DRAFT DOCUMENT OF ENVIRONMENTAL PROTECTION (DEP) (DRAFT DEP)

ACTIVITY:
FLIGHT EXPERIMENT 1

CONTROL NUMBER DRAFT DEP-16-001.0

April 2017
Effective Date TBD

US ARMY GARRISON-KWAJALEIN ATOLL
IN THE
REPUBLIC OF THE MARSHALL ISLANDS

PREPARED BY TELEDYNE BROWN ENGINEERING, INC.
HUNTSVILLE, ALABAMA

DISTRIBUTION A. Approved for Public Release: Distribution Unlimited
Approved for Public Release by US Navy Strategic Systems Programs, May 2, 2017
## MILESTONE SCHEDULE

<table>
<thead>
<tr>
<th>Number</th>
<th>Requirement</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Evacuate nonessential personnel within the Mid-Atoll Corridor and shelter critical personnel. (1.1.a)</td>
<td>Prior to flight test</td>
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<tr>
<td>2</td>
<td>Publish NOTAMs and NOTMARs. (1.1.a)</td>
<td>Prior to flight test</td>
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<tr>
<td>3</td>
<td>Activate onboard flight termination if public safety is jeopardized. (1.1.b)</td>
<td>During payload descent</td>
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<tr>
<td>4</td>
<td>Bi-weekly survey by aircraft for sea turtles and sea turtle nesting for at least 8 weeks preceding launch. (1.1.c)</td>
<td>Weekly for at least 8 weeks prior to test.</td>
</tr>
<tr>
<td>5</td>
<td>Monitor for and report observations of marine mammals and sea turtles. (1.1.d)</td>
<td>During travel to and from Illeginni Islet</td>
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<tr>
<td>6</td>
<td>Conduct overflights of Illeginni to survey for marine mammals and sea turtles.(1.1.e)</td>
<td>Three times over at least the week prior to the test and as close to launch as safely practicable.</td>
</tr>
<tr>
<td>7</td>
<td>Report sightings of marine mammals or sea turtles that occur during surveys, overflights or ship travel for consideration in approving launch. (1.1.g)</td>
<td>Prior to flight</td>
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<tr>
<td>8</td>
<td>For land impact, inspect beach area for active turtle nests at Illeginni Islet. (1.2.b)</td>
<td>At least 30 days prior to launch and as close to launch as safely practicable.</td>
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<td>6</td>
<td>Conduct overflight of the islet vicinity to survey for dead or injured marine mammals and sea turtles. (1.2.c &amp; 1.3.d)</td>
<td>As soon as safely practicable after the flight test.</td>
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<td>7</td>
<td>Survey the islet and near-shore waters for injured wildlife, damaged coral or damage to sensitive habitat. (1.2.d)</td>
<td>When feasible, within 1 day after land impact test.</td>
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<td>8</td>
<td>Notify the Appropriate Agencies and the GRMI of a test event which involves a test failure, anomalies, or termination. (7.0.a)</td>
<td>Within five calendar days.</td>
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<tr>
<td>9</td>
<td>Provide Incidental Take/Impact Report. (1.6.c &amp; 7.0.b)</td>
<td>By December 31 of the flight test year</td>
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The Compact of Free Association between the Republic of the Marshall Islands (RMI) and the United States (US) requires all US Government activities at US Army Garrison-Kwajalein Atoll (USAG-KA) and the Ronald Reagan Ballistic Missile Defense Test Site (RTS) (jointly referred to as USAKA) to conform to specific compliance requirements, coordination procedures, and environmental standards identified in the USAKA Environmental Standards (UES). As specified in Section 2-2 of the UES, these standards also apply to all USAKA activities occurring elsewhere within the RMI, including the territorial waters of the RMI.

All missile demonstration programs proposed to occur at USAKA and within the RMI territorial waters must comply with the UES. The activities described in this Document of Environmental Protection (DEP) and companion document, Notice of Proposed Activity (NPA), apply to all mission programs conducted at USAKA with similar concepts and ultimate impact affects to the deep-water Broad Ocean Area (BOA) region southwest of Illeginni Islet, on Illeginni Islet, or the Kwajalein Missile Impact Scoring System (KMISS) in the BOA southeast of Gagan Islet. This DEP is prepared for compliance with UES § 2-17.3.1(j) Proposed actions or activities for which a biological opinion has been rendered.

REFERENCES


TECHNICAL DESCRIPTION OF ACTIVITY

The activities described in this DEP are associated with the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) sponsorship of the Department of the Navy (US Navy) Strategic Systems Programs (SSP), which USD(AT&L) has designated as the lead agency and action proponent, to collect data on a developmental payload by testing range performance and to demonstrate technologies for prospective strike capabilities. An Environmental Assessment (EA)/Overseas Environmental Assessment (OEA) prepared by the US Navy SSP, along with the Department of Energy (DoE) and the US Army Space and Missile Defense Command/Army Forces Strategic Command (USASMDC/ARSTRAT) as cooperating and participating agencies, respectively, is in-process for this Flight Experiment 1 (FE-1) program. The EA/OEA will evaluate the potential environmental consequences of conducting a single flight test from the Kauai Test Facility (KTF) located on the Pacific Missile Range Facility (PMRF), Barking Sands, Hawai‘i, to US Army Kwajalein Atoll (USAFA) Ronald Reagan Ballistic Missile Defense Test Range (RTS) within the Republic of the Marshall Islands (RMI). This DEP will cover the one flight test.

The US Navy SSP FE-1 program proposes a single flight test of the developmental payload concept to demonstrate the maturity of key technologies. These technologies include precision navigation, guidance and control, and enabling capabilities. The FE-1 launch vehicle consists of a three-stage Strategic Target System (STARS) booster system and the developmental payload. Following launch over the Pacific Ocean, the payload shall separate from the booster inside the atmosphere and fly toward pre-designated target sites at or near USAFA. At the terminal end of the flight, the US Navy SSP intends for the vehicle to impact at one of three locations: (1) a land impact site on Illeginni Islet at the USAFA, (2) within a deep-water BOA southwest of Illeginni Islet within USAFA, or (3) at the Kwajalein Missile Scoring System (KMISS) in the BOA southeast of Gagan Islet within USAFA. The US Navy SSP’s preferred location is to impact at Illeginni Islet.

The US Navy SSP payload shall break up on or just before impact at the western end of the Illeginni Islet with limited risk of debris entering the lagoon or ocean waters. Once approved by Explosive Ordnance Disposal (EOD) personnel, recovery and clean-up actions shall begin. Personnel shall recover all visible debris resulting from the flight. The impact area shall be washed with water to stabilize the disturbed soil, followed by removal of any remaining debris. The crater shall be backfilled and, if necessary, repairs made to surrounding structures.
LOCATION OF ACTIVITY

The activity is located on Illeginni Islet, in the deep-water BOA southwest of Illeginni Islet, or in the KMISS BOA southeast of Gagan Islet, Kwajalein Atoll in the RMI.

COMPLIANCE STATUS

The US Navy SSP FE-1 program so described in this DEP shall be conducted in compliance with the UES.
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## APPENDICES

- Appendix A Notice of Proposed Activity: *US Navy Flight Experiment 1*, Control Number NPA-16-001.0 ................................................................. A-1
- Appendix B Placeholder for Biological Opinions ............................................................... B-1
### ABBREVIATIONS AND ACRONYMS

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<tr>
<td>Be</td>
<td>Beryllium</td>
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<tr>
<td>BO</td>
<td>Biological Opinion</td>
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<tr>
<td>BOA</td>
<td>Broad Ocean Area</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
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<tr>
<td>DEP</td>
<td>Document of Environmental Protection</td>
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<tr>
<td>DoD</td>
<td>Department of Defense</td>
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<tr>
<td>DU</td>
<td>Depleted Uranium</td>
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<tr>
<td>EA</td>
<td>Environmental Assessment</td>
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<tr>
<td>ECR</td>
<td>Environmental Comments and Recommendations</td>
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<tr>
<td>EOD</td>
<td>Explosive Ordnance Disposal</td>
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<tr>
<td>HAP</td>
<td>Hazardous Air Pollutant</td>
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<tr>
<td>HPO</td>
<td>Historic Preservation Office</td>
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<tr>
<td>HPP</td>
<td>Historic Preservation Plan</td>
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<tr>
<td>IAW</td>
<td>In Accordance With</td>
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<tr>
<td>ICBM</td>
<td>Intercontinental Ballistic Missile</td>
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<tr>
<td>KEEP</td>
<td>Kwajalein Environmental Emergency Plan</td>
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<tr>
<td>LCU</td>
<td>Landing Craft-Utility</td>
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<tr>
<td>LLNL</td>
<td>Lawrence Livermore National Laboratory</td>
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<tr>
<td>NASA</td>
<td>National Aeronautics and Space Administration</td>
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<td>NEPA</td>
<td>National Environmental Policy Act</td>
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<td>NMFS</td>
<td>National Marine Fisheries Service</td>
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<td>NOTAM</td>
<td>Notice to Airmen</td>
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<td>Notice to Mariners</td>
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<td>Notice of Proposed Activity</td>
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<tr>
<td>OEA</td>
<td>Overseas Environmental Assessment</td>
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<tr>
<td>PMRF</td>
<td>Pacific Missile Range Facility</td>
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<td>RMI</td>
<td>Republic of the Marshall Islands</td>
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<td>RMIEPA</td>
<td>Republic of the Marshall Islands Environmental Protection Authority</td>
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<td>RTS</td>
<td>Ronald Reagan Ballistic Missile Defense Test Site</td>
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<td>U</td>
<td>Uranium</td>
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<tr>
<td>UES</td>
<td>USAKA Environmental Standards</td>
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<td>US</td>
<td>United States</td>
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<tr>
<td>USACE</td>
<td>United States Army Corps of Engineers</td>
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<td>US NAVY SSP</td>
<td>United States Navy Strategic Systems Programs</td>
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<td>USAG-KA</td>
<td>United States Army Garrison-Kwajalein Atoll</td>
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<tr>
<td>USAKA</td>
<td>United States Army Kwajalein Atoll</td>
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<tr>
<td>USASMDC/ARSTRAT</td>
<td>US Army Space and Missile Defense Command/Army Forces Strategic</td>
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<tr>
<td>USEPA</td>
<td>United States Environmental Protection Agency</td>
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<tr>
<td>USFWS</td>
<td>United States Fish and Wildlife Service</td>
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<tr>
<td>UXO</td>
<td>Unexploded Ordnance</td>
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1.0 REQUIREMENTS AND LIMITATIONS

(Predetermined responsibility for tasks is provided in brackets at end of paragraphs where appropriate.)

1.1 General Requirements and Limitations

a. Prior to a flight test, safety precaution measures shall be implemented. Within the Mid-Atoll Corridor, nonessential personnel shall be evacuated and mission critical personnel shall be sheltered. Notices to Airmen (NOTAMs) and Notice to Mariners (NOTMARs) shall be published and circulated in accordance with established procedures. Radar and visual sweeps of the hazard area shall be accomplished immediately prior to a test flight to ensure clearance of non-critical personnel. [US Navy SSP, USAG-KA & RTS]

b. If the flight deviates from its course or should other problems occur during descent that might jeopardize public safety, the onboard flight termination system shall be activated causing the payload to fall towards the ocean and terminate flight. [US Navy SSP, RTS]

c. For at least 8 weeks preceding the FE-1 flight test launch, Illeginni Islet shall be surveyed bi-weekly by qualified persons for sea turtles, sea turtle nesting activity, and sea turtle nests. Surveys will be conducted by fixed wing aircraft or helicopters. If possible, these persons shall also inspect the area within 2 days of the launch.

d. Pre-test persons at Illeginni Islet and in vessels traveling to and from Illeginni Islet shall look for and report any observations of sea turtles, evidence of sea turtle haul out or nesting, or of sea turtle nests at or near Illeginni Islet. [US Navy SSP, USAG-KA & RTS]

e. USAG-KA and/or RTS personnel shall conduct a helicopter or fixed-wing aircraft overflight of the islet vicinity three times over at least the week prior to the test and as close to launch as safely practicable to survey for marine mammals and sea turtles. The final overflight shall be made within one day of the proposed launch. [US Navy SSP, USAG-KA & RTS]

f. During ocean travel to and from impact and test support areas, ship personnel shall monitor for marine mammals and sea turtles to avoid potential ship strikes and report any observations to the USAG-KA Environmental Engineer. Vessel operators shall also adjust their speed or raft deployment based on expected animal locations, densities, and on lighting and turbidity conditions. [US Navy SSP & USAG-KA]

g. Any marine mammal or sea turtle sightings during surveys, overflights, or ship travel shall be reported to the USAG-KA Environmental Engineer, the RTS Range Directorate, and the Flight Test Operations Director for consideration in approving the launch.

h. During the flight test, personnel in the vicinity of the impact area shall comply with the Army’s Hearing Conservation Program. Depending on their location, personnel may be required to wear hearing protection. [US Navy SSP, USAG-KA & RTS]

i. Vessel operations, particularly in the BOA, shall only occur when weather and sea conditions are acceptable for safe travel. [US Navy SSP & USAG-KA]

j. Vessel and equipment operations shall not involve any intentional ocean discharges of fuel, toxic wastes, or plastics and other solid wastes that could potentially harm marine life. [US Navy SSP & USAG-KA]
k. Vessel and heavy equipment operators shall inspect and clean equipment for fuel or fluid leaks prior to use or transport. [US Navy SSP & USAG-KA]

l. Prior to the shipment of test support equipment and materials from the US to USAKA, the equipment shall be washed and a certified Pest Control Technician or Military Veterinarian shall inspect the equipment to ensure that it does not contain any insects, animals, plants, or seeds. [US Navy SSP]

m. Prior to returning the test support equipment and materials to the US, the equipment shall be washed and a certified Pest Control Technician shall inspect the equipment again to ensure that it does not contain any insects, animals, plants, or seeds that might have been picked up during fielding. [US Navy SSP & USAG-KA]

n. To avoid impacts on coral heads off Illeginni Islet, sensor rafts shall not be located in lagoon waters less than 10 feet (3 meters) deep. [US Navy SSP & USAG-KA]

o. If practicable within mission requirements, the flight test at Illeginni shall be conducted during mid-day when birds are typically at rest and less likely to be within the impact area. [US Navy SSP, USAG-KA & RTS]

p. Prior to recovery and cleanup actions on Illeginni Islet or near the ocean rafts, Explosive Ordnance Disposal (EOD) personnel shall first survey for any residual explosive materials. If found, such materials shall be collected and managed in accordance with the current DEP for Disposal of Munitions and Other Explosive Materials. [US Navy SSP & USAG-KA]

q. Protected marine species including invertebrates shall be avoided or effects to them minimized, which may include movement of these organisms out of the area likely to be affected. [US Navy SSP & USAG-KA]

r. All on-site personnel shall be briefed and provided with information on the need to protect and avoid harassment of sensitive species. The on-site supervisor shall ensure compliance with protection objectives. [US Navy SSP & USAG-KA]

s. After the environmental analyses are completed, a fact sheet describing the project and the environmental controls shall be prepared and shall be provided at locations on Ebeye and Kwajalein Island. [US Navy SSP, USAG-KA]

1.2 Land Impact Illeginni Requirements and Limitations

a. Vehicle and equipment movements on Illeginni shall follow existing paths and roadways. Operational and emergency lighting shall be shielded and pointed down to minimize the potential for impacts to migratory birds and sea turtles. [US Navy SSP, USAG-KA, RTS]

b. To prevent birds from nesting on the support equipment after initial setup, the equipment shall be appropriately covered with tarps or other materials and “scare” techniques (e.g., scarecrows, mylar ribbons, and/or flags) shall be used on or near equipment. [US Navy SSP & USAG-KA]

c. The impact area shall be searched for black-naped tern nests and chicks prior to any pre-flight equipment mobilization. Any discovered nests shall be covered with an A-frame structure as per USFWS guidance. The area shall be monitored during pre-launch activities to ensure no black-naped tern nests are disturbed. Post-survey monitoring shall also be conducted to
observe for impacts to adult black-naped terns or their nests. Results of the monitoring shall be reported to the USAG-KA Environmental Engineer to provide to the USFWS. [US Navy SSP, USAG-KA]
d. Beginning at least 30 days prior to launch, USAG-KA environmental staff shall inspect beach area for active turtle nests at Illeginni Islet. If nests with eggs are discovered, USAG-KA shall immediately notify the appropriate agencies and implement USFWS recommendations to avoid or minimize project-related impacts to sea turtle nests. [US Navy SSP & USAG-KA]
e. USAG-KA and/or RTS personnel shall conduct a helicopter or fixed-wing aircraft overflight of the islet vicinity as soon as safely practicable after the test to survey for any dead or injured marine animals and sea turtles. [US Navy SSP, USAG-KA &/or RTS]
f. When feasible, within 1 day after the land impact test at Illeginni Islet, USAG-KA environmental staff shall survey the islet and the near-shore waters for any injured wildlife, damaged coral or damage to sensitive habitats. For recovery and rehabilitation of any injured migratory birds or sea turtles found at Illeginni, USFWS and National Marine Fisheries Service (NMFS) shall be notified to advise on best care practices. During inspections of the islet and near-shore waters, USAG-KA environmental staff shall assess any sea turtle mortality. Any impacts to biological resources shall be reported to the Appropriate Agencies, with USFWS and NMFS offered the opportunity to inspect the impact area to provide guidance on mitigations. [US Navy SSP & USAG-KA]
g. Site recovery and clean-up shall be performed for land or shallow water impact. [US Navy SSP]
h. The land impact crater shall be excavated and the excavated material screened to remove payload debris. The crater shall then be back-filled with ejecta from around the rim of the crater. Best management practices (e.g., use of booms or other barriers) shall be implemented to contain exposed soil and minimize the potential for disturbed sediment from washing into nearby waters. [US Navy SSP & USAG-KA]
i. Following cleanup and repairs to the Illeginni site, soil samples shall be collected at various locations around the impact area and tested for tungsten alloy. [US Navy SSP & USAG-KA]
j. To minimize long-term risks to birds and marine life at Illeginni Islet, all visible payload debris and any other project-related debris shall be recovered during post-test operations. This shall include the recovery of floating or visible debris in the shallow lagoon or shallow ocean waters by range divers. [US Navy SSP]
k. At Illeginni Islet, should any delivery vehicle components or payload particle debris impact in areas of sensitive biological resources (i.e., forested areas, sea turtle nesting habitat, and coral reef), then USFWS and NMFS biologists shall be invited to inspect, as practicable, to assess, and to provide guidance on mitigations. Debris recovery operations shall be conducted to minimize impacts on such resources. In all cases, hand tools shall most likely be used. [US Navy SSP, USAG-KA & RTS]
If the reef, reef flat, or shallow waters are inadvertently impacted, inspection shall occur within 24 hours to assess damage to determine mitigation measures. [US Navy SSP, USAG-KA & RTS]

As part of post-test cleanup activities on Illeginni Islet, personnel shall stabilize fugitive dust and disturbed soil by wetting/washing the site with water. [US Navy SSP]

Following removal of all payload items and any remaining debris from the impact area, necessary repairs shall be made and the crater backfilled.

1.3 BOA Impact Requirements and Limitations

a. For use of an instrumentation raft near the impact area, the raft shall have running lights and stationkeeping; and no anchoring of the raft shall occur; “scare” techniques (e.g., scarecrows and flags) shall be used on or near equipment; and the raft shall be returned to port after the flight test. [US Navy SSP & USAG-KA]

b. To help prevent migratory birds from being attracted to a raft while positioned in the BOA impact areas, “scare” techniques (e.g., scarecrows and flags) shall be used on the raft. [US Navy SSP]

c. The US Navy SSP shall prepare a detailed cleanup plan that satisfies human health and safety requirements and incorporates measures to minimize ocean pollution. [US Navy SSP]

d. Although no floating debris from the payload impact in the BOA is expected, ship personnel shall recover any floating debris remaining after the impact and properly dispose of it. [US Navy SSP & USAG-KA]

e. USAG-KA and RTS personnel shall conduct a helicopter or fixed-wing aircraft overflight of the impact area vicinity as soon as safely practicable after the test to survey for any dead or injured marine animals. Such sightings shall be reported to the USAG-KA Environmental Office, the RTS Range Directorate, and the Flight Test Operations Director, who shall then forward information to the Appropriate Agencies. [US Navy SSP, USAG-KA, RTS]

f. US Navy SSP, USAG-KA and RTS personnel shall survey the nearest islet and near-shore waters for injured wildlife, damaged coral or damage to sensitive habitat when feasible, within 1 day after impact into the BOA. [US Navy SSP, USAG-KA, RTS]

g. Payload recovery/cleanup operations shall not be attempted in deeper waters (>180 ft) (>55 m). Payload debris from an impact in the ocean or lagoon beyond shallow waters shall not be recovered. [US Navy SSP, USAG-KA, RTS]

h. If the payload impacts in the shallow waters of less than 50 ft (less than 15 m) of the lagoon or the open ocean, a dive team from USAG-KA shall be brought in by US Navy SSP to conduct underwater searches. Using a ship for recovery operations, all practicable efforts shall be made to locate and recover the debris. If debris is found, divers shall recover debris manually. [US Navy SSP, USAG-KA & RTS]

i. Recovery and cleanup operations shall be conducted in a manner to minimize any further impacts. [US Navy SSP, USAG-KA & RTS]
1.5 Incidental Take Terms and Conditions for FE-1 Flight Test

[To be Based on the Final NMFS and USFWS Biological Opinions (In-process 2017), DEP Appendix B]

Incidental take may occur in the form of harm or harassment to the breeding success or loss of up to 3 green turtle nests or injury, or loss of up to 390 eggs or hatchlings [numbers to be amended as required following receipt of final BOs] as a result of project-related payload impacts at Illeginni Islet.

a. Payload shall be aimed away from known sea turtle nesting areas within the Mid-Atoll Corridor Impact Area in order to minimize the number of turtle nests destroyed.

b. US Navy SSP shall work with the USAG-KA Environmental Engineer to inspect the impact zones to assess sea turtle mortality after the FE-1 flight test. Baseline data shall be collected at Illeginni prior to the FE-1 flight test for comparison purposes.

c. US Navy SSP shall submit a report by December 31 of the year in which the Flight Test was conducted to USAKA that describes sea turtle impacts, if any, or any take that may have occurred at Illeginni Islet.

d. USAG-KA Environmental Engineer shall forward the US Navy SSP annual report to the Pacific Island Fish and Wildlife Office Field Supervisor documenting take of green turtles or hawksbill turtles and suggesting ways to further minimize incidental take at Illeginni.

e. If, during the course of the action, the level of incidental take is exceeded, such incidental take represents new information requiring re-initiation of the Biological Opinion and review of the reasonable and prudent measures provided. US Navy SSP and USAG-KA shall immediately cease activities at Illeginni Islet that caused or contributed to the taking and USAG-KA, in conjunction with the US Navy SSP, shall immediately provide an explanation of the causes of the taking, and review with the USFWS and/or NMFS the need for possible modification of the reasonable and prudent measures.

f. Re-initiation of consultation shall occur if:

(1) The amount or extent of incidental take is exceeded

(2) New information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in the Biological Opinion

(3) The agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in the Biological Opinion

(4) A new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take shall cease, pending re-initiation of consultation.

1.6 Material and Waste Management

a. Hazardous waste treatment or disposal is prohibited at USAKA [UES §3-6.6.5(a)].
b. All activities at USAKA importing activity-specific hazardous materials into USAKA are required to submit within 15 days of receiving the material or before actual use, whichever comes first, a separate Hazardous Materials Procedure to the Commander, USAG-KA, for approval (UES §3-6.4.3).

c. Response to releases of oil, fuels and lubricants into the USAKA environment shall be in accordance with the Kwajalein Environmental Emergency Plan (KEEP) (UES §3-6.5.8).

d. Payload debris could consist of batteries and various heavy metal components that include small quantities of aluminum, steel, titanium, magnesium and other alloys, copper, chromate coated hardware, and tungsten alloys. All waste materials collected shall be returned to USAG-KA for proper storage and disposal in the United States in accordance with the UES.

e. For the post-test recovery and cleanup of delivery vehicle and payload debris from Illeginni Islet or in the shallow waters of the lagoon, US Navy SSP, USAG-KA, and RTS personnel and contractors shall follow established safety procedures.

f. No ocean disposal shall occur associated with the FE-1 flight test. [US Navy SSP & USAG-KA]

1.7 Climate Change

The FE-1 developmental payload is not expected to emit hazardous air pollutants during flight, or impact, in USAKA that would contribute to climate change. Emissions from equipment, vessels, and aircraft used at and between the identified locations at USAKA for one flight test are not anticipated to be significant. Although global sea level is documented to be rising due to climate change, and the islands within USAKA are of low elevations, the subtle effects of rising sea level and climate change will not affect the single flight test scheduled to occur within a year after signing of the Finding of No Significant Impact, nor would the single FE-1 flight test affect climate change. Therefore, there are no specified limitations or requirements for FE-1 activities related to climate change.

2.0 MONITORING PROCEDURES

a. During travel to and from Illeginni Islet, ship personnel shall monitor for marine mammals and sea turtles to avoid potential ship strikes and report any observations to the USAG-KA Environmental Engineer. Vessel operators shall adjust their speed based on expected animal densities, and on lighting and turbidity conditions. [US Navy SSP, RTS, USAG-KA]

b. Any marine mammals or sea turtles observed by any personnel during deployment of the free-floating sensors in the BOA impact area shall be reported to the USAG-KA Environmental Engineer, the RTS Range Directorate, and the Flight Test Operations Director. USAG-KA and RTS aircraft pilots flying in the vicinity of the impact and test support areas shall also report any opportunistic sightings of marine mammals and sea turtles. [US Navy SSP, RTS, USAG-KA]

c. Personnel involved in cleanup and backfilling of craters created by impact shall monitor soil and debris for cultural or historic remains unearthed by impact or backfilling activities. [US Navy SSP, USAG-KA, RTS]
d. If cultural or historic remains are discovered during the activities, work shall cease and the USAG-KA Environmental Engineer shall be notified by US Navy SSP and RTS personnel. The RMI EPA and RMI Historic Preservation Office (RMIHPO) shall be notified by USAG-KA, and appropriate mitigation measures, developed in consultation with the RMIHPO, shall be implemented by US Navy SSP to minimize the effects on the resource or to recover as much of the resource as possible (conforming to professional standards for research), as directed by UES §3-7.5.7. [US Navy SSP, RTS, USAG-KA]

e. The US Navy SSP FE-1 program and RTS personnel shall monitor the worksite throughout each workday for any endangered or threatened species moving into area. Work shall be delayed until any such species is out of harm’s way, leaves the area, or is relocated (attached organisms only) beyond the influences of the project to similar habitat. Any relocation of benthic organisms shall be coordinated well in advance of removal with USAG-KA, USFWS, NMFS, and RMI EPA. [US Navy SSP, RTS]

f. To monitor all reportable activities and incidents associated with FE-1, recordkeeping and reporting shall occur IAW applicable Department of Defense, US Navy, RTS, and USAG-KA policies and regulations, and UES requirements.

g. A report of a bench study to develop measurements of dissolution and migration of the payload tungsten alloy in Illeginni Islet soil and findings shall be made available to DOD partners, NMFS, USFWS, and the RMI EPA following completion of the study. [US Navy SSP]

3.0 MITIGATION MEASURES

During similar tests, impacts to protected species were much less than expected, as witnessed by the USFWS personnel participating in the biological monitoring during the tests. Since similar impacts are expected for the proposed US Navy SSP FE-1 flight test, the mitigations below shall be performed following the US Navy SSP FE-1 flight test.

3.1 Illeginni Islet

a. Pre-flight monitoring by qualified personnel shall be conducted on Illeginni Islet for sea turtles or sea turtle nests.

b. On-site personnel will report any observations of sea turtles or sea turtle nests on Illeginni to appropriate test and USAG-KA personnel to provide to NMFS and USFWS.

c. During travel to and from impact zones, including Illeginni Islet, and during raft deployment, ship personnel shall monitor for marine mammals and sea turtles to avoid potential vessel strikes. Vessel operators shall adjust speed or raft deployment based on expected animal locations, densities, and or lighting and turbidity conditions.

3.2 BOA Impacts Areas

a. During ocean travel to and from impact and test support areas, ship personnel shall monitor for marine mammals and sea turtles to avoid potential ship strikes and report any observations to the USAG-KA Environmental Engineer. Vessel operators shall also adjust their speed or raft deployment based on expected animal densities, and on lighting and turbidity conditions. [US Navy SSP & USAG-KA]
b. Any marine mammal or sea turtle sightings during overflights or ship travel will be reported to the USAG-KA Environmental Engineer, the RTS Range Directorate, and the Flight Test Operations Director for consideration in approving the launch.

c. Vessel operations, particularly in the BOA, shall only occur when weather and sea conditions are acceptable for safe travel. [US Navy SSP & USAG-KA]

d. Vessel operations shall not involve any intentional ocean discharges of fuel, toxic wastes, or plastics and other solid wastes that could potentially harm marine life. [US Navy SSP & USAG-KA]

4.0 MINOR DEP MODIFICATIONS

Minor modifications to this DEP may be accomplished under the provisions of UES §2-17.3.6(e).

5.0 NOTIFICATION PROCEDURES

5.1 Emergency Notifications

a. Within 24 hours of discovery of an emergency environmental condition, USAG-KA shall notify the public affected or potentially affected by the condition and the Appropriate Agencies by the most expeditious means available.

b. Within 10 days following emergency notification, USAG-KA shall submit written notification of the event to the Appropriate Agencies that contains at a minimum the relevant information described in UES §2-7.2.2.

c. Emergency notifications shall be made for any condition that the Commander, USAG-KA, determines to constitute an emergency condition.

5.2 Public Notifications

a. Public notifications shall be made by USAG-KA to advise the public of an activity or action that US Navy SSP has taken or is planning as a result of emergency conditions. [US Navy SSP, SMDC]

b. Public notification made as a result of emergency conditions shall be made in *The Kwajalein Hourglass* and *The Marshall Islands Journal*, posters or bulletins displayed in public places, announcements on Kwajalein Range Services Newsline and/or on public television. [US Navy SSP, SMDC]

5.3 Agency Notification

a. In the event that any USAG-KA species and habitats of Special Concern as stated in UES Appendices 3-4A thru 3-4D, are disturbed, transplanted, injured or killed due to test activities, the NMFS, the USFWS, and the RMIEPA shall be informed by USAG-KA and RTS within 24 hours of discovery. [USAG-KA, RTS]

b. If cultural or historic remains or artifacts are discovered during the course of FE-1 activities, work at the site shall cease and the USAG-KA Environmental Engineer shall be notified by US Navy SSP. The RMIHPO shall be notified by USAG-KA, and appropriate mitigation measures, developed in consultation with the RMIHPO, shall be implemented by US Navy SSP to
minimize the effects on the resource or to recover as much of the resource as possible (conforming to professional standards for research), as directed by UES §3-7.5.7. [US Navy SSP, SMDC, USAG-KA]

6.0 RECORDS KEEPING

a. The NPA, Environmental Comments and Recommendations, and the DEP authorizing FE-1 activities at USAKA shall be preserved for the duration of the activity plus 10 years or for 10 years after expiration of the DEP, whichever is less. (UES §2-13.2.7)
b. All records associated with the activity shall be maintained for at least five years. (UES §2-13.2)
c. Personnel-training records shall be preserved for 10 years beyond the period the employee is engaged in activities potentially affecting the environment at USAKA (UES §2-13.2.1).

7.0 REPORTING PROCEDURES

The following reports are required IAW the UES:

a. The USAG-KA Environmental Office shall provide a notification statement to the UES Appropriate Agencies, and the Government of the Republic of the Marshall Islands (GRMI), via the USAKA Host Nation Office and US Embassy, within five calendar days of a test event which involves a test failure, anomalies, or termination. This statement shall include the location, safety and environmental consequences.
b. A report shall be submitted by December 31 of the year in which the flight test was conducted to USAKA that describes sea turtle impacts or any take that occurred at Illeginni Islet.
c. USAG-KA Environmental Engineer shall forward the report to the USFWS Pacific Islands Office Field Supervisor documenting take of green turtles and suggesting ways to further minimize incidental take at Illeginni.
d. A written report shall be provided to NMFS, USFWS, and the RMIEPA within 10 days of an incident resulting in the disturbance, transplant, injury, or death of any USAKA species and habitats of Special Concern as stated in UES Appendices 3-4A thru 3-4D. The report shall provide the type and number of organisms disturbed, transplanted, injured, or killed; their condition; the locations and conditions of the original and new habitats; and the projected chances of recovery if injured.
e. If any of the requirements of the DEP or the UES are violated during the activity covered by this DEP, a written report shall be provided to the UES Appropriate Agencies within 30 days of the violation.

8.0 RESOLUTION OF NONCOMPLIANT AREAS

Currently, there are no known UES non-compliant activities associated with the US Navy SSP FE-1 flight test at USAKA. With the implementation of the requirements, limitations, and monitoring protocols described in this DEP, FE-1 flight test activities at USAKA shall be in full compliance with the UES 14th Edition, September 2016.
9.0 ENVIRONMENTAL COMMENTS AND RECOMMENDATIONS RECEIVED ON THE NOTICE OF PROPOSED ACTIVITY AND USAG-KA’S RESPONSES

US ENVIRONMENTAL PROTECTION AGENCY (USEPA)
COMMENT: NPA may affect resources within the jurisdiction of this agency. Agree with proposed environmental controls. No comments provided.

USAKA RESPONSE: Response noted.

US ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT (USAEDH)
COMMENT: NPA does not affect resources within the jurisdiction of this agency. No comments provided.

USAKA RESPONSE: Response noted.

US FISH AND WILDLIFE SERVICE (USFWS)
COMMENT: NPA may affect resources within the jurisdiction of this agency. Conditionally agree with proposed environmental controls, subject to the enclosed comments/recommendations.

USAKA RESPONSE: Response noted.

Comment 1: It is not clear if the floating rafts will be deployed offshore or possibly nearshore. If they are deployed nearshore, we recommend taking actions to avoid them washing aground on the reef flat near the island. If they are only to be deployed offshore, then this is unlikely to occur.

USAKA RESPONSE: The free-floating rafts are deployed in waters not less than 3m deep and have station-keeping capabilities to allow accurate data collection during test events. They have been successfully utilized for flight testing at USAKA on many occasions with no previous groundings.

Comment 2: We recommend using best management practices to contain exposed soil during the post-impact through back filling the impact crater to minimize disturbed sediment that may wash in nearby waters.

USAKA RESPONSE: Use of best management practices to contain exposed soil during post-impact backfilling of the impact crater is added to the Draft DEP at section 1.2(h).

Comment 3: If the impact occurs in the water in depths shallow enough to be recovered, we recommend further coordination with the Service to develop a plan to assess potential impacts to marine resources from recovery efforts. Additional actions may need to be taken to mitigate the impacts associated with a shallow water landing.

USAKA RESPONSE: Section 1.2(f) addresses inspection following a land impact; the nearshore area is added to that section to ensure coordination in accordance with the USFWS comment.
Comment 4: Terrestrial resources: All the terrestrial and seabirds on Illeginni will likely exhibit startle reflexes when a payload impacts the island, but the startle reflex will not likely adversely affect any birds. Black noddies actively incubating eggs on nests in Pisonia trees will briefly leave the nests, but the startle reflex should not cause any eggs or chicks to fall from the nest. The sound pressures of the sonic boom and impact may cause a temporary threshold shift (TTS) in the hearing of birds at a distance (uncertain distance) from the impact, and may cause a permanent non-lethal threshold shift (PTS) in the hearing of birds near the impact area. The consequences of a TTS or PTS are unknown at this time.

USAG-KA RESPONSE: Comment noted.

Comment 5: Black-naped terns: Black-naped terns (BNTE), a coordination species under the UES, nest in the vicinity of the impact area on Illeginni and any active nests, eggs and chicks would likely be killed or injured by direct contact or ejected debris. The number of nests observed by USFWS on Illeginni has not exceeded 4, and BNTE normally have one or two viable eggs or chicks. Therefore, the maximum number of adversely affected BNTE should not exceed 12 birds (4 adults and 8 eggs or chicks) if impact of the RV is during daylight hours, when one adult of each pair is over the open ocean foraging for small fish. A maximum of 16 birds could be injured or killed if the impact is at night when both adults are roosting at or near the nests. It is probable that support activities near the helicopter pad on Illeginni will deter some terns from initiating nests before launch, but terns incubating eggs or feeding chicks will attempt to continue nesting throughout the activities. Nests and young chicks can be protected with the construction of wooden "A-frame" structures, which will serve to shade the eggs and chicks if adults are flushed from the nest and will provide warning to support personnel to avoid the nests. We suggest painting the A-frames orange or another highly visible color to serve as a warning to avoid the nests. We recommend that KRS Environmental Services search the area for nests and chicks prior to any equipment mobilization and cover nests with A-frames. We recommend monitoring the area during pre-launch activities to insure no nests are disturbed. We further recommend conducting post-survey monitoring to observe impacts to adult birds or nests. Sturdy A-frames could also protect some nests from small ejected debris at impact, depending on their distance from the impact crater.

USAG-KA RESPONSE: Section 1.2.(c) has been added to the Draft DEP to comply with the USFWS comment. Post-test observations will be reported to the USAG-KA Environmental Engineer who will provide the information to the USFWS.

Comment 5: Great crested terns: Great Crested Terns may nest on Illeginni, but we have no positive data to report where or when the great crested terns might breed. They nest on sand spits, so we presume they would be on the northwest of Illeginni, outside of the impact zone.

USAG-KA RESPONSE: Comment noted.

NATIONAL MARINE FISHERIES SERVICE, PACIFIC ISLANDS REGIONAL OFFICE, PROTECTED RESOURCES DIVISION (NMFS) COMMENT: NPA may affect resources within the jurisdiction of this agency. Agree with proposed environmental controls. No comments provided.
**USAKA RESPONSE:** Response noted.

**REPUBLIC OF THE MARSHALL ISLANDS ENVIRONMENTAL PROTECTION AUTHORITY (RMIEPA)**

**COMMENT:** Thank you for the opportunity to review and comment on the Navy Flight Experiment NPA. Please find below RMI EPA's comments, for consideration and response:

RMI EPA concurs with the NPA, taking into account requested responses for the following:

**Comment 1:** RMI EPA suggests a reference in the NPA explaining its context within the UES. RMI EPA understands NPAs referenced in UES Section 2-17.3.2 as being undertaken before an activity that requires a DEP, but it is not clear which DEP(s) would be referenced. Specific reference could be afforded to individual item(s) in the list of DEP activities in 2-17.3.1.

**USAG-KA RESPONSE:** The following statement has been added to the second paragraph of page i of the Draft DEP, “This DEP is prepared for compliance with UES § 2-17.3.1(j) Proposed actions or activities for which a biological opinion has been rendered.”

**Comment 2:** The NPA notes that deep water impact zones may be up to 8,000 feet deep. Please address in greater detail the procedures for deep water impact beyond the water surface (eg the NCA states that debris on the water surface will be removed, is there any potential impact for payload material dissipation underneath the surface waters, including heavy metals, and if so, what are anticipated procedures or monitoring, including potential water currents).

**USAG-KA RESPONSE:** The payload disintegrates into small pieces, which are denser than seawater and thus will sink. The proposed BOA impact sites are located at depths generally at or greater than 8,000 ft (2,438 m). No collection of sunken material would be anticipated.

The US National Aeronautics and Space Administration (NASA) conducted a thorough study of the seawater quality effects of missile components deposited in ocean waters (1998). NASA concluded that the release of hazardous materials from missiles into seawater would not be significant. The materials will be rapidly diluted and, except in the immediate vicinity of the debris, will not be found at concentrations that produce adverse effects. The payload materials are relatively insoluble and the depth of the Pacific Ocean at either of the proposed BOA impact sites is thousands of feet; where light does not penetrate; levels of oxygen that might interact with materials at the surface are too low for that to occur; and water temperature differences from the upper water layers hamper any mixing between them. Any area on the ocean bottom affected by the slow dissolution of the payload debris will be relatively small, due to the size of the payload debris pieces as compared relative to the volume of surrounding seawater. Therefore, water quality effects from the payload are expected to be minimal. As potential for toxic concentrations is expected to be small and the effects would be very localized, the potential for cumulative impacts is expected to be nil. There are no plans to monitor deep water impacts in the BOA benthic zones of 8,000 ft depth or greater, where no mixing with upper layers of water occurs. This information has been added to the EA.
Comment 3: The NPA states that manual recovery of debris from land and shallow waters "as reasonably practicable." Please further elaborate on specific conditions in which such recovery would or would not likely be considered "reasonably practicable."

USAG-KA RESPONSE: The term has been replaced in the Draft DEP to indicate all “visible” debris shall be recovered.

Comment 4: RMI EPA suggests advance public written notice or poster in the Marshallese language, which briefly summarizes the approximate date/nature of the activity, and planned environmental safeguards (written in common or non-technical phrasing). Such a poster could be placed in ferry areas and in local media (e.g., Marshall Islands Journal, and/or text for radio announcement on V7AB). This would be useful to address the gap between actual environmental controls, and a frequent public perception in Marshallese communities that such controls are not applied.

USAG-KA RESPONSE: A section was added to the DEP at 1.2(s) to provide and post a fact sheet at locations on Ebeye and Kwajalein Island.
NOTICE OF PROPOSED ACTIVITY (NPA)

ACTIVITY:
US NAVY INTERMEDIATE RANGE CONVENTIONAL PROMPT STRIKE (IRCPS)
FLIGHT EXPERIMENT 1 (FE-1)

CONTROL NUMBER NPA-16-001.0

DECEMBER 2016

US ARMY GARRISON-KWAJALEIN ATOLL IN THE REPUBLIC OF THE MARSHALL ISLANDS

PREPARED BY TELEDYNE BROWN ENGINEERING, INC. HUNTSVILLE, ALABAMA

DISTRIBUTION A. Approved for Public Release: Distribution Unlimited
Approved for Public Release by US Navy Strategic Systems Programs, December 29, 2016
NOTICE OF PROPOSED ACTIVITY

ACTIVITY: US NAVY INTERMEDIATE RANGE CONVENTIONAL PROMPT STRIKE (IRCPS) FLIGHT EXPERIMENT 1 (FE-1)

CONTROL NUMBER NPA-16-001.0

DATE SUBMITTED: 06 January 2017

The Compact of Free Association between the Republic of the Marshall Islands (RMI) and the United States (US) requires all US Government activities at US Army Garrison-Kwajalein Atoll (USAG-KA) [formerly US Army Kwajalein Atoll (USAKA)], where the Ronald Reagan Ballistic Missile Defense Test Site (RTS) is a tenant organization, to conform to specific compliance requirements, coordination procedures, and environmental standards identified in the USAKA Environmental Standards and Procedures (UES) (USASMDC/ARSTRAT 2016). As specified in UES Section (§) 2-2, these standards also apply to all USAG-KA activities and to RTS tenant activities occurring elsewhere within the RMI, including the territorial waters of the RMI.

The US Navy Strategic Systems Programs (SSP) Intermediate Range Conventional Prompt Strike (IRCPS) Flight Experiment 1 (FE-1), which could affect the deep water region southwest of Illeginni Islet, Illeginni Islet, or northeast of Kwajalein Atoll within the Kwajalein Missile Impact Scoring System (KMISS) broad ocean area (BOA) southeast of Gagan Islet, must comply with the UES (USASMDC/ARSTRAT 2016).

REFERENCES


**TYPE OF ACTIVITY**

This NPA addresses an experimental flight test of the US Navy SSP IRCPS Intermediate Range Glide Body (IRGB) concept for a conventional (non-nuclear) hypersonic assembly impacting within RTS at USAKA.

**LOCATION OF ACTIVITY**

The activity is located within the deep water region southwest of Illeginni Islet, on Illeginni Islet, or northeast of Kwajalein Atoll within the Kwajalein Missile Impact Scoring System (KMISS) broad ocean area (BOA) southeast of Gagan Islet.

**COMPLIANCE STATUS**

The US Navy SSP IRCPS FE-1 flight test described in this NPA and the companion Document of Environmental Protection (DEP) will be conducted in compliance with the UES.
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# ABBREVIATIONS AND ACRONYMS

1 Be Beryllium  
2 BOA Broad Ocean Area  
3 Cr Chromium  
4 DEP Document of Environmental Protection  
5 DoD Department of Defense  
6 DoE Department of Energy  
7 DU Depleted Uranium  
8 EA Environmental Assessment  
9 EOD Explosive Ordnance Disposal  
10 ft feet  
11 ICBM Intercontinental Ballistic Missile  
12 IRCPS Intermediate Range Conventional Prompt Strike  
13 IRGB Intermediate Range Glide Body  
14 KEEP Kwajalein Environmental Emergency Plan  
15 km Kilometers  
16 KMISS Kwajalein Missile Impact Scoring System  
17 KTF Kauai Test Facility  
18 LCU Landing Craft Utility  
19 LLNL Lawrence Livermore National Laboratory  
20 m Meters  
21 m Miles  
22 MMIII Minuteman III  
23 Ni Nickel  
24 NMFS National Marine Fisheries Service  
25 NPA Notice of Proposed Activity  
26 PMRF Pacific Missile Range Facility  
27 RMI Republic of the Marshall Islands  
28 RTS Ronald Reagan Ballistic Missile Defense Test Site  
29 RV Reentry Vehicle  
30 SSP Strategic Systems Programs  
31 TTS Temporary Threshold Shift  
32 U Uranium  
33 UES USAKA Environmental Standards  
34 UHFR Ultra-High Frequency  
35 US United States  
36 USAG-KA US Army Garrison–Kwajalein Atoll  
37 US Army Kwajalein Atoll  
38 USASMDC/ARSTRAT United States Army Space and Missile Defense Command/Army  
39 Forces Strategic Command  
40 USAV US Army Vessel  
41 USFWS US Fish and Wildlife Service  
42 UXO Unexploded Ordnance  
43 W Tungsten
1.0 Technical Description of Activity
1.1 General

The US Department of the Navy (US Navy) plans to conduct a flight test designed to prove various aspects of their Conventional Prompt Strike (CPS) system’s capabilities. The Navy Strategic Systems Programs (SSP) manages their CPS concept, Intermediate Range Conventional Prompt Strike (IRCPS), a conventional (non-nuclear) intermediate range glide body (IRGB). One experimental flight test (FE-1) is planned in 2017, launching from the Kauai Test Facility (KTF) located on the Pacific Missile Range Facility (PMRF), Barking Sands, Hawaii, with the IRGB impacting at Ronald Reagan Ballistic Missile Defense Test Range (RTS), US Army Kwajalein Atoll (USAKA). An Environmental Assessment (EA) prepared by the Navy SSP, along with the US Army Space and Missile Defense Command/Army Forces Strategic Command (USASMDC/ARSTRAT) and Department of Energy (DoE) as participating and cooperating agencies, respectively, is expected to be completed in 2017.

The FE-1 launch vehicle consists of a 3-stage Strategic Target System (STARS) booster system and the IRGB experiment. Following launch, the boosters will burnout and separate in sequence with the IRGB separating from the third stage booster over the Pacific Ocean. The IRGB will then use autonomous flight control to maneuver and glide at hypersonic velocities in the upper atmosphere toward RTS. Upon reaching the terminal end of flight, the IRGB will impact one of the three designated impact zones as shown in Figure 1. The potential impact zones are: (1) an impact within a deep water ocean area approximately 20 miles (mi) (32 kilometers [km]) southwest of Illeginni Islet; (2) a land impact site on the northwestern end of Illeginni Islet; or (3), an impact area within the Kwajalein Missile Impact Scoring System (KMISS) in the deep water area southeast of Gagan Islet. Range Safety requirements and mission analysis will determine which impact zone is selected and the actual impact zone size prior to the launch. The Navy’s preference is to impact on Illeginni Islet.

Within one day of the test and for any of the three potential impact sites, existing USAG-KA based Landing Craft Utility (LCU) vessels will deploy up to 16 free-floating, battery-powered rafts with optical and/or acoustical sensors in waters no less than 10 feet (ft) (3 meters [m]) deep. The observation rafts will collect data from the IRGB descent until impact.

For an impact at either deep water impact zone, in addition to free-floating rafts, a larger raft equipped with data collection instrumentation will be placed in the ocean waters near the impact site for up to two weeks in preparation for the flight test. Once the test is completed, the raft will be returned to port and the data will be delivered for analysis.

For impact at the KMISS site southeast of Gagan Islet, existing optical and electronic sensors and system support equipment are already in place on the Islet and in the offshore ocean waters. Fixed underwater sensors are located a minimum of 3 nautical miles (nmi) (5.5 kilometers(km)) offshore at depths ranging from 7,000 to 12,000 ft (2,134 to 3,658 m). The KMISS scores the precision of in-water impacts by reentry vehicles (RVs) and other projectiles.

The vicinity of the selected impact zone for the FE-1 flight test will be evacuated prior to launch and exclusionary control will be maintained until recovery actions are complete. Additionally, if needed, the Mid-Atoll Corridor will be cleared and monitored for unauthorized access prior to the flight test.

For either deep water impact zone, the former US Army Vessel (USAV) Worthy, a Tactical Auxiliary General Ocean Surveillance (T-AGOS) class ship commissioned to serve as a mobile instrumentation platform at RTS, will likely be utilized. The Kwajalein Mobile Range Safety System (KMRSS) is installed on the USAV Worthy to provide logistical and instrumentation support. The vessel also has some limited capability to support billeting for operations. Fly-overs of either deep water impact zone will be conducted before the flight test to observe and report on marine mammals.
and sea turtles in the impact zone and after the flight test to determine if any debris from the IRGB remains on the surface.

On land and prior to the flight test, up to two Experimental Ku-Band Area Blast Radar (ExKLABR) radars will be placed within the impact zone prior to the test to gather tracking data on the IRGB. These small radars (24-inch by 15-inch by 6-inch cube) will be powered by automobile batteries. Up to two larger Early Launch Tracking System (ELTS) radars, powered by on-shore or portable generator power will be on Illeginni Islet to gather tracking data but located far enough away from the impact area to eliminate the possibility of damage. Both radars are self-contained, transportable, and capable of remote operations.

At impact, materials contained in the IRGB payload will breakup and partially disintegrate. These materials consist of batteries and small quantities of various heavy metals and heavy metal alloys, including a tungsten (W) alloy. Although highly unlikely, small pieces from the IRGB might also remain intact.

On land, the impact could form a crater. Should the IRGB impact in areas adjacent to the existing paved helipad at Illeginni Islet, soil containing residual concentrations of Be and DU as a result of prior intercontinental ballistic missile (ICBM) flight tests could be scattered over the area. Prior to debris recovery and cleanup actions on Illeginni Islet, unexploded ordnance (UXO) personnel will first inspect the impact crater and surrounding area for any residual explosive materials. Test support personnel will conduct an impact assessment and cleanup and recovery operations once the site is clear for safe entry.

Following completion of the impact area assessment, personnel will manually recover IRGB debris from land and, if present, from surrounding shallow waters (less than 180 ft or 55 m deep) as reasonably possible. The impact area will be wetted with freshwater to stabilize the disturbed soil. The impact crater will be excavated using a backhoe or front end loader transported to the island by an LCU and the excavated material will be screened to recover debris. Following debris removal, the crater will be backfilled and, if necessary, repairs made to surrounding structures. USAG-KA and RTS personnel will be involved in these operations. Accidental spills from support equipment operations will be contained and cleaned up. All waste materials will be appropriately stored and returned to Kwajalein Islet for proper disposal. Following cleanup and repairs to the Illeginni site, soil samples will be collected at various locations around the impact area and tested for pertinent contaminants.

Should the IRGB inadvertently impact in the deeper waters of the Atoll lagoon (up to approximately 180 feet), a dive team from USAG-KA or RTS will be brought in to conduct underwater searches. Using a ship for recovery operations, the debris field will be located and certified divers in scuba gear will attempt to recover the debris manually.

If the IRGB impacts within one of the deep water impact zones, debris remaining on the water surface will be recovered and removed. Accidental spills occurring from a support vessel will be contained and cleaned up in accordance with the Kwajalein Environmental Emergency Plan (KEEP) (KRS, 2014 or current version).

Test support is provided primarily by existing RTS and USAG-KA government personnel and contractors and will be supplemented by Navy personnel and contractors, and cooperating agency personnel.

1.2 Activity Location

This NPA addresses the single flight test of the Navy SSP IRGB conventional (non-nuclear) hypersonic assembly impacting within the deep waters southwest of Illeginni Islet, on Illeginni Islet, or within the deep waters of KMISS southeast of Gagan Islet (Figures 1 and 2).
Figure 1  Notional Impact Areas At and Near USAKA for Navy SSP IRCPS FE-1 Flight Test
2.0 Description of Activity Environmental Setting

(Intent: Provides basic information on the islet(s) and geology.)

Kwajalein Atoll is located in the western chain of the RMI in the West Central Pacific Ocean, 2,300 mi (3,701 km) west-southwest of Hawaii. The Atoll is dotted with a string of approximately 100 islets that enclose one of the world’s largest lagoons (1,100 square miles or 2,849 square kilometers). Lagoon depths are typically 120 to 180 ft (37 to 55 m). The Atoll was formed through a combination of climatic, geological, and biological processes including changes in sea level, volcanic action, sea floor subsidence, and coral reef growth. The undersea volcanic mountains and exposed mountain top islets of the Atoll formed from sea floor magma emergences between 68 to 140 million years ago. The volcanic islet cores slowly disappeared below sea level, leaving a ring of intertidal reef flats and islets of accumulated sand and rubble. When sea levels dropped 2,000 to 5,000 years ago, additional land surfaces became exposed. The dynamic Atoll islets continue to move, grow, and retreat in response to changing seas, vegetation, and human modification.

Illeginni is a 31-acre islet on the southwest side of the Atoll consisting of managed vegetation surrounding buildings and facilities, and four relatively large patches of littoral forest. After 1975, most facilities, including the Spartan and Sprint missile launch facilities, were abandoned-in-place. The Illeginni power plant was downsized in 2010 and is now a minor air emissions source utilizing small (80 kilowatt) Tier 3 generators. A helipad is located in the northwestern end of the Islet. The Islet is uninhabited.

The proposed deep water impact zones are located to the northeast and southwest of the Atoll with depths generally at or greater than 8,000 ft (2,438 m). The proposed northeast deep water impact zone is within the existing KMISS deep-ocean, hydrophone sensor array. The array is located about 3.2 to 8.6 nmi (5.9 to 15.9 km) southeast of and beyond the visual range of Gagan Islet. The KMISS hydrophones lie at depths from about 7,000 to 12,000 ft (2,134 to 3,658 m). The proposed deep water impact zone southwest of Illeginni Islet is at a distance of 17 nmi (31.5 km) from Illeginni in water depths around 12,000 ft (3,658 m). Seafloor sediments at both deep water locations
are likely to be similar, consisting of *Globigerina* ooze, a soft seafloor sediment composed of microscopic shells from calcareous planktonic animals (foraminifera), with varying amounts of volcanic sand and possibly some brownish clay.

### 3.0 Environmental Areas Potentially Affected by Activity

*(Intent: Addresses all areas with the potential to be affected by the activity. States only those areas possibly affected. Does not discuss how the area will be protected. Environmental areas are the seven addressed in the UES: air quality, water quality and reef protection, drinking water quality, endangered species and wildlife resources, ocean disposal, material and waste management, and cultural resources.)*

#### 3.1 Air Quality

Emission sources for the IRCPS FE-1 flight test will include a combination of vessels, aircrafts, cranes, trucks, fork lifts, backhoes/loaders, and/or portable power generators on Kwajalein Island, at the selected impact zone, and along the aircraft flight paths and vessel courses between those locations. (Specific controls are discussed in Section 5.0.)

*Illeginni Islet*

Some amount of fugitive dust could be generated at impact on land. Additionally, fugitive dust will be generated by impact crater ejecta. Previous impacts of the intercontinental ballistic missile (ICBM) RVs have resulted in the deposition of beryllium (Be) and depleted uranium (DU) in the soil adjacent to the helipad, beach and reef flat. Potentially, small quantities of hazardous air pollutants, including Be and DU residing in the soil from past ICBM testing, and heavy metals and W alloy could be dispersed into the air upon IRGB impact.

*Southwest and Northeast Deep Water Impact Zones*

Emission sources in the deep water impact zones will include diesel vessel engines used to position and maintain support vessels in specific locations, and aircraft during overflights. At Illeginni Islet, emission sources will include mobile generators supplying temporary power pre- and post-launch. A diesel backhoe or front end loader also will be used on Illeginni Islet post-launch to backfill the crater.

#### 3.2 Endangered Species and Wildlife Resources

*Illeginni Islet*

Illeginni Islet has terrestrial habitats of significant biological importance including mixed broadleaf (littoral) forest, habitat that supports seabird colonies, and shorebird habitat. Protected migratory seabirds and shorebirds have been observed breeding, roosting, or foraging on Illeginni Islet, on adjacent inter-islet reef flats at low tide, and hovering above adjacent islets and at sea. Sea turtle nesting and haul-out areas were identified along the northwestern and northeastern Illeginni shorelines in years past.

Motorized equipment and personnel on Illeginni Islet for up to several weeks for pre-launch, launch, and post-launch activities could cause individual birds to be disturbed. Terrestrial biological resources could be affected by human disturbance during site preparation and post-test cleanup, by physical contact, by elevated noise and sound pressure levels from the IRGB flight, and by habitat alteration from IRGB impact. However, the Illeginni impact zone is in a previously disturbed area on the northwest end of the islet which does not have nesting seabirds.

Waters surrounding Illeginni Islet include a diverse assemblage of habitats and species including coral, sponge, reef-associated fish, marine mollusks, and sea turtles. While IRGB impact is not planned or expected in the marine environments surrounding Illeginni, marine species and habitats could be affected by human disturbance during site preparation and clean up, vessel operation, and from elevated sound pressure levels during IRGB flight and impact.

*Southwest and Northeast Deep Water Impact Zones*

The deep water impact zones have deep-ocean habitats with the potential for transient marine mammals, sea turtles, and fish. Vessel operations, site preparation, placement of data collection equipment, impact of the IRGB, and post-impact clean up in and near the deep water impact zones
could affect marine species. Elevated noise levels from IRGB flight and impact could affect marine species in the deep water impact zones. An IRGB impact in either deep water impact zone could affect marine mammals, sea turtles, and certain fish species.

3.3 Material and Waste Management

Illeginni Islet
The IRGB contains small amounts of hazardous materials and heavy metals, including W, that will be dispersed by the IRGB impact. Land and reef waters could receive small amounts of contamination from hazardous materials due to spills of equipment fuels and lubricants used during the pre- and post-launch activities. (Specific controls are discussed in Section 5.0.)

Southwest and Northeast Deep Water Impact Zones
Illeginni or ocean waters of the selected deep water impact zone will receive small amounts of contamination from hazardous materials and heavy metals due to the IRGB impact, and possibly from spills of equipment fuels and lubricants used during the pre- and post-launch activities.

4.0 Analysis of Effect of Activity on Environmental Areas in the Absence of Environmental Controls
(Intent: Referring to each of the areas in Section 3, provide the consequences of not having environmental controls for that area.)

4.1 Air Quality

Illeginni Islet
In the absence of controls, the air quality could be degraded with the potential for dispersion of and exposure to Be and DU dust residing in the impact zone soil on Illeginni from past ICBM testing. The air quality could be degraded from W alloy dust as a result of the IRGB impact.

Southwest and Northeast Deep Water Impact Zones
For either of the deep water impact sites, transient diesel emissions could present an inhalation hazard to shipboard personnel.

4.2 Endangered Species and Wildlife Resources

Illeginni Islet
In the absence of environmental controls, pre-launch, launch, and post-launch activities on Illeginni could affect sea turtle and migratory bird species, and loss of habitat for sea turtles, seabirds, and shorebirds. Without environmental controls, FE-1 flight test activities also could affect habitats and species in the marine environment adjacent to Illeginni Islet including fish, corals, and mollusks.

Southwest and Northeast Deep Water Impact Zones
The pre-launch, launch, and post-launch activities within the deep water impact zones could affect marine mammal, sea turtle, and fish species in the absence of environmental controls.

4.3 Material and Waste Management

Illeginni Islet
If not recovered, IRGB debris could impair the terrestrial areas. If not prevented or cleaned up upon occurrence, spills of equipment fuels, lubricants, and hazardous materials will contaminate the land, groundwater, and/or reef waters and pose a health threat to wildlife resources and personnel.

Southwest and Northeast Deep Water Impact Zones
If not recovered, IRGB debris could impair the marine environment. If not prevented or cleaned up upon occurrence, spills of equipment fuels, lubricants, and hazardous materials will contaminate the ocean waters and pose a health threat to wildlife resources and personnel.
5.0 Technical Description and Analysis of Environmental Controls Used in Activity

(Intent: Presents the methods to be employed to protect the areas discussed in Section 3 and 4.)

5.1 Air Quality

Emission of criteria pollutants and greenhouse gases from sources described in Section 3.1 will be minor and temporary. There will be no exceedance of UES air quality standards, no new permanent stationary sources of emissions, and, therefore, no required changes to the DEP for air emissions (USAKA, August 2013).

Illeginni Islet

Support equipment setup activities on Illeginni Islet will require little or no soil excavation; therefore, no hazardous air pollutant inhalation concerns from Be or DU residing in the soil from past ICBM testing is anticipated. Emission sources will be minimal during preparation activities on Illeginni Islet prior to the IRGB impact. There will not be any construction of, or use of permanent major stationary sources.

During impact, small quantities of hazardous air pollutants will be generated. Due to the potential for hazardous air pollutant inhalation risks at the impact site on Illeginni Islet, precautionary procedures for post-test recovery and cleanup operations will be implemented. These include restricting access to the impact area and areas immediately downwind from inadvertent aircraft, vessel, or vehicle traffic. Trade winds, range evacuation procedures, and uninhabited areas within miles of Illeginni Islet should prevent any immediate hazardous air pollutant inhalation risks to personnel or residents of Kwajalein Atoll.

Following impact, disturbed soil and debris will be stabilized by wetting the impact area with freshwater brought to Illeginni by vessel. Personnel will use appropriate personal protective equipment. Direct measurements of previous ICBM RV tests have provided sufficient information to conclude that there will be no potential hazardous air pollutants-related health effects in the vicinity from Be or DU. Long-term air sampling following such tests has shown that Be and DU concentrations in air downwind of impact areas are essentially indistinguishable from natural concentrations of Be and DU in air at other atoll locations (Robison et al, 2005, 2006, 2013). The Navy SSP expects minimal post-test soil and air sampling or monitoring may be necessary due to the small quantities of hazardous materials and heavy metals in the IRGB.

Southwest and Northeast Deep Water Impact Zones

Emission sources are expected to be negligible for any impact directly into the ocean waters in the BOA sites. Fuel fumes from vessels and aircraft will be transient and dispersed in the open ocean atmosphere.

5.2 Endangered Species and Wildlife Resources

General

Immediately prior to their shipment to Illeginni, equipment and experiment materials will be washed and inspected by a certified pest control inspector or military veterinarian to ensure that the shipment does not contain any insects, animals, plants, or seeds. The shipment will be treated for the removal of pests (e.g., rats, mice, and ants) and other non-native organisms to prevent their potential spread and introduction to Illeginni Islet.

During travel to and from the selected impact zone, shipboard personnel will monitor for marine mammals and sea turtles to avoid potential ship strikes. Vessel operators will adjust speed based on expected animal locations, densities, and/or lighting and turbidity conditions. If personnel observe sea turtles or marine mammals within the impact zone, the sightings will be reported to the USAG-KA Environmental Engineer, the RTS Range Directorate, and the Flight Test Operations Director. Sightings within an impact zone will be considered in flight test planning and could result in a launch delay. Vessel and equipment operations will not involve any intentional discharges of fuel, toxic wastes, or plastics and other solid wastes that could harm terrestrial or marine life.

For either a land or deep water IRGB impact, sensors on self-stationing rafts will be located in the surrounding lagoon or ocean waters. To prevent collision with coral heads, the rafts will be
located in no less than 10 ft (3 m) of water. The rafts will be positioned within a day of the flight
test. The position of the rafts will be maintained by on-board battery powered electric motors. After
completion of the flight test, the rafts will be quickly recovered and returned to the support vessel.

Terrestrial

Illeginni Islet

On Illeginni Islet, pre-launch, launch, and post-launch activities are planned for previously
disturbed areas of the islet. Efforts will be made to minimize vegetation removal in the Illeginni
littoral forest to preserve habitat for migratory birds. Removal of vegetation in shoreline areas will
be minimized to prevent removal of sea turtle nesting habitat. Best management practices will be
required for control of debris on the Islet during all operations to prevent inadvertent harm to
wildlife.

Actions will be taken to minimize disturbance to sensitive resources, such as posting signs
designating sensitive areas on the Islet, and providing all personnel with information on the need to
protect sensitive species. Prior to their arrival on Illeginni, personnel will be briefed on the need to
respect and protect sensitive Islet resources, including the native forest, and to avoid harassment of
sensitive species. Onsite supervisors will ensure that personnel working on the IRCPS FE-1 flight
test comply with the protection objectives. Personnel will be instructed to stay on existing roads and
paths where possible, avoid areas designated as avian nesting or roosting habitat, and to avoid all
contact with any nest that may be encountered. Preparation and set-up activities on the Islet will be
conducted with awareness of the possible presence of shorebirds and their eggs. To minimize
disturbance to wildlife and habitat, movement of equipment from and back to vessels at the harbor
on the Islet will always follow existing roads and paths. Operational and emergency lighting will be
shielded and pointed down to minimize the potential for impacts to migratory birds and sea turtles.

Pre-test preparations and post-test cleanup activities will involve motorized equipment and
personnel on Illeginni Islet for up to several weeks and could cause individual birds to leave the
western end of the Islet where support equipment is staged for the flight test. A combination of
support equipment with their respective structures and components will be spread over
approximately a two-acre area. Forested areas on the Islet will not be disturbed during the IRCPS
FE-1 flight test activities. White terns nest throughout the year whereas other bird species nest
primarily from October through April. While the majority of birds nest in the trees, white terns lay
eggs directly on the ground, and those near the western end of the Islet could be damaged or covered
up by mission activities. When feasible, timing of the IRGB impact will occur around midday when
birds are roosting in the shade.

Due to the potential for sea turtle nesting on Illeginni, personnel will be instructed to avoid
all contact with sea turtles or turtle nests that might exist within the area. Sea turtles nest throughout
the year. As a precaution to preventing potential impacts on sea turtle nests, the Navy, USAG-KA,
and RTS personnel will inspect the Illeginni Islet beaches for active turtle nests beginning 30 days
prior to the flight test and report any observations to the USAG-KA Environmental Engineer, the
RTS Range Directorate, and the Flight Test Operations Director. If discovered, nests with eggs will
be moved to the Eniwetak Islet conservation area in coordination with the US Fish and Wildlife
Service (USFWS) and USAG-KA Environmental Office.

Additionally, if feasible, within a few days or weeks before the test, biologists will survey the
Islet to document current conditions of sea turtle nesting areas, the conditions of other habitats, and
the types and general numbers of individual species. When feasible, within one day after the test,
qualified biologists or environmental staff members will survey the Islet and the near-shore waters
for any injured wildlife, damaged coral, or damage to sensitive habitats. In, addition, USFWS and
National Marine Fisheries Service (NMFS) biologists will provide guidance on the recovery and
rehabilitation of any injured migratory birds or sea turtles found at Illeginni.
Should IRGB debris impact areas of sensitive biological resources (i.e., sea turtle nesting habitat or coral reef), a USFWS or NMFS biologist will be allowed to provide guidance and/or assistance in recovery operations to minimize impacts on such resources. To the greatest extent practicable, when moving or operating heavy equipment on the reef during post-test clean up, protected marine species including invertebrates will be avoided or effects to them will be minimized. This may include movement of these organisms out of the area likely to be affected.

Southwest and Northeast Deep Water Impact Zones

There are no terrestrial habitats within the BOA impact zones.

Ocean and Reef

Illeginni Islet

For an IRGB impact at Illeginni, all or most of the resulting debris is expected to fall on land with minimal risk of effects to the coral reef and marine life. To minimize potential effects on marine mammals and sea turtles, USAG-KA and RTS personnel will conduct aircraft or fixed-wing aircraft over-flights of the Illeginni Islet vicinity at least three times over the week prior to the flight test. If personnel observe marine mammals or sea turtles in the impact vicinity, they will report such findings to the USAG-KA Environmental Engineer, the RTS Range Directorate, and the Flight Test Operations Director for consideration in approving the launch.

Southwest and Northeast Deep Water Impact Zones

For an IRGB impact in a deep water impact zone, support vessels will be placed in position approximately one day before launch in an effort to reduce the attraction to sea turtles and other marine life. Support vessels will remain at the deep water location for no more than 10 days in the event of a launch delay.

USAKA and/or RTS personnel will conduct a helicopter or fixed-wing aircraft overflight of the impact vicinity as close to the time of the launch as safely practical. If personnel observe marine mammals near the impact area, or moving towards the impact area, they will report such sightings to the USAG-KA Environmental Engineer, the RTS Range Directorate, and the Flight Test Operations Director. Sightings in the impact area will result in a launch delay.

After the IRGB impact, the waters will be surveyed by personnel working the FE-1 flight test for any dead or injured marine mammals, sea turtles, and birds. USAG-KA aircraft pilots otherwise flying in the vicinity of the impact zone and test support areas also will report any opportunistic sightings of dead or injured marine mammals or sea turtles. Any observations of injured animals will be reported to the USAG-KA Environmental Engineer and the Navy SSP, who in turn will provide the information to USASMDC/ARSTRAT, NMFS, and USFWS.

Noise

General

A sonic boom will be generated by the IRGB flight for either a deep water or land impact. The sonic boom will be instantaneous and expected not to cause any lasting effects. The elevated sounds are likely to only temporarily startle birds and terrestrial and marine wildlife. The FE-1 flight test is expected to produce a sonic boom similar to or less than that of the Minuteman III (MMIII) RV. Based on MMIII data, the estimated sound pressure levels will not exceed the temporary (when an organism is exposed to sound pressures below the threshold of physical injury but may result in temporary hearing alteration) or permanent threshold shift levels for any marine mammals, sea turtles, fish, or birds and no injury from sonic boom is anticipated. However, due to the potential for injury to organisms from elevated sound pressure levels at IRGB impact, additional analyses will be conducted to evaluate expected sound pressure levels and the resulting effects on terrestrial and marine species and reported in the biological assessment for the flight test.
Post Test Recovery

General

All clean-up operations will be performed in a manner to minimize any further harm to biological resources, and USFWS and NMFS will be allowed to provide guidance and/or assistance during recovery and cleanup in either terrestrial or marine areas.

Any IRGB debris and supporting equipment returning to the US will be washed and inspected by a certified pest control technician to ensure the items do not harbor any insects, animals, plants, or seeds that might have been picked up during fielding.

Illeginni Islet

If left in place, debris from the IRGB could harm wildlife on the Islet and in the surrounding marine waters. All visible IRGB debris will be retrieved for evaluation and to minimize risk of ingestion by birds and marine life. The Navy SSP will follow a post-test recovery and clean-up operations plan developed for their specific activity. The recovery plan will include detailed descriptions on the steps to be taken to remove all visible debris, and to survey for injured or dead wildlife.

Southwest and Northeast Deep Water Impact Zones

Any floating IRGB debris that is visible within a BOA impact zone will be recovered to minimize risks to marine wildlife in accordance with the Navy SSP post-test recovery and clean-up operations plan. Observation rafts also will be recovered and loaded on to the LCU.

5.3 Hazardous Materials and Waste Management

Navy SSP IRCPS FE-1 flight test personnel and all associated personnel will follow procedures for the proper storage, transportation, and disposal of hazardous materials and waste. Other than the use of fuels and lubricants for operating transportation and other support equipment, there will be limited use of hazardous materials at RTS in support of either a land or BOA impact. Accidental spills from support equipment operations will be contained and cleaned up in accordance with the Kwajalein Environmental Emergency Plan (KEEP) requirements. All hazardous and non-hazardous wastes will be properly disposed of in accordance with the UES.

Illeginni Islet

Post-test recovery, cleanup, and disposal actions will ensure no significant impacts from hazardous materials. Waste management procedures described in the UES will be followed.

Prior to recovery and cleanup actions on Illeginni Islet, Explosive Ordnance Disposal (EOD) personnel will first survey the impact site for remaining explosive materials. If UXO is found, such materials will be managed in accordance with the current DEP for Disposal of Munitions and Other Explosive Materials.

Following completion of the impact assessment by Navy and LLNL, personnel will recover as much visible debris as reasonably possible to minimize long-term risks to birds. The impact crater and surrounding area will be wetted to stabilize the disturbed soil and equipment will be washed off before being sent back to the US. Only freshwater will be used to wet and/or wash the site. Freshwater will be transported to Illeginni on an LCU or other vessel. Following removal of all supporting equipment and any remaining debris from the impact site, all craters will be backfilled and, if necessary, repairs made to surrounding structures. Certified divers will conduct underwater surveys and recover visible debris that may have entered the shallow lagoon or ocean waters less than 180 feet deep. All waste materials will be returned to Kwajalein for proper disposal in accordance with the UES. In preparation for the IRCPS FE-1 flight test, hazardous and non-hazardous waste handling procedures will be detailed in a post-test recovery/cleanup plan.

Based on the soil analysis conducted by LLNL, concentrations of Be and Uranium (U) (as a surrogate for DU) on Illeginni Islet are statistically similar to the natural background concentrations found in soils on other coral atolls in the northern Marshall Islands and at other global locations (Robison, 2005, 2006, 2013). The observed soil concentrations of Be and U on Illeginni Islet are

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within the USEPA Region 9 Preliminary Remediation Goals (PRG) as outlined in the UES. Because existing Be and U concentrations in the soil on Illeginni Islet are similar to natural background concentrations, small quantities of additional heavy metal deposition from the IRGB will be expected to maintain the result of soil concentrations well below USEPA Region 9 PRG for residential soil. The Navy expects that minimal post-test soil sampling or monitoring will be necessary as part of the Navy SSP FE-1 flight test.

Southwest and Northeast Deep Water Impact Zones

Any floating IRGB debris that is visible within a deep water impact zone will be recovered to minimize risks to marine wildlife in accordance with the Navy SSP post-test recovery and clean-up operations plan.

[For Sections 6 – 13, if not applicable, states that the activity will not affect the resource or not require the subject action.]

6.0 Dispersion Model for Modeling Air Sources

(Intent: Applicable if an air source is being built or emissions are related to or will result from the activity.)

The activities associated with the Navy SSP IRCPS FE-1 flight test in USAKA will not involve operation of permanent major stationary sources. Air modeling is not required for the project activities described in this NPA.

7.0 Analysis of Waste Discharge for Point-Source Waste Discharges to Water

(Intent: Explains source and content of any waste that will be part of a point source discharge. Every effort should be made to not create a point source discharge; explains how it will be avoided.)

There are no point source discharges associated with the Navy SSP IRCPS FE-1 flight test activities described in this NPA; therefore, analysis of waste discharges is not required. Freshwater used to wet the impact site and debris on Illeginni Islet will be isolated to the impact area and helipad and will be prevented from flowing into the ocean or lagoon.

8.0 Information for Hazardous Waste Treatment, Storage, or Disposal Facilities

(Intent: Treatment, storage and disposal of hazardous waste are prohibited at USAKA/RTS. The text should reaffirm that such will not take place with the activity. If hazardous waste will be created due to the activity, it should be identified and how it will be removed from USAKA/RTS.)

Hazardous materials will not be treated, permanently stored, or disposed of at USAKA. All spills will be cleaned-up in accordance with the KEEP and mission specific emergency response plans.

All hazardous waste removed from Illeginni will be properly containerized and shipped to Kwajalein for disposal. All hazardous waste will be disposed of in accordance with UES Section 3-6.6.5.

9.0 Biological Assessment if Endangered Resources May Be Affected

(Intent: Addresses strictly endangered resources, as defined by UES §3-4. Endangered resources at USAKA/RTS are all marine. Explains precautions to protect endangered resources.)

Consultation will be initiated with the USFWS and the NMFS for the Navy SSP IRCPS FE-1 flight test due to the possibility that the activity “may affect and is likely to adversely affect” green sea turtle (Chelonia mydas) and hawksbill sea turtle (Eretmochelys imbricata) nesting on Illeginni Islet, non-larval humphead wrasse (Cheilinus undulatus), 14 species of coral, and the top snail (Tectus niloticus) (Figure 3). A biological assessment evaluated the consequences of elevated sound pressure levels, splashdown of launch vehicle components in the BOA, IRGB impact on Illeginni Islet or in deep ocean waters near Kwajalein Atoll, increased vessel activity, hazardous chemicals, and disturbance from increased human activity and equipment operation. Sea turtle nesting and nest habitat may be adversely affected in Illeginni Islet by direct contact from IRGB impact, debris, hazardous chemicals, and disturbance from increased human activity and equipment operation. Although potential impact to sea turtle nesting sites is possible, the single flight test, the limited number of recorded nests on the Islet, and mitigation measures to protect these resources all serve to
minimize the potential for impacts to occur. Disturbance from increased human activity and equipment operation as well as IRGB impact debris may affect and likely to adversely affect the humphead wrasse, 14 species of coral, and the top snail in the waters adjacent to Illeginni Islet. Effects on larval fish, corals, and mollusks in the near-shore marine environment also are possible but are considered minimal due to low risk of a reef or shoreline impact and the episodic density and distribution of larvae. Consultation will be conducted as required with the resource agencies for the Navy SSP IRCPS FE-1 flight test.

Recommended conservation measures developed from consultation with the USFWS and NMFS will be included in the DEP.

10.0 Information on Receiving-Water Quality for Water Discharges
(Intent: Discusses the quality of water where a point source (including stormwater) is being introduced. Only existing Class B waters can receive point sources (water classification maps, UES Appendix 3-2A).

Water discharges are not associated with this activity; therefore, information on receiving water quality is not required. Freshwater used to wet a land impact site will be isolated to the impact area and the helipad and will be prevented from flowing into the ocean or lagoon.

11.0 Information on Marine Life, Currents, and Other Characteristics of Ocean Disposal Site
(Intent: Applicable for ocean disposal activities).

There will be no ocean disposal associated with the flight tests described in this NPA and companion DEP. Material and debris resulting from routine tests conducted at or near USAKA are not considered ocean disposal under the standards of the UES §3-5.5(a)(3).

12.0 Information on Marine Life and Environment in Dredging or Filling Areas
(Intent: Applies if doing dredging or filling activities in waters of the RMI.)

There are no dredging and filling actions associated with this activity.

13.0 Species and Numbers of Migratory Birds and Other Wildlife Resources and Habitats That May Be Taken
(Intent: Provides complete discussion for migratory birds, wildlife resources, and habitats that may be “taken” because of the activity. “Take” and “taking” are defined in the UES.)

The Navy SSP IRCPS FE-1 flight test may affect several coordination fish, mollusk, coral, and migratory bird species on or near Illeginni Islet. Elevated sound pressure levels, IRGB impact on Illeginni Islet, increased vessel activity, hazardous chemicals, and disturbance from increased human activity and equipment operation have the potential to affect coordination species. Fifteen species of bird have the potential to occur on Illeginni Islet and may be affected by elevated sound pressure levels as well as disturbance from increased human activity or equipment operation. These birds generally are found outside of the impact area and while they may be temporarily disturbed, no lasting effects on bird species are expected. Direct contact from IRGB debris and disturbance from increased human activity and equipment operations may affect coordination fish, corals, and mollusks in nearshore waters at Illeginni Islet. However, effects on fish, corals, and mollusks in the near-shore marine environment are considered minimal due to the single proposed flight and the low risk of a reef or shoreline impact. Actions to minimize disturbance to sensitive resources will include posting signs designating sensitive areas on the Islet, and providing all personnel with information on the need to protect and avoid harassment of sensitive species. Personnel will be instructed to avoid areas designated as avian nesting or roosting habitat as well as coral reef habitats.
Figure 3  Locations of Biological Resources and Habitats at Illeginni Islet for DEP Coordination
14.0 Notification  
(Intent: Provides emergency notification and any other type of notifications that are applicable to the activity.)

14.1 Emergency Notifications  
Within 24 hours of discovery of an emergency environmental condition, USAG-KA shall notify the public affected or potentially affected by the condition and the Appropriate Agencies by the most expeditious means available. Emergency environmental conditions are those that pose an immediate threat to human health and safety, incidental take of protected species or habitats, and unplanned impacts to sensitive natural and cultural resources. Within 10 days following emergency notification, USAG-KA shall submit written notification of the event to the Appropriate Agencies that contains, at a minimum, the relevant information described in UES Section 2-7.2.2. Emergency notifications shall be made for any condition that the Commander, USAG-KA, determines to constitute an emergency condition.

14.2 Public Notifications  
Public notifications will be made by USAG-KA to advise the public of an activity or action that USAG-KA has taken or is planning. Public notification will be made through means that are widely available and consulted by the public at USAKA and the RMI. This normally includes publication in *The Kwajalein Hourglass*, posters or bulletins displayed in public places, announcements on Kwajalein Range Services Newsline and/or on public television.

15.0 Records Keeping  
(Intent: States how long and where records will be stored.)

The DEP with the NPA and all recommendations permitting impacts at Illeginni Islet shall be preserved for the duration of the activity plus ten years or for ten years after expiration of the DEP, whichever is less.

16.0 Resolution of Non-compliant Areas  
(Intent: Fully explains areas of noncompliance and how the activity will or will not correct the noncompliance.)

Currently, there are no known non-compliant activities associated with the Navy SSP IRCPS FE-1 flight test at USAKA.
APPENDIX B

TABLE 4-7  IMPACT AVOIDANCE AND MINIMIZATION MEASURES FROM THE US NAVY SSP FLIGHT EXPERIMENT 1
ENVIRONMENTAL ASSESSMENT
<table>
<thead>
<tr>
<th>Location</th>
<th>Measure</th>
<th>Anticipated Benefit</th>
<th>Evaluating Effectiveness</th>
<th>Implementing and Monitoring</th>
<th>Responsibility</th>
<th>Estimated Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMRF</td>
<td><strong>FE-1 (Proposed Action)</strong></td>
<td>Transportation, handling, and storage of rocket motors and other ordnance would occur in accordance with DoD, Navy, and US DOT policies and regulations</td>
<td>Safeguard the materials from fire or other mishap</td>
<td>Recordkeeping in accordance with DoD, Navy, and US DOT policies and regulations</td>
<td>US Navy SSP, USAF</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shipments would be inspected for species of plants and animals alien to the environment at Hawai‘i</td>
<td>Prevent the introduction of alien species of plants and animals at Hawai‘i and the RMI</td>
<td>Recordkeeping of all inspections and outcomes</td>
<td>US Navy SSP</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sandia personnel at KTF would conduct range responsibilities</td>
<td>Ensure appropriate launch preparation, including explosive safety, support to PMRF range safety and inter-range coordination</td>
<td>Recordkeeping in accordance with DoD, Navy, and other applicable policies and regulations</td>
<td>Sandia</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Publication and circulation of Notices to Airmen (NOTAMs) and Notices to Mariners (NOTMARs) prior to launch, prepare and provide at locations on Ebeye and Kwajalein Island a fact sheet describing the project and the environmental controls</td>
<td>Provide safety and warning to personnel, including private citizens and commercial entities, concerning any potential hazard areas that should be avoided; ensure the clearance of non-critical personnel, vessels or aircraft in the vicinity</td>
<td>Recordkeeping in accordance with DoD, Navy, and DOE policies and regulations</td>
<td>US Navy SSP, Sandia</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check launch pad area for safe access after vehicle liftoff</td>
<td>Ensure worker safety for post-launch inspection, clean-up, and maintenance</td>
<td>Recordkeeping in accordance with DoD, Navy, and DOE policies and regulations</td>
<td>Sandia</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td>Over-Ocean Flight Corridor</td>
<td><strong>FE-1 (Proposed Action)</strong></td>
<td>Payload’s flight path would avoid flying over the Northwestern Hawaiian Islands</td>
<td>Avoid impacts to protected species and habitats</td>
<td>Recordkeeping and reporting in accordance with DoD, Navy, and DOE range and flight safety policies and regulations, USFWS regulations, and the ESA and MMPA</td>
<td>US Navy SSP, Sandia</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>During travel in the BOA,</td>
<td>Although unlikely, any</td>
<td>Recordkeeping and</td>
<td>US Navy SSP, RTS</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
</tbody>
</table>

US Navy SSP FE-1 Draft DEP  April 2017
<table>
<thead>
<tr>
<th>USAKA, RMI Illeginni Islet</th>
<th>FE-1 (Preferred Impact Location)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-flight monitoring by qualified personnel will be conducted on Illeginni Islet for sea turtles or sea turtle nests. On-site personnel will report any observations of sea turtles or sea turtle nests on Illeginni to appropriate test and USAG-KA personnel to provide to NMFS.</td>
<td>Computer-monitored destruct lines, based on no-impact lines, are pre-programmed into flight safety software</td>
</tr>
<tr>
<td>Avoid impacts to sea turtles and sea turtle nests</td>
<td>Avoid debris falling on inhabited areas, ensure compliance with Space System Software Safety Engineering protocols and US range operation standards and practices</td>
</tr>
<tr>
<td>Determine the rate of successful compliance and incident prevention</td>
<td>Determine the rate of successful compliance and incident prevention</td>
</tr>
<tr>
<td>For at least 8 weeks preceding the FE-1 launch, Illeginni Islet would be surveyed by pre-test personnel for sea turtles, sea turtle nesting activity, and sea turtle nests on a bi-weekly basis. If possible, personnel will inspect the area within two days of the launch. If sea turtles or sea turtle nests are observed near the impact area, observations would be reported to appropriate test and USAG-KA</td>
<td>Recordkeeping and reporting in accordance with DoD, Navy, and RTS range and flight safety policies and regulations</td>
</tr>
<tr>
<td>US Navy SSP, RTS</td>
<td>US Navy SSP, RTS</td>
</tr>
<tr>
<td>Within 1 year after the FONSI is signed</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
</tbody>
</table>

Ship personnel would monitor for marine mammals and sea turtles to avoid potential ship strikes. Vessel operators would adjust speed based on expected animal locations, densities, and or lighting and turbidity conditions when possible.

Dead or injured marine mammals or sea turtles sighted by post-flight personnel would be reported to SMDC, who would then inform NMFS and USFWS.

Computer-monitored destruct lines, based on no-impact lines, are pre-programmed into flight safety software.

Avoid debris falling on inhabited areas, ensure compliance with Space System Software Safety Engineering protocols and US range operation standards and practices.

Determine the rate of successful compliance and incident prevention.

Recordkeeping and reporting in accordance with DoD, Navy, and DOE range and flight safety policies and regulations.

US Navy SSP, Sandia

Within 1 year after the FONSI is signed.
<table>
<thead>
<tr>
<th>RTS would conduct range responsibilities</th>
<th>Ensure appropriate launch preparation, including explosive safety, support to Navy SSP and inter-range coordination</th>
<th>Determine the rate of successful compliance and incident prevention</th>
<th>Recordkeeping in accordance with DoD, Navy, and RTS applicable policies and regulations</th>
<th>RTS</th>
<th>Within 1 year after the FONSI is signed</th>
</tr>
</thead>
<tbody>
<tr>
<td>During travel to and from impact zones, including Illeginni Islet, and during raft deployment, ship personnel would monitor for marine mammals and sea turtles to avoid potential vessel strikes. Vessel operators would adjust speed or raft deployment based on expected animal locations, densities, and or lighting and turbidity conditions.</td>
<td>Avoid impact on marine mammals and sea turtles.</td>
<td>Although unlikely, any dead or injured marine mammals or sea turtles sighted by post-flight personnel would be reported to the USAG-KA Environmental Office and SMDC, who would then inform NMFS and USFWS. USAG-KA aircraft pilots otherwise flying in the vicinity of the impact and test support areas would also similarly report any opportunistic sightings of dead or injured marine mammals or sea turtles</td>
<td>If personnel observe sea turtles or marine mammals in potential impact zones, sightings would be reported to appropriate test and USAG-KA personnel for consideration in launch planning, recordkeeping and reporting in accordance with DOD, Navy, and RTS policies and regulations.</td>
<td>Navy SSP, RTS</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td>Vessel and equipment operations would not involve any intentional discharges of fuel, toxic wastes, or plastics and other solid wastes that could harm terrestrial or marine life. Hazardous materials would be handled in adherence to the hazardous materials and waste management systems of USAG-KA. Hazardous</td>
<td>Avoid introduction of hazardous chemicals into terrestrial and marine environments.</td>
<td>Determine the rate of successful compliance and incident prevention</td>
<td>Vessel and heavy equipment operators would inspect and clean equipment for fuel or fluid leaks prior to use or transport, recordkeeping of all incidents and outcomes</td>
<td>US Navy SSP, RTS</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
</tbody>
</table>
material releases would comply with the emergency procedures set out in the Kwajalein Environmental Emergency Plan (KEEP) and the UES.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Goal</th>
<th>Data Collection</th>
<th>Responsible Party</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>All equipment and packages shipped to USAG-KA will undergo inspection prior to shipment.</td>
<td>Prevent the introduction of alien species of plants and animals to Kwajalein Atoll</td>
<td>Determine the rate of successful prevention, identifying the need for treatment applications, as necessary</td>
<td>US Navy SSP</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td>Sensor rafts would not be located in waters less than 3 m (10 ft) deep.</td>
<td>To avoid impacts on coral heads off Illeginni Islet</td>
<td>Determine the rate of successful compliance and incident prevention</td>
<td>US Navy SSP, LLNL</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td>Publication and circulation of Notices to Airmen (NOTAMs) and Notices to Mariners (NOTMARs) prior to launch, prepare and provide at locations on Ebeye and Kwajalein Island a fact sheet describing the project and the environmental controls</td>
<td>Provide safety and warning to personnel, including private citizens and commercial entities, concerning any potential hazard areas that should be avoided; ensure the clearance of non-critical personnel, vessels or aircraft in the vicinity</td>
<td>Determine the rate of successful compliance and incident prevention</td>
<td>US Navy SSP, RTS</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td>FTS on the payload would include a failsafe operation</td>
<td>Further ensure the safety of the Marshall Islands and avoid debris falling on inhabited areas or any protected area, ensure compliance with Space System Software Safety Engineering protocols and US range operation standards and practices</td>
<td>Determine the rate of successful compliance and incident prevention</td>
<td>US Navy SSP, Sandia, RTS</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td>Payload impact would be in the non-forested area, placement of scarecrows, Mylar flags, helium-filled balloons, and strobe lights or tarp coverings on or near equipment and the impact area</td>
<td>Avoid affecting the bird habitat</td>
<td>Determine the rate of successful compliance and incident prevention or occurrence</td>
<td>Navy SSP, RTS</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td>The impact area will be searched for seabird nests,</td>
<td>Avoid impacts to seabirds, especially black-naped terns</td>
<td>Post-test monitoring to observe impacts to</td>
<td>Results of monitoring would be reported to</td>
<td></td>
</tr>
</tbody>
</table>

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| Should any missile components or debris impact areas of sensitive biological resources (i.e., sea turtle nesting habitat or coral reef), a USFWS or NMFS biologist would be allowed to provide guidance and/or assistance in recovery operations to minimize impacts on such resources | Minimize impacts on terrestrial and marine biological resources | Determine whether components or debris impact sensitive resources, determine if a USFWS or NMFS biologist was contacted and allowed to provide guidance | Recordkeeping and reporting in accordance with DoD, Navy, RTS, USFWS and NMFS policies and regulations | US Navy SSP | Within 1 year after the FONSI is signed |
| Should personnel observe endangered, threatened, or | Avoid impacts to terrestrial and marine wildlife | Determine the rate of successful compliance and | Recordkeeping and reporting with DoD, | US Navy SSP | Within 1 year after the FONSI is signed |

including eggs and chicks, prior to pre-flight activity. Any discovered seabird nest would be covered with an A-frame structure to protect eggs or chicks and to warn project personnel. seabirds, especially black-napped terns, their nests, eggs, or chicks. USAG-KA Environmental and to USFWS

Debris recovery and site cleanup would be performed for land or shallow water impacts. To minimize long-term risks to terrestrial and marine life. Comparison of recovered debris to known materials in the payload. All visible project-related debris would be recovered during post-flight operations, including debris in shallow lagoon or shallow ocean waters by range divers. In all cases, recovery and cleanup would be conducted in a manner to minimize further impacts on biological resources. Protected marine species including invertebrates will be avoided or effects to them will be minimized, which may include movement of these organisms out of the area likely to be affected.

RTS, US Navy SSP

Within 1 year after the FONSI is signed.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Compliance/Prevention Measures</th>
<th>Responsible Parties</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evacuation of nonessential personnel and sheltering all personnel remaining within the Mid-Atoll Corridor; publication and circulation of Notices to Airmen (NOTAMs) and Notices to Mariners (NOTMARs); perform radar and visual sweeps of the hazard area immediately prior to test flights</td>
<td>Provide safety and warning to personnel, including native Marshallese citizens, concerning any potential hazard areas that should be avoided; ensure the clearance of non-critical personnel, vessels or aircraft in the vicinity</td>
<td>Navy, RTS, USFWS, and RMI EPA policies and regulations</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td>Ordnance personnel survey of impact site, removal of residual explosive materials, manual cleanup and removal of debris including hazardous materials, backfill impact crater, dive team or ROV survey and debris recovery for deeper water lagoon impact</td>
<td>Ensure post-test personnel safety, avoid impacts to terrestrial and marine vegetation and wildlife</td>
<td>Recordkeeping in accordance with DoD, Navy, and RTS policies and regulations</td>
<td>Within 1 year after the FONSI is signed</td>
</tr>
<tr>
<td>Inspect reef, reef flat, or shallow waters within 24 hours if inadvertently impacted, assess damage, decide on any mitigation measures</td>
<td>Avoid or minimize impacts to marine vegetation and wildlife</td>
<td>Determine the rate of successful compliance and incident prevention with appropriate disposition of recovered materials</td>
<td>RTS, US Navy SSP, possibly NMFS/USFWS</td>
</tr>
<tr>
<td>Prepare a project specific NPA and DEP</td>
<td>Ensure UES compliance</td>
<td>Complete the NPA and DEP prior to occurrence of the Proposed Action</td>
<td>US Navy SSP</td>
</tr>
</tbody>
</table>

**USAKA, RMI Southwest or Northeast Offshore Waters**

**FE-1 (Alternative Impact Locations)**

- Computer-monitored destruct lines, based on no-impact lines, are pre-programmed into flight
- Avoid debris falling on inhabited areas, ensure compliance with Space System Software Safety
- Determine the rate of successful compliance and incident prevention
- Recordkeeping and reporting in accordance with DoD, Navy, and RTS range and flight safety

**US Navy SSP, RTS**

**Within 1 year after the FONSI is signed**
<table>
<thead>
<tr>
<th>Safety software</th>
<th>Engineering protocols and US range operation standards and practices</th>
<th>Policies and regulations</th>
<th>Raft would have running lights and station-keeping; no intentional ocean dumping should the instrumentation raft be inadvertently struck during the conduct of the mission; possible use of scarecrows, Mylar flags, helium-filled balloons, and strobe lights.</th>
<th>Maritime safety; compliance with international policy; visual deterrents to avoid inadvertent impacts to birds that might be on the raft</th>
<th>Determine the rate of successful compliance and incident prevention or occurrence</th>
<th>Recordkeeping and reporting in accordance with DoD, Navy, and RTS range and flight safety policies and regulations</th>
<th>US Navy SSP, RTS, LLNL</th>
<th>Within 1 year after the FONSI is signed; reporting on bird impacts before the end of the year in which the FE-1 flight test occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTS on the payload would include a failsafe operation to further ensure the safety of the Marshall Islands</td>
<td>Further ensure the safety of the Marshall Islands and avoid debris falling on inhabited areas or into any protected area, ensure compliance with Space System Software Safety Engineering protocols and US range operation standards and practices</td>
<td>Determine the rate of successful compliance and incident prevention</td>
<td>Recordkeeping in accordance with DoD, Navy, and RTS policies and regulations</td>
<td>US Navy SSP, RTS</td>
<td>Within 1 year after the FONSI is signed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visible debris on the water surface would be recovered and removed</td>
<td>Avoid physical impacts to marine life</td>
<td>Collection of any visible debris on the water surface or documentation of the lack of visible debris</td>
<td>All visible project-related debris on the water surface would be recovered during post-flight operations. In all cases, recovery and cleanup would be conducted in a manner to minimize further impacts on biological resources. Recordkeeping and reporting in accordance with DoD, Navy, and RTS, policies and regulations</td>
<td>RTS/USAG-KA, US Navy SSP</td>
<td>Within 1 year after the FONSI is signed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evacuation of nonessential personnel and sheltering all other personnel remaining within the Mid-Atoll Corridor; publication and circulation of Notices to provide safety and warning to personnel, including native Marshallese citizens, concerning any potential hazard areas that should be avoided; ensure the</td>
<td>Determine the rate of successful compliance and incident prevention</td>
<td>Recordkeeping in accordance with DoD, Navy, and RTS policies and regulations</td>
<td>US Navy SSP, RTS</td>
<td>Within 1 year after the FONSI is signed</td>
<td></td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th><strong>Airmen (NOTAMs) and Notices to Mariners (NOTMARs); post a project fact sheet at Ebeye and Kwajalein Island Ferry stops; perform radar and visual sweeps of the hazard area immediately prior to test flights.</strong></th>
<th><strong>clearance of non-critical personnel, vessels or aircraft in the vicinity</strong></th>
<th><strong>Ordnance personnel survey of impact site, removal of residual explosive materials, manual cleanup and removal of surface floating debris including hazardous materials</strong></th>
<th><strong>Ensure post-test personnel safety, avoid impacts to marine vegetation and wildlife</strong></th>
<th><strong>Determine the rate of successful compliance and incident prevention with appropriate disposition of recovered materials</strong></th>
<th><strong>Recordkeeping in accordance with DoD, Navy, and RTS policies and regulations</strong></th>
<th><strong>RTS</strong></th>
<th><strong>Within 1 year after the FONSI is signed</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prepare a project specific NPA and DEP</strong></td>
<td><strong>Ensure UES compliance</strong></td>
<td><strong>Complete the NPA and DEP prior to occurrence of the Proposed Action</strong></td>
<td><strong>Final DEP authorized with UES Appropriate Agencies’ signatures prior to occurrence of the Proposed Action</strong></td>
<td><strong>US Navy SSP</strong></td>
<td><strong>Within 1 year after the FONSI is signed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>During travel to and from impact zones, ship personnel would monitor for marine mammals and sea turtles to avoid potential ship strikes. Vessel operators would adjust speed based on expected animal locations, densities, and or lighting and turbidity conditions.</strong></td>
<td><strong>Avoid impact on marine mammals and sea turtles.</strong></td>
<td><strong>Although unlikely, any dead or injured marine mammals or sea turtles sighted by post-flight personnel would be reported to the USAG-KA Environmental Office and SMDC, who would then inform NMFS and USFWS. USAG-KA aircraft pilots otherwise flying in the vicinity of the impact and test support areas would also similarly report any opportunistic sightings of dead or injured marine mammals or sea turtles.</strong></td>
<td><strong>If personnel observe sea turtles or marine mammals in potential impact zones, sightings would be reported to appropriate test and USAG-KA personnel for consideration in launch planning.</strong></td>
<td><strong>US Navy SSP, RTS</strong></td>
<td><strong>Within 1 year after the FONSI is signed; reporting on marine mammal or sea turtle impacts before the end of the year in which the FE-1 flight test occurs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vessel and equipment operations would not involve any intentional discharges of fuel, toxic wastes, or plastics and other solid wastes that could harm marine life.</strong></td>
<td><strong>Avoid introduction of hazardous chemicals into marine environments.</strong></td>
<td><strong>Determine the rate of successful compliance and incident prevention</strong></td>
<td><strong>Vessel and heavy equipment operators would inspect and clean equipment for fuel or fluid leaks prior to use or transport, recordkeeping</strong></td>
<td><strong>US Navy SSP</strong></td>
<td><strong>Within 1 year of completion of the FONSI</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*US Navy SSP FE-1 Draft DEP April 2017*
<table>
<thead>
<tr>
<th>Action</th>
<th>Objective</th>
<th>Responsible Entities</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous materials would be handled in adherence to the hazardous materials and waste management systems of USAG-KA. Hazardous material releases would comply with the emergency procedures set out in the Kwajalein Environmental Emergency Plan (KEEP) and the UES.</td>
<td>and reporting in accordance with DoD, Navy, RTS, and RMI EPA policies and regulations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Should personnel observe endangered, threatened, or other species requiring consultation moving into the area, work would be delayed until such species leave the area or were out of harm’s way.</td>
<td>Avoid impacts to terrestrial and marine wildlife.</td>
<td>Determine the rate of successful compliance and incident prevention</td>
<td>Recordkeeping and reporting in accordance with DoD, Navy, RTS, NMFS, USFWS, and RMI EPA policies and regulations</td>
</tr>
<tr>
<td>Perform a bench study to develop measurements of dissolution and migration of the tungsten alloy in Illeginni Islet soils</td>
<td>Inform future biological resources analyses of potential effects</td>
<td>Completion of the study and determination of findings</td>
<td>Report of study and findings made available to DOD partners, NMFS, USFWS, and the RMI EPA</td>
</tr>
</tbody>
</table>
APPENDIX C

PLACEHOLDER FOR
BIOLOGICAL OPINIONS