towers and wind turbines. The OCAS System includes a low-powered continuous wave radar operating on frequencies in the 1300-1350 MHz band, a VHF radio capable of transmitting concurrently on virtually all frequencies in the band 118-136 MHz, and a localized energy supply source that energizes and controls the lighting on the antenna structure or other air navigation obstacle.

The radar continuously scans for approaching aircraft. OCAS® activates the obstacle lights as an aircraft enters into the initial zone of the predefined horizontal and vertical perimeter ("warning zone"), providing a visual warning to the pilot. If the aircraft continues toward the structure or the wire despite this visual warning and enters the second warning zone, the VHF radio transmits an audible warning to the flight crew. No additional equipment is necessary in the cockpit because the VHF component is a digital synthesized carrier waveform that can transmit on any or all of the 721 twenty-five (25) kHz channels in the 118-136 MHz band.

The audible warning will interrupt ongoing ground-to-air (and air-to-ground) or air-to-air transmissions only if the aircraft is close enough to an obstacle for the low-powered VHF signal to be heard by the pilot. At such times, it is vitally important that the OCAS System interrupt any ongoing VHF voice transmissions to alert the pilot of imminent danger. The limited output power and antenna associated with this VHF transmitter ensures that the onboard radios of aircraft well above or otherwise not on course to collide with the obstacle will not detect the audible warning.

Proactive AVWS stations are a substantial enhancement to air navigation safety over passive aviation obstruction warning systems prevalent in the United States. The activated lighting and audible warning more effectively alert pilots of obstacles as compared to obstacles equipped with always-on lights. The combined visual-audible warning of OCAS® is comparable to other air collision avoidance technologies and rail safety collision avoidance systems. In addition, AVWS technology reduces energy consumption by activating tower lighting on an "as needed" basis and may enable other potentially significant environmental benefits.

This Petition does not seek additional spectrum for AVWS systems. Instead, this Petition requests the Commission amend Part 87 of its Rules so that owners and operators of antenna structures and other air navigation obstacles are eligible to secure AVWS station authorizations to (1) operate continuous wave, low power radar units operating in the band 1300-1350 MHz as provided under Subpart Q of Part 87, (2) transmit on VHF ground-to-air and air-to-air frequencies available under several subparts of Part 87 of the Rules that are used in connection with flight operations in the vicinity of the navigation obstacle, and (3) clarify that antenna structures equipped with or supported by AVWS stations are exempt from the continuous lighting requirements under Section 17.51 of the Commission's Rules.

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Establishment of a New Subpart T to Part 87 of the Commission's Rules and Regulations To Authorize Advanced Audio Visual Warning Systems for Antenna Structures and other Air Navigation Obstacles	)	RM-_____
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PETITION FOR RULEMAKING

OCAS, Inc., by its attorneys and pursuant to Section 1.401 of the Commission's Rules, hereby requests that the Commission establish a new Subpart T to Part 87 of its Rules in order to permit the operation of advanced obstacle warning systems for antenna structures and other air navigation obstacles, such as its Obstacle Collision Avoidance System ("OCAS System" or "OCAS®"), generally referred to as an Audio Visual Warning System ("AVWS"), to improve air navigation safety in the United States.

I. INTRODUCTION

OCAS, Inc. is based in Vienna, Virginia, and is a wholly-owned subsidiary of OCAS AS, a privately-held, Norwegian-based company, collectively referred to as "the Company" or "OCAS." The Company is dedicated to developing, deploying and supporting the latest technology in air navigation obstacle warning systems, principally integrated lighting and audible warning solutions for antenna structures, utility transmission towers, wind turbine farms, utility transmission wires and other air navigation obstacles. OCAS was founded in 1999 by two former military pilots, Morten Mork and Rolf Bakken, who were committed to advancing air navigation obstruction warning technology. The principals' interest and motivation in improving

air navigation safety stem, in major part, from the number of fatal accidents involving pilots who were killed in aircraft collisions with power lines and wire crossings. Based on their understanding of air navigation, aircraft communications and the inherent limits of existing obstacle marking and lighting systems, OCAS developed its integrated obstacle warning system that includes both visual and audio warnings as an aircraft approaches an obstacle. Technologically, OCAS® operates by continuous wave, low power radar, and transmitters capable of operating on all of the voice frequencies available in the global VHF Aviation band 118-136 MHz.

The Company has achieved substantial success in its initial years of operation. The Obstacle Collision Avoidance System (alternatively referred to as OCAS®) is successfully deployed at more than 40 locations throughout the world, principally in Norway, Germany, Canada and the United States (largely through sales to the Federal Government) and has over 500,000 operational hours. In light of the marketplace acceptance and demand for this innovative obstacle warning system, OCAS is submitting this Petition for Rulemaking to establish a new Subpart T to Part 87 of the Commission's Rules to permit owners and operators of antenna structures and other air navigation obstacles to secure authority to operate AVWS stations, more particularly (1) to operate continuous wave, low power radar units operating in the band 1300-1350 MHz as provided under Subpart Q of Part 87; (2) to transmit audible warnings on VHF ground-to-air and air-to-air frequencies available under several subparts of Part 87 of the Rules; and (3) to clarify that the antenna structures equipped with or supported by AVWS stations are exempt from the continuous lighting requirements under Section 17.51 of the Commission's Rules.

II. DISCUSSION

A. Description of the OCAS System

OCAS® is an integrated air hazard notification system that satisfies the applicable air hazard marking and lighting requirements of the Federal Aviation Administration ("FAA") and utilizes radar frequencies and VHF voice frequencies authorized under Part 87 of the Commission's Rules. The OCAS System is designed and engineered to be deployed on or near air navigation obstacles such as electrical transmission wires, telecommunications towers and wind turbines. Three main units comprise the OCAS System: a low-powered continuous wave radar, a VHF radio capable of transmitting concurrently on virtually all frequencies in the band 118-136 MHz, which is allocated worldwide for aeronautical mobile requirements, and a localized energy supply source that energizes and controls the lighting on the structure consistent with FAA marking and lighting requirements.

The OCAS® radar operates continuously, calculating the location, direction, altitude and groundspeed of nearby aircraft that enter one of two "warning zones." Each zone has a predefined horizontal and vertical perimeter.[1] With smart antenna arrays, the continuously operating, low-powered radar[2] tracks nearby aircraft with software-controlled ray formation and guidance, accomplished without moving parts and with a very low ray emission in relation to range capabilities of the system. The radar component relies on state-of-the-art, locally configurable software with configurable search options. Obstruction lighting is activated when an aircraft enters into the zone of the predefined horizontal and vertical perimeter. As an aircraft

[1] The outer perimeters of the warning zones can be increased or decreased depending on the flight operations in the vicinity of, and the local topography surrounding, the obstacle.

[2] The low-powered, continuous wave radar transmits at two watts on frequencies between 1307.5-1342.5 MHz.

enters the first warning zone, the OCAS® activates its UHF Cluster Link Radio to remotely and simultaneously activate the lights on the tower to provide a visual warning to the pilot. If the aircraft continues toward the structure despite this visual warning and enters the second warning zone, the VHF component of the system transmits an audible warning that is received by the aircraft's in-place transceiver alerting the flight crew.[3] The VHF component of the OCAS System is a digital synthesized carrier waveform that can transmit on any or all of the 721 twenty-five (25) kHz channels in the 118-136 MHz band. Though the output power of the VHF radio is configurable, the proposed maximum is -3 dBm per channel. A centerfed double-dipole antenna limits the VHF transmission to a practical range of 5 – 7 km horizontal and 6,000 feet vertical. This radiation pattern ensures that aircraft using generally available aircraft radios and antennas receive the audible warning when entering the second warning zone.[4] In other words, the VHF component transmits a largely horizontal signal and a relatively modest vertical signal, reaching only aircraft, which based on altitude, speed and direction, are on a course likely to collide with the obstacle absent a diversion. The modest vertical signal strength minimizes the potential for reception of OCAS® transmissions by transceivers onboard aircraft flying at elevations safely above the antenna structure or other obstacles protected by OCAS®. The output power, radiation pattern and duration of the audible warning transmission may be modified as required by local topography and man-made obstacles.

A service available to OCAS customers is remote monitoring. Using standard GSM or CDMA technology, OCAS monitors and confirms the operational status of an OCAS® system, including the radar component, at least once every 24 hours. OCAS can provide operational

[3] More information about the OCAS System is available at http://www.ocasinc.com/.

[4] The VHF antenna is 2 dBi vertical polarized, coaxial half wave dipole.

status reports directly to the structure owner via SMS or e-mail messages. A series of system responses are built-in to the OCAS system in the event of component failures. If either the radar component or the UHF link that activates the lights fails, the structure will be continuously lit until the system is again functioning properly. If there is a lighting outage at the obstacle, the audio warning function of OCAS® will remain active, and the OCAS remote monitoring facility will see an alarm indicating the outage. A Notice to Airmen ("NOTAM") would be issued immediately. In addition, OCAS® records each activation of the tower lights and audible warning attributable to approaching aircraft, documenting the speed, position and size of the aircraft, among other details, and sends this information to the database maintained by OCAS.[5]

B. Importance of the Audible Warning

The OCAS audible warning represents a substantial safety enhancement over the passive marking and lighting associated with legacy "always-on" lighting of structures. These single sensory warnings are simply not as effective as combined visual-audio warnings. Upon review of safety data, accident reports and the enhanced effectiveness of combining audio warnings with visual markers to draw the pilot's attention, the OCAS founders focused initially on the audible warning component. As experienced pilots, they understood the reality that air navigation obstacles equipped only with always-on lighting during daylight and night hours can easily blend into the horizon observed from the cockpit of an aircraft and that the audible warning is needed to draw a pilot's attention to fast approaching air navigation obstacles.

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[5] *Safety Study of Wire Strike Devices Installed on Civil and Military Helicopters*, Final Report p. 40 (Federal Aviation Administration, Sept. 2008)(available at http://www.tc.faa.gov/its/worldpac/techrpt/ar0825.pdf) ("FAA Wire Strike Study") (last visited Mar. 4, 2010).

Although the audible warning may interrupt an ongoing ground-to-air (and air-to-ground) or air-to-air transmission, it only does so when the aircraft is in imminent danger of striking an obstacle if its course is not altered. Furthermore, only if the aircraft is close enough to the obstacle will the low-powered VHF signal be heard by the pilot. At such times, it is vitally important that the OCAS System interrupt any ongoing VHF voice transmissions so that the pilot's attention can be drawn to its perilous course. Air-to-ground or air-to-air communications will not be affected by the OCAS System in the absence of imminent danger.

Unquestionably, OCAS® is a substantial improvement over the passive obstacle marking and lighting of antenna structures and other air navigation obstacles because it delivers an enhanced level of safety through audible warnings. The importance of the audible warning was duly noted several years ago by the Rotorcraft Directorate of the FAA's Transportation Division when it observed the inability to secure frequencies on a routine basis for OCAS® is a "SEVERE limitation" because "for OCAS to have the biggest positive impact on aviation safety the frequency bands need to be opened up to ensure the greatest opportunity to alerting an aircraft/pilot they are on a potentially life threatening course and to take appropriate action."[6]

Audible warnings are essential elements of other on-board aircraft collision safety systems. For example, the Traffic Collision Avoidance Systems ("TCAS") installed onboard aircraft are capable of providing audio and visual warnings to the flight crew. TCAS is designed to reduce midair collisions between aircraft by monitoring the airspace around an aircraft for

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[6] *See*, Memorandum from David A. Downey, Manager, FAA Rotorcraft Directorate to Thomas Toula, Air Transportation Division (August 7, 2007) (emphasis in original) (attached hereto as Exhibit 1) ("Rotorcraft Memo"). The Rotorcraft Memo continues by noting "the OCAS system ... was designed to engineer out all of the concerns and shortcomings of the existing lighting and marking systems in use today. To date, it has found wide acceptance by all stakeholders in the wire and obstruction marking initiative as a replacement technology to existing systems."

other nearby aircraft that are equipped with a TCAS transponder. If such other aircraft is detected as being too close, TCAS sends an audio warning to the flight crew.[7] The Terrain Awareness and Warning System ("TAWS") monitors the position and altitude of the aircraft using GPS technology and relies on a digital elevation database to determine if the location and altitude of the aircraft place it in danger of colliding with nearby terrain. TAWS also provides an audible warning to the flight crew if a collision is likely.

An auditory warning is also mandatory in advanced warning systems being deployed pursuant to the Rail Safety Improvement Act of 2008 (PL 110-432).[8] This law requires all Class I freight rail carriers and any entity providing regularly scheduled intercity or commuter rail passenger transportation to implement positive train control ("PTC") technology systems by December 31, 2015. PTC technology uses advanced wireless communications technology to transmit train movement information between locomotives and a network operations center. In a typical PTC system, if a locomotive's speed exceeds the applicable limit, the network control center transmits to engineers in the locomotive both an audible alert and a visible warning (displayed on the locomotive's control panel).[9]

C. Trends In Aircraft-Obstacle Collisions, Growth in Aviation and Projected Construction of Air Navigation Obstacles Support Adoption of the Proposed Rule Amendments

In January 2009, OCAS personnel secured the assistance of National Transportation Safety Board ("NTSB") staff in querying the NTSB's aviation accident database for the period

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[7] Unlike the TCAS and TAWS systems, the OCAS System does not require the installation of any additional equipment onboard the aircraft.

[8] *See* Rail Safety Improvement Act, 122 Stat. 4848 (Oct. 16, 2008).

[9] *See* BNSF Railway, "Positive Train Control Video Shows how BNSF's Electronic Train Management System works", available online at http://www.bnsf.com/media/etms_video.html (last visited Mar. 4, 2010).

2003 through 2007. According to the database, 162 accidents involving aircraft were attributable to air obstacles.[10] The following insights were gleaned from these queries:

- More than 95 % of these accidents related to wires, utility poles and static lines.
- On average, one accident attributable to an air obstacle occurs every 12 days. Thirty nine of these accidents were fatal, resulting in 61 deaths. An additional 54 accidents were reported as "serious."
- Perhaps, the most surprising aspect of these unfortunate statistics is that an overwhelming majority (85 percent) of obstacle-related accidents occurred during daylight hours.

An earlier study found that approximately 60 percent of accidents involving an aircraft striking a wire from 1994 through 2004 involved general aviation aircraft, while agricultural aircraft accounted for approximately 27 percent of these accidents.[11]

In a very real sense, a "perfect storm" is developing in aviation safety. The increasing demands society places on aviation for passenger and freight transportation, as well as aviation support required for law enforcement, medical, pipeline safety, agriculture and recreation, will likely increase the number of fixed wing and rotorcraft aircraft flying in the United States. In parallel, the trend in continued construction of new air navigation obstacles is irrefutable.

In its recent Declaratory Ruling on problematic local government tower siting processes,[12] the Commission emphasized the demand for new wireless infrastructure, specifically

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[10] The NTSB aviation accident database is available at http://www.ntsb.gov/ntsb/query.asp (last visited Mar. 4, 2010). Unfortunately, this trend is continuing, as described in the NTSB's preliminary report of a fatal aircraft/obstacle collision that occurred on January 5, 2010. (available at http://www.ntsb.gov/ntsb/brief.asp?ev_id=20100105X94046&key=1)(last visited Mar. 4, 2010)("Preliminary Report"). The Preliminary Report was issued following the investigation of an accident involving a helicopter operated by the California Department of Fish and Game. The helicopter collided with power lines near Auberry, California and the certificated commercial pilot and three passengers were killed. Two law enforcement officers witnessed the accident and confirmed that the weather at the time of the accident was clear, with a few high scattered clouds, and light winds out of the north.

[11] FAA Wire Strike Study at 4.

noting CTIA-provided data showing aggregate demand for 16,000 new communications towers,[13] the deployment of Clearwire's wireless broadband network (as well as wireless broadband generally),[14] and the buildout of new infrastructure to support operations on the recently auctioned AWS spectrum.[15] Additionally, demand for alternative energy generation is driving the construction of new infrastructure (principally, wind-powered turbines) and associated high capacity transmission lines that will require air navigation warning systems.[16] This projected demand for the communication infrastructure, energy-producing structures and continued growth in aviation in the United States underscore the need for more advanced obstacle lighting and warning technologies, such as the OCAS System and AVWS generally.[17]

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[12] *In the Matter of Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review and to Preempt Under Section 253 State and Local Ordinances that Classify All Wireless Siting Proposals as Requiring a Variance*, WT Docket No. 08-165, Declaratory Ruling, FCC 09-99, (rel. November 15, 2009).

[13] Id. at ¶ 35, n 113.

[14] Id. at ¶ 35.

[15] Id.

[16] *See* American Wind Energy Association ("AWEA") Annual Wind Report (2008) available at http://www.awea.org/publications/reports/AWEA-Annual-Wind-Report-2009.pdf (last visited Mar. 4, 2010)("AWEA Report"). "Installed wind turbines continue to grow larger, but at a slower rate. Over 5,000 turbines were brought on line in 2008 bringing the total number of turbines installed in the U.S. close to 30,000. The 1.5-MW turbine size is still by far the most popular - over half the machines installed in 2008 were 1.5-MW units. Larger turbines are pulling the average up a bit, though: 125 3-MW and 240 2.5-MW turbines were installed." AWEA Report, p. 15. *See also*, AWEA Windpower Outlook 2009 available at http://www.awea.org/pubs/documents/Outlook_2009.pdf (last visited Mar 4, 2010)("AWEA Outlook"). The AWEA Outlook anticipates new construction to slow in 2010, but continue at a rapid rate since the United States has overtaken Germany in having the most installed wind generation capacity of any country in the world. AWEA Outlook, p. 3.

[17] FAA Wire Strike Study, p. 1.

D. Federal Aviation Administration Support for the Deployment of OCAS® and Other AVWS Options

As the Company looked to the United States as a potential market for OCAS®, it initiated discussions with the FAA, the agency primarily responsible for the air navigation safety in the United States. In late August 2005, OCAS conducted a demonstration for the FAA near Milton, Kentucky to provide the agency[18] with an opportunity to test the OCAS System,[19] installing the system to alert aircraft to power lines crossing the Ohio River. A total of 77 test runs were performed near the power lines using two helicopters (Jet Ranger and MD-500) and a general aviation Grumman, AA-5A Cheetah. During the test runs, aircraft flew at different angles and altitudes near the power lines to activate the OCAS System and also flew outside the obstacles' warning zones to demonstrate that the OCAS System would only activate as intended.[20] The OCAS System met all test objectives and FAA requirements with excellent and consistent results.[21]

Discussions with the FAA continued for several years. In a July 31, 2007, memorandum, the Air Transportation Division noted the OCAS System "provides an equivalent level of safety

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[18] Transport Canada and the Norwegian Civil Aviation Authority also participated in the testing and evaluation. Both of these countries have accepted the OCAS System as an equivalent and superior obstruction marking and lighting alternative.

[19] *See*, Obstacle Collision Avoidance System Demonstration – FAA Acceptance, Flight Test Report, August 2005 (Attached hereto as Exhibit 2)("Flight Test Report").

[20] In addition, simulated seaplane landing patterns were flown into the warning zone for simulated landings on the river beyond the power lines to activate the OCAS System.

[21] On average, the lights on the power lines were activated 33.7 seconds before the aircraft crossed the power lines. The audio warning was transmitted, on average, 22.5 seconds before the aircraft crossed the power lines. The activation time of audio warnings was observed via VHF radios tuned to 121.750/123.025 MHz both in the aircraft and on the ground and was measured in the aircraft with a handheld digital watch. The visual and audio warnings were both triggered to allow the pilots sufficient time and airspace to react to the warning, locate the power lines and perform a safe maneuver to avoid the potential collision. No false warnings occurred when the aircraft flew outside the obstacle warning zone.

and a suitable alternative to the lighting and marking requirements of obstacles as recommended in Advisory Circular 70/7460-1." This memorandum requested concurrence from other offices within the FAA to permit the OCAS System to be used "in lieu of local area lighting and marking of obstacles."[22] On August 7, 2007, the Rotorcraft Directorate provided its concurrence, stating it "**FULLY** supports the acceptance of OCAS and OCAS type systems, to improve the overall safety of the aviation community."[23] The Rotorcraft Directorate recognized the potential of the OCAS System to "both save lives and prevent critical utility infrastructure outages."

In June 2009, Kevin Haggerty, Manager of Obstruction Evaluation Services ("OES"), issued a memorandum directing amendments to FAA Advisory Circular 70/7460-1K, Obstruction and Lighting, that would "incorporate Audio Visual Warning Systems (AVWS) as an acceptable form of marking and lighting that meet established technical standards to identify an obstruction to air navigation."[24] In announcing that OES will approve an AVWS as an alternative to conventional lighting systems on a case-by-case basis, it found that OCAS® meets the FAA requirements:

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[22] *See*, Memorandum from Thomas K. Toula, Manager, Air Transportation Division, to Managers of the Flight Standards Division, Aeronautical Information Management Group, Office of Spectrum Policy and Management and Airport Safety and Operations Division (July 31, 2007)(attached hereto as Exhibit 3).

[23] Rotorcraft Memo, p.1. The memo also states that "if the FAA is to remain one of the world leaders in aviation safety, acceptance of OCAS and/or OCAS type systems are imperative." Id at 2.

[24] *See*, Memorandum from Kevin Haggerty, Manager, Obstruction Evaluation Services, to Obstruction Evaluation Services Personnel (June 15, 2009)(attached hereto as Exhibit 4). The Commission incorporates the Advisory Circular into section 17.23 of its Rules to increase air navigation safety and efficiency. *See, Use of 112-118 MHz for Differential Global Positioning System (GPS) Correction Data and the Use of Handheld Transmitters on Frequencies in the Aeronautical Enroute Service*, 64 Fed. Reg. 27,472 (May 20, 1999). The "specifications, standards, and general requirements stated in [the Advisory Circular] are mandatory." 47 C.F.R. § 17.23.

> The FAA has analyzed and reviewed the Obstruction Collision Avoidance System (OCAS®) and has determined that OCAS® provides the equivalent level of safety and is a suitable alternative to the marking and light requirements as recommended in FAA 70/7460-1K.

Shortly thereafter, the Rotorcraft Directorate renewed its request that the FAA fully accept the OCAS System.[25] The FAA's Director of Spectrum Engineering Services subsequently expressed its support for the use of VHF frequencies derived from 118-136 MHz for the OCAS audible warning that are directly assigned by the Commission under Part 87 of the Rules for use in connection with AVWS stations.[26] The VHF frequencies that OCAS proposes be available for assignment to audible warning systems are consistent with this FAA Spectrum Memorandum.

In parallel discussions with the FAA, OCAS has maintained an ongoing dialogue with aviation interests and pilot associations within the United States, including the Aircraft Owners and Pilots Association ("AOPA"). In all respects these stakeholders support the availability of OCAS® in the United States.[27] For example, in a January 27, 2009 memorandum, the National EMS Pilots Association ("NEMSPA")[28] offered its full support of OCAS® as a technology to reduce accidents and fatalities among airborne EMS operators,[29] noting that NEMSPA believes

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[25] *See*, Memorandum from Mark R. Schilling, Acting Manager, Rotorcraft Directorate to Oscar Alvarez, Director of ATC Spectrum Engineering Services (August 18, 2009)(attached hereto as Exhibit 5).

[26] *See*, Memorandum from Oscar Alvarez, Director, Spectrum Engineering Services to Mark R. Schilling, Acting Manager, Rotorcraft Directorate (October 16, 2009)(attached hereto as Exhibit 6)("FAA Spectrum Memorandum").

[27] *See*, Wright, Dick, A New Solution to an Old Problem?, Rotor Magazine, Spring 2003 (available at http://www.rotor.com/membership/rotor/rotorpdf/spring%2010.pdf) ("A New Solution") (attached hereto as Exhibit 7).

[28] The mission of NEMSPA is to serve the pilots involved in the air-medical transport industry, and to work to improve the quality and safety of those services.

[29] *See*, Memorandum from Kent Johnson, President, NEMSPA to Mark V. Rosenker, Acting Chairman, NTSB (January 27, 2009)(attached hereto as Exhibit 8)("NEMSPA Memo"). The NEMSPA Memo cites the FAA accident/incident data showing that wire and obstruction strike

"the audio component [of the OCAS System] has the greatest positive impact on aviation safety in all flying conditions by providing the effective alerting of an aircraft/pilot that they are on a potentially life threatening course and to take action."[30] In addition to NEMSPA, the Helicopter Association International ("HAI") has also offered its support for the OCAS System.[31] In September 2009, OCAS principals provided a briefing on OCAS® to the Aeronautical Frequency Committee of the Aviation Spectrum Resources, Inc. ("ASRI").[32] ASRI expressed support for the OCAS System and indicated a willingness to consider recommending use of ASRI-managed frequencies in certain OCAS® deployments.

E. OCAS® Promotes Energy Conservation and Sustainability and May Obviate a Cause for Increased Avian Deaths in Proximity to Certain Telecommunications Towers

OCAS® is an eco-friendly technology. It promotes energy conservation in connection with the lighting of towers, reduces significantly "night sky pollution," may facilitate the siting of wind-powered turbines in closer proximity to undisturbed natural environments, and mitigates a suspected cause of increased avian mortality associated with the "always-on" lighting of communications towers.

The core sustainability component inherent in OCAS® is the episodic activation of tower lighting. This substantially reduces electricity consumption and dramatically increases the life expectancy of tower lights and reduces tower maintenance costs. Today, virtually all tower owners are required to replace bulbs on constantly-lit towers every 12 to 24 months. With the

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accidents are the top operational cause of rotorcraft accidents for the period of 1996 through 2006, and 35 percent of those accidents are fatal.

[30] Id.

[31] *See*, A New Solution (Exhibit 5).

[32] ASRI is responsible for managing the Aeronautical Enroute VHF Spectrum (128.825 – 132.00 MHz) and the long distance operational control (LDOC) HF spectrum in the United States.

OCAS System, these bulbs may be replaced every 10 years. Another integral aspect of OCAS® is that these systems are designed and built to be powered by solar energy as well as conventional energy supplies. This lessens dependence on conventional energy resources. The episodic lighting on OCAS® supported antenna structures and other air navigation obstacles eliminates the constant barrage of light pollution associated with legacy obstruction marking and lighting systems.[33]

In recent months, OCAS® has been in discussions with the Bureau of Land Management (BLM), Department of the Interior. As with the siting of telecommunications towers, the siting of wind-powered turbines gives rise to predictable "not in my backyard" ("NIMBY") responses. OCAS® addresses dark sky pollution concerns that are particularly strong in undeveloped areas. OCAS® may also resolve a relatively new concern associated with preserved habitats and the proposed installation of wind turbine farms. While the placement of wind turbines within undisturbed habitats is not the issue, areas adjacent to these protected areas are often prime locations for wind turbine farms. For many members of the public, the "view" leading to the protected habitat is almost as important as the habitat itself. One approach that is under consideration by BLM to facilitate multiple uses of the land adjacent to certain protected areas is to camouflage the wind turbines in natural background shades and coloring and to deploy OCAS®. The OCAS System will provide the necessary warnings and alerts to aircraft that fly in the vicinity of the turbines without the light pollution. The camouflaged turbines are expected to better preserve the visual aesthetics during the day time, as well.

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[33] OCAS is endorsed by the International Dark Sky Association (http://www.darksky.org/) as the only obstruction lighting system that meets International Dark Sky requirements. *See also, A Dark Sky Solution for Obstacle Collision Avoidance*, International Dark Sky Association Specific Bulletin, Vol 1 Issue 3 (2008)(approving the OCAS System as a "Dark-Sky Friendly Device")(attached hereto as Exhibit 9).

OCAS® and other AVWS technologies could also mitigate one of the possible causes of heightened avian fatalities occurring in proximity to telecommunications towers located along migratory bird routes. According to the Petition for Expedited Rulemaking and Other Relief ("Petition")[34] filed by American Bird Conservancy, Defenders of Wildlife and National Audubon Society in April 2009, increased avian fatalities have a propensity to occur in proximity to telecommunications towers.[35] This Petition cited several studies purporting to demonstrate that the always-on lighting of antennas supporting structures[36] may be responsible for increased avian mortality.[37]

One common thread in these studies is that migratory birds flying near continuously-lit towers at night lose their natural navigating cues and orient with the tower lights.[38] One recent study compared fatalities at towers with different lighting systems and suggested that avian fatalities could be reduced by 50 to 70 percent at guyed communication towers by removing non-

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[34] *See,* Petition for Expedited Rulemaking and Other Relief on behalf of American Bird Conservancy, Defenders of Wildlife and National Audubon Society WT Docket Nos.: 08-61 and 03-187 (filed April 14, 2009)("Petition"). Later that same month, the Commission released a Public Notice seeking comment on the Petition. *See in re* Wireless Telecommunications Bureau Seeks Comment on Petition for Expedited Rulemaking and Other Relief Filed on Behalf of American Bird Conservancy, Defenders of Wildlife and National Audubon Society Regarding Commission Implementation of the National Environmental Policy Act, The Endangered Species Act, and the Migratory Bird Treaty Act, *Public Notice,* DA 09-904, WT Docket Nos.: 08-61 and 03-187 (Apr. 29, 2009).

[35] Id at 4 (attributing an estimated four to five million bird deaths each year to communication towers).

[36] 47 C.F.R. § 17.21 (towers are generally required to be painted and lit when they exceed 200 feet).

[37] Petition at 4.

[38] Id at 5, citing Lopez, Joanna, *The Impact of Communication Towers on Neotropical Songbird Populations*, 18 Endangered Species UPDATE 50 (2001). The Petition claims that disoriented birds then circle the towers and frequently die of exhaustion or from collisions with the tower, its support system or other birds.

flashing/steady-burning red lights.[39] This study concluded that "changing FAA obstruction lighting provides virtually the only means of reducing [avian] fatalities at existing towers."[40] The episodic nature of the lighting provided by OCAS® would eliminate the always-on lighting of legacy obstruction marking and lighting systems. To the extent elevated levels of avian fatalities at tower sites are caused by "always on" lighting, a tower equipped with OCAS® may reasonably be expected to contribute to fewer avian fatalities.

III. EXPLANATION OF PROPOSED RULE AMENDMENTS

The proposed rule amendments expand the eligibility for certain frequencies available under Part 87, principally the assignments within the 1300-1350 MHz band for the short array radar which provides the essential data on approaching aircraft for operation of the OCAS® and the VHF voice frequencies noted in the FAA Spectrum Memorandum. These frequencies include the Part 87 VHF ground-to-air (and air-to-ground) and air-to-air frequencies routinely assigned directly by the Commission. In order to maximize the likelihood that pilots in aircraft entering the second warning zone of an AVWS station will hear the audible warning, operation on multiple frequency VHF assignments is proposed. The number and selection of frequencies will not be fixed *per se*, but will be based on those frequencies that are assigned for flight operations in the general vicinity of the AVWS station.[41]

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[39] *See*, Gehring, Joelle *et al.*, *Communication Towers, Lights, and Birds: Successful Methods of Reducing the Frequency of Avian Collisions*, 19 Ecological Applications 505, 512 (2009)("Gehring Study").

[40] Id at 513.

[41] OCAS reasonably believes that virtually all assignments in the 112-136 MHz band for voice communications should be available for assignment to each OCAS System. This will ensure the pilot of an aircraft approaching an air navigation obstacle will receive the audible warning. At this time, a number of stakeholders in air communications do not share OCAS' perspective. Accordingly, the proposed rule amendments are consistent with the FAA's Spectrum Memorandum.

The radar assignments include paired 5 MHz assignments that require FAA concurrence prior to grant by the Commission. Consistent with a request of the FAA, the Company proposes these radar frequency assignments be assigned subject to the condition that the AVWS licensee will migrate to another FAA-recommended 1300-1350 MHz paired assignment if requested by the FAA. The proposed rule amendments include a provision specifying a maximum output power for the radar frequencies of two watts, which represents the OCAS System's peak output power for the radar frequencies. The OCAS System's average output power for the radar frequencies is projected to be one watt.[42]

Consistent with the intent and design of the audible warning component, the proposed rule amendments also include provisions specifying the maximum transmitter output power (well under 1 watt) and the antenna design for the VHF radios transmitting the audible warning to ensure that only pilots flying aircraft for which the approach angle, speed and location indicated a strong risk of collision with the antenna structure or other obstacle will receive the audible warning. The proposed amendments also include provisions that exempt owners and operators of antenna structures supported by OCAS® from the continuous lighting requirements under Part 17 of the Commission's Rules.

[42] The radar component of the OCAS System has an antenna gain of 17 dBi such that the peak effective isotropic radiated power ("EIRP") for the radar frequencies is 20 dBw

WHEREFORE, THE PREMISES CONSIDERED, OCAS Inc. respectfully requests that the Federal Communications Commission adopt in a timely manner a Notice of Proposed Rulemaking looking toward the adoption of rule amendments consistent with the proposals set forth herein and take other action consistent with the public interest in improving air navigation safety.

Respectfully Submitted,

OCAS, Inc.

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March 4, 2010

CERTIFICATE OF SERVICE

I, Wesley K. Wright, attorney at the law firm of Keller and Heckman LLP, do hereby certify that on this 4th day of March, 2010, a copy of the foregoing Petition for Rulemaking was served via electronic mail upon the following:

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APPENDIX