

## Proposed Compatibility Determination

- Use:** International Monitoring System installed by the Department of Defense in support of the Comprehensive Nuclear Test Ban Treaty
- Refuge Name:** Midway Atoll National Wildlife Refuge/Battle of Midway National Memorial, Papahānaumokuākea Marine National Monument
- City/County and State:** Midway Atoll is the penultimate western atoll in the Northwestern Hawaiian Islands, is an unincorporated territory of the United States, and lies outside the State of Hawai'i.

### Establishing and Acquisition Authority:

Midway Atoll National Wildlife Refuge (Refuge) was established in 1988 as an overlay National Wildlife Refuge under a cooperative agreement with the U.S. Navy (Navy). Under this agreement, administrative responsibility for the Refuge was shared by the U.S. Fish and Wildlife Service (Service) and the Navy. The Naval Air Facility at Midway was operationally closed in 1993. Facility cleanup was completed by June 30, 1997, when the Navy and its contractors departed. Custody and accountability for Midway Atoll were officially transferred from the Navy to the Service in May 1996. Executive Order (EO) 13022, signed by President Clinton on October 31, 1996, superseded earlier orders that assigned responsibility for Midway to the Navy. Secretary of Interior Babbitt signed Secretary's Order 3217 on September 13, 2000, designating Midway Atoll Refuge concurrently as the Battle of Midway National Memorial. On June 15, 2006, President Bush signed Presidential Proclamation (PP) 8031 making Midway Atoll Refuge part of the newly established Northwestern Hawaiian Islands National Marine Monument, later renamed Papahānaumokuākea Marine National Monument (Monument).

### Refuge Purpose(s):

Midway Atoll Refuge was established pursuant to the Fish and Wildlife Act of 1956 and the Fish and Wildlife Coordination Act of 1934. Pertinent language in those statutes includes:

1. ". . . for the development, advancement, management, conservation and protection of fish and wildlife resources . . . for the benefit of the U.S. Fish and Wildlife Service, in performing its activities and services." (Fish and Wildlife Act of 1956)
2. ". . . shall be administered by the Secretary of the Interior directly in accordance with cooperative agreements . . . and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife resources thereof, and its habitat thereon . . ." (Fish and Wildlife Coordination Act of 1934).

The following specific purposes were included in EO 13022, dated October 31, 1996, which transferred jurisdiction and control over the Midway Islands from the Navy to the U.S. Department of the Interior (DOI):

## **Executive Order 13022**

**Sec. 3. (a)** The Secretary of the Interior, through the United States Fish and Wildlife Service, shall administer the Midway Islands as the Midway Atoll National Wildlife Refuge in a manner consistent with Executive Order 12996 of March 25, 1996 [Management and General Public Use of the National Wildlife Refuge System], for the following purposes:

- (1) maintaining and restoring natural biological diversity within the refuge;
- (2) providing for the conservation and management of fish and wildlife and their habitats within the refuge;
- (3) fulfilling the international treaty obligations of the United States with respect to fish and wildlife;
- (4) providing opportunities for scientific research, environmental education, and compatible wildlife dependent recreational activities; and
- (5) in a manner compatible with refuge purposes, shall recognize and maintain the historic significance of the Midway Islands consistent with the policy stated in Executive Order 11593 of May 13, 1971.

In addition, PP 8031 established what was later renamed the Papahānaumokuākea Marine National Monument which covers a much larger area than the Refuge, but also includes the Refuge. The proclamation states it is in the public interest “to preserve the marine area of the Northwestern Hawaiian Islands and certain lands as necessary for the care and management of the historic and scientific objects therein” and the Monument was established for the purpose of “...protecting the objects described above, all lands and interest in lands owned or controlled by the Government of the United States....”

On July 30, 2010, the Monument was inscribed as one of only 27 mixed World Heritage Sites by the United Nations Educational, Scientific and Cultural Organization, for its outstanding natural and cultural attributes.

### **Public Law 107-206, Fiscal Year 2002 Supplemental Appropriations (August 2, 2002)**

The purpose of this Congressional action was to permit the Secretary of Interior to charge reasonable fees for services provided at Midway Atoll NWR, including fuel sales, and retain those fees to be credited to the United States Fish and Wildlife Service “Resource Management” account and to remain available until expended....

### **National Wildlife Refuge System Mission:**

The mission of the National Wildlife Refuge System is:

To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [National Wildlife Refuge System Administration Act of 1966, 16 U.S.C. 668dd-668ee.]

## Description of Use(s):

The Department of Defense (DOD) proposes to install an International Monitoring System infrasound monitoring station (IMS) on Sand Island, Midway Atoll NWR. The IMS, mandated by the Comprehensive Nuclear Test Ban Treaty (CTBT) of September 1996, is a global network of 321 seismic, hydro acoustic, infrasound, and radionuclide stations used to collect data for nuclear test monitoring. The infrasound station would serve as a “backup system” to a radionuclide station, which is the primary detection system and already in place and operational inside a building at the Refuge. The designated U.S. station operator for the Refuge is the U.S. Army Space and Missile Defense Command (SMDC) or its designated agent.

The IMS will consist of four infrasound elements and three communications nodes. Locations of the infrasound elements will be determined in consultation with Refuge staff. Each infrasound element site will have a 1 cubic yard equipment enclosure which will contain a micro barometer, digitizer, radio, and batteries. A GPS antenna and radio antenna will be mounted to the outside of the enclosure. Two solar panels would be mounted on brackets on the ground next to the enclosure. Four polypropylene hoses will lie on the ground radiating out from the side of the enclosure with each hose entering the enclosure. The hoses will be covered with 2-inch sterile stones and gravel to keep the birds from them. The units will have a horizontal footprint of 60 square feet each. Final agreement was that the hoses will lie on top of the paved surface, not dug in. SMDC has no objections with the Service placing sand piles great than 5 feet away from the infrasound hoses and equipment and planting native grasses and shrubs to help camouflage the equipment. In addition, SMDC has no objection to the Service removing all pavement greater than 5 feet away from the infrasound hoses and equipment and planting native grasses and shrubs (Figures 1-3).

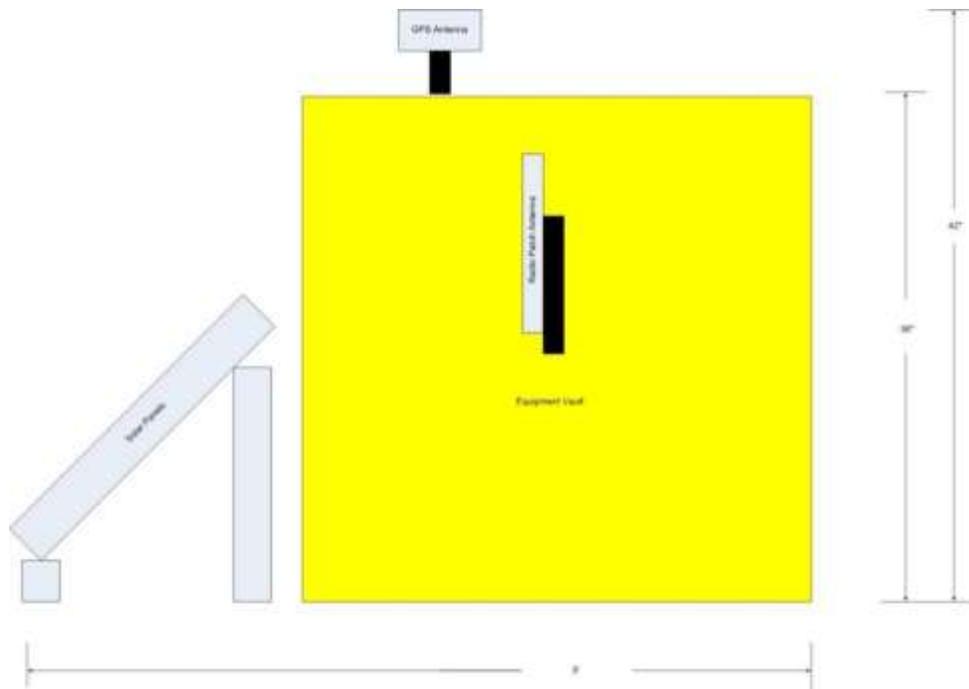


Figure 1. Each array has an instrument enclosure with approximate dimensions of 3’ vertical, 5’x4’ horizontal, and a wind-noise reducing system with a total horizontal footprint of 60’ (Garces and Rembold 2010).

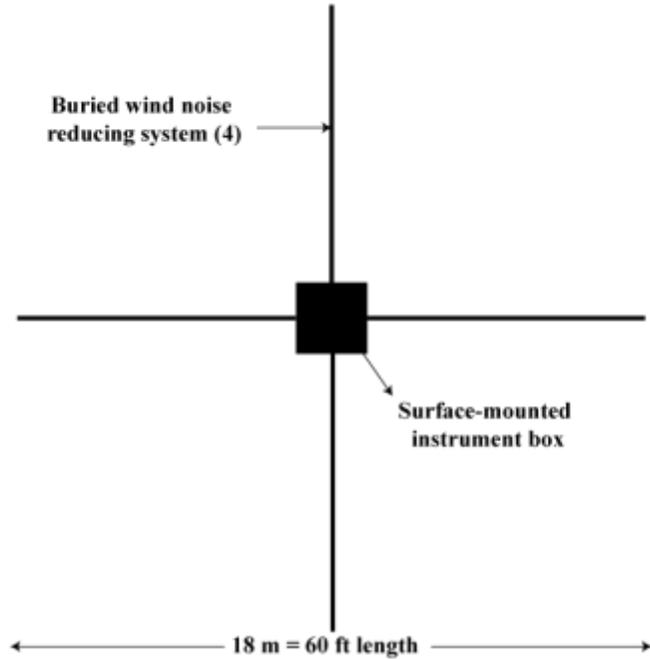


Figure 2. Prototype wind noise reducing system. Each leg would be set on the surface, and covered with sterile gravel/coral (Garces and Rembold 2012).

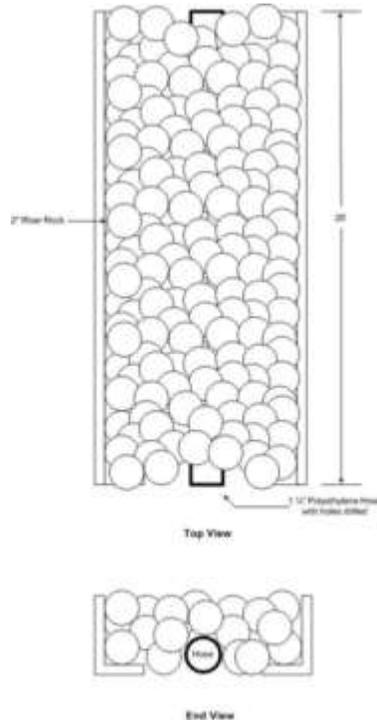


Figure 3. Top and end view of infrasound pipe surface installation (Garces and Rembold 2012).

Data from the sites will be transmitted by radio to communications nodes in turn directly connected to the communications building. The three communications nodes will be installed on existing buildings as shown in Figures 4-7: Flight Operations Building (with FAA approval); the Defense Base Services, Inc. Operation Building; and the building housing the radionuclide components of the

project. The data will be collected at the communications building (Central Recording Facility) and formatted into a data frame and sent by fiber optic to the CTBT radionuclide building where it will be transmitted by satellite to Vienna. Once these data arrive in Vienna they will be available to all parties that have signed the CTBT.

GPS Coordinates for each element of the IMS (four elements total).

H1: 28.209710° - 177.381440°

H2: 28.213250° - 177.369550°

H3: 28.202890° - 177.384320°

H4: 28.212920° - 177.385410°



Figure 4. Approximate locations of proposed infrasound array locations ( $N = 4$ ) and communication nodes ( $N = 3$ ) on Sand Island, Midway Atoll (Garces and Rembold 2012). Yellow dots represent instrument locations, yellow dashed lines are radio links, red squares are communication nodes, and red lines are existing fiber optic links.

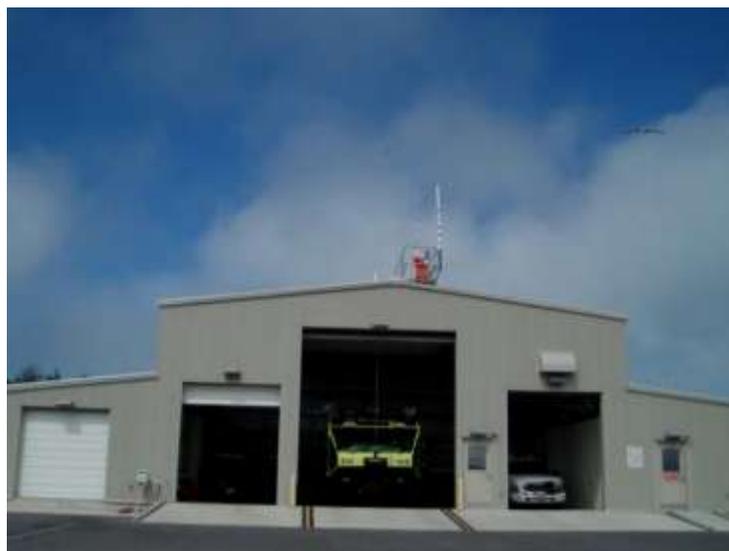


Figure 5. Proposed communication node 1 atop of the Flight Operations Building on Sand Island (Garces and Rembold 2010).



Figure 6. Proposed communication node 2 atop of the CTBT occupied building near the Cargo Pier on Sand Island (Garces and Rembold 2010).



Figure 7. Proposed communication node 3 atop of the Medical Clinic building on Sand Island (Garces and Rembold 2010). This is also where the proposed central Recording Facility (CRF) will reside.

The proposed project will take place during the 2012-2013 construction seasons. Installation will require 30 days the first year; 30 days the second year; and maintenance activities are proposed for approximately 7 days each year thereafter

**Availability of Resources:**

Staff time needed for installation and ongoing oversight of this project includes preparation of biological assessments and compatibility determination and coordination for transportation of personnel and materials for installation and subsequent equipment maintenance. Additional biological monitoring will be conducted under the existing memorandum of agreement. Technical maintenance needed on equipment would require that a DOD contractor come to Midway to make the repairs. Flights by DOD personnel would be on a space available basis and all costs (flight/lodging/meals) would be covered by DOD.

The Service has been tasked by Congress (Public Law 107-206) to fully charge all users of Midway to help offset costs of operating the island’s infrastructure. To help us meet this goal Congress has also given the refuge receipts authority which allows the refuge to keep reasonable fees collected for services provided at Midway Atoll. The SMDC and the Service have signed a Memorandum of Understanding (2006) to allow for annual funding to the Refuge to cover all costs associated with this use.

<b>Category and Itemization</b>	<b>Annual (\$000/year)</b>	<b>One-time (\$000)</b>
Administration and Management	\$ 7,072**	\$10,000*
Maintenance/Energy consumption	\$25,000	
Biological Monitoring	\$9,568**	
Special equipment, facilities or improvements (T-1 line)	\$39,539**	
17% Cost Recovery Assessment	\$13,874.03**	

\* One time fees for PMNM permit processing and compatibility determination

\*\*Based on % of annual costs, to be calculated yearly

The above annual cost reflects the cost to refuge staff. This cost is conservatively estimated as requiring 2% of the base cost of a GS-13 refuge manager, GS-12 deputy refuge manager, and GS-12 administrative position, based on the assumption that this activity would use that portion of the year to administer and coordinate activities conducted on the Refuge and supported by the operation of the field station.

**Anticipated Impacts of the Use(s):**

The IMS arrays have been installed worldwide and their design includes measures to minimize impacts to wildlife. An Impact Assessment for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) proposed Infrasound Project at the Midway Atoll National Wildlife Refuge (Garces and Rembold 2010) was completed on March 12, 2007 (Klavitter 2007). The Impact Assessment concluded that the proposed CTBTO Infrasound Project as designed would cause substantial negative biological effects. The Refuge Manager subsequently concluded that the project was not an appropriate use of the Refuge. The Infrasound Project components were redesigned and the proposal was resubmitted to the Service. The redesigned project appears to have a lower level of biological impacts than the original submission according to a Second Impact Assessment completed in May 2011 (Klavitter and Leary 2011).

To the extent possible the installations will be placed on existing concrete or asphalt to minimize habitat loss for breeding seabirds, overwintering migratory birds, Laysan ducks and potential future translocated native birds. Although the habitat loss may not be immediate, the use will prevent the

Service from restoring these areas to nesting habitat during the life of the project. To mitigate for the future habitat loss, SMDC will remove approximately 2400 square yards of concrete to make new nesting habitat available.

The Second Impact Assessment: 1) identified a potential bird strike hazard to albatross, estimating a loss of about 3 albatross per year from collisions with equipment, and 2) estimated habitat would be lost for approximately 20 pairs of birds.

Disturbance to nesting seabirds would be minimized by scheduling installation and site visits when the fewest seabirds are nesting.

There is some risk of invasive species introduction if care is not taken to make sure equipment and supplies sent to Midway are free of non-native seeds, insects, etc. during installation and maintenance checks. Gravel/stone used to cover the IMS hoses must be sterile: completely free from live animal or plant material, including adults, seeds, eggs, etc.

The Pacific Islands Fish and Wildlife Service Office has completed an informal consultation for this project as it relates to Laysan ducks (*Anas laysanensis*) and seabirds protected under the Migratory Bird Treaty Act. (16 U.S.C. 703-712). Three conservation measures were identified to avoid minimize impacts to these birds. The finding was that the proposed project may affect, but is not likely to adversely affect, the Laysan duck based on the conservation measures.

A comprehensive cumulative impacts study was not undertaken, but the Refuge has many competing uses including an emergency airfield, a harbor, a visitor program, 65 residents, a radionuclide station, tide station, greenhouse gas study, seismic station, and various research projects. Each of the uses appears to have low impacts on the refuge when considered alone, but when all uses are added together, they may begin to cause significant impacts because of the relatively small land area (1470 acres) in the Refuge and abundance (3 million seabirds) of wildlife.

The infrasound station elements are automated; therefore, no personnel will be stationed on Midway to maintain them. The impacts from annual or infrequent visits by DOD contractors to inspect and/or repair the infrasound stations are deemed to be insignificant as the addition of one or two people to the island population for short periods will not have a measurable impact on our logistical supply nor will they impair our normal work on refuge resources and programs.

### **Public Review and Comment:**

This CD has been issued for public review and comment as part of the permit review process for Papahānaumokuākea Marine National Monument. The compatibility determination and associated PMNM Permit 2012-021 are also made available through printed copies upon request and through the Monument Websites at <http://www.fws.gov/pacificislands> and <http://www.papahanaumokuakea.gov/resource/permits.html>. This level of review and comment was selected to meet Service requirements under the National Wildlife Refuge System Administration Act of 1966, as amended, the Compatibility policy 603 FW 2, and as determined by the Co-Trustees of the Monument. The Monument is of national interest; therefore, the availability of the CDs and related permits will be advertised at the national level via the Web-based notifications identified above. The 14 day public comment period will be held from June 29, 2012 through July 13, 2012. To provide comments please email Permit Manager Ray Born at [ray\\_born@fws.gov](mailto:ray_born@fws.gov) with SMDC-CD

in the subject line. Comments are due back to July 6, 2012. The final Compatibility Determination will be posted on the Midway and Papahānaumokuākea MNM web sites listed above.

### **Stipulations Necessary to Ensure Compatibility:**

#### GENERAL TERMS AND CONDITIONS:

Each permittee would be required to adhere to all general conditions specified by the Monument Co-Trustees in their joint permit (Attachment 1).

All equipment and gravel/stones brought to the refuge must be clean, fumigated, and shipped in containers with rat stations.

The activity is also subject to all terms of the Right of Way permit to be completed.

#### CONSERVATION MEASURES IDENTIFIED BY HAWAIIAN AND PACIFIC ISLANDS NATIONAL WILDLIFE REFUGE COMPLEX, U.S. FISH AND WILDLIFE SERVICE

1. All Refuge guidelines to avoid and minimize impacts to wildlife will be followed. The guidelines are intended to minimize human impacts to all wildlife, including Laysan ducks. The guidelines include maintaining buffer distances between people and endangered species, driving vehicles safely and slowly around the Refuge, and staying on designated trails and roadways.
2. Laysan ducks are found throughout Sand Island, and it is possible that a duck could be found at a project construction site. Refuge guidelines will be followed to carefully relocate any Laysan duck at a construction site out of harm's way. If a Laysan duck does enter a site, construction will be halted and the bird is safely relocated by US Fish and Wildlife staff.
3. Construction activities will be conducted during the seabird non-nesting season (July to October) to minimize disturbance to nesting seabirds.

#### Terms and Conditions of Department of Defense/U.S. Fish and Wildlife Service MOU:

The MOU terms and conditions are incorporated in this document as special conditions.

1. DOD SMDC must provide annual funding to ensure that all costs borne by the refuge are fully compensated.
2. If the IMS become an albatross strike hazard, the SMDC must agree to alter or remove them to eliminate that hazard.
3. If SMDC requires more than 4 seats on any Service/FAA charter, they will be required to charter a separate plane to avoid negative impacts to our logistical supply chain.
4. SMDC has no objections with the Service placing sand piles greater than 5 feet away from the infrasound hoses and equipment and planting native grasses and shrubs to help camouflage the equipment.
5. SMDC has no objection to the Service removing all pavement greater than 5 feet away from the infrasound hoses and equipment and planting native grasses and shrubs.
6. SMDC agrees to pay for the cost of removing one or more concrete slabs totaling approximately 2,400square yards for partial mitigation of the amount of habitat that will be taken up by the 4 infrasound stations.
7. The Service agrees to allowing SMDC to utilize an unused fiber optic pair on island to

- transmit data with the understanding the if in the future the Service needs to use the pair in the future, SMDC will share a fiber pair with the Service.
8. SMDC must following all Service and PMNM invasive species prevention protocols when shipping equipment to Midway including but not limited to putting a rodent bait station in each 20-footshipping containing baited with rodenticide and a peanut butter flavored sticky trap. All materials must be clean, free of insects, seeds, eggs, rodents, etc., and stored only on paved surfaces.

**Justification:**

In 1996 the CTBT was adopted by the United Nations. The treaty, which prohibits all nuclear test explosions, was signed by 71 nations including the United States. Currently there are 177 signatories. To monitor the treaty the International Monitoring System was designed, which currently consists of 337 monitoring facilities all over the globe, comprised of seismic, infrasound, hydro acoustic, and radionuclide monitoring stations as well as radionuclide laboratories. The locations of these stations were agreed upon by scientific experts to ensure that a nuclear detonation could be detected anywhere on the globe and are included in the treaty text. As part of the system, the United States is responsible for the installation of 17 seismic stations, 8 infrasound stations and 11 radionuclide stations. Midway Atoll was chosen as the location of one of the U.S radionuclide stations based on its location in the mid-north Pacific and its relationship to other sites such as Wake which makes triangulation of detected events possible. No other site in this part of the Pacific offers the infrastructure to support this activity. This station, along with stations already installed in Hawai‘i, Wake Island, and Guam, will perform a vital role in monitoring the South Pacific Ocean for nuclear explosions.

It is anticipated that installation and operation of the IMS will result in a small amount of habitat loss, loss of about three albatross per year from collisions with equipment, and in disturbance to wildlife during construction and maintenance. However disturbance will be intermittent and short-term and limited in time and space and there are more than adequate amounts of undisturbed habitats available to wildlife using the refuge for escape and cover.

It is anticipated that wildlife populations will find sufficient food resources and resting places such that their abundance and use of the Refuge will not be measurably lessened from installation and operation of the IMS. The relatively limited number of individuals expected to be adversely affected due to installation and operation of the IMS will not cause wildlife populations to materially decline, the physiological condition and production of species will not be impaired, their behavior and normal activity patterns will not be altered dramatically, and their overall welfare will not be negatively impacted. Thus, allowing installation and operation of the IMS with stipulations will not materially detract from or interfere with the purposes for which the refuge was established or the National Wildlife Refuge System mission.

**References Cited:**

Memorandum of Understanding between the Department of Defense and Fish and Wildlife Service Concerning Cooperation on Matters Pertaining to the International Monitoring System. 2006. Reaffirmed February 4, 2011.

Garces, M. and R. Rembold, 2007. Preliminary Design for IMS Infrasound Array I58US, Midway Atoll. Infrasound Laboratory Draft Report. May 17, 2007.

Garces, M. and R. Rembold, 2010. Design for IMS Infrasound Array I58US, Midway Atoll. Infrasound Laboratory Draft Report. Updated March 2, 2011.

Garces, M. and R. Rembold, 2012. Addendum to Preliminary Design for IMS Infrasound Array I58US, Midway Atoll. Infrasound Laboratory Report.

Klavitter, J. 2007. Impact Assessment for the Proposed Nuclear Test Ban Treaty Infrasound Project at Midway Atoll National Wildlife Refuge. U.S. Fish and Wildlife Service Report. April 2, 2007. Honolulu, Hawaii.

Klavitter, J and P. Leary, 2011, Second Impact Assessment for the Proposed Comprehensive Test Ban Treaty Organization's Infrasound Project at Midway Atoll National Wildlife Refuge. U.S. Fish and Wildlife Service Report. March 24, 2011. Honolulu, Hawaii.