

2288, Mobile, Alabama 36628-0001 or by telephone at (334) 690-3018.

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Raymond J. Fatz,

*Deputy Assistant Secretary of the Army
(Environment, Safety and Occupational
Health) OASA (I, L&E).*

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Department of the Navy

Notice of Record of Decision for the Disposal of U.S. Navy Shipboard Solid Waste from Surface Ships

SUMMARY: Pursuant to section 102(2) of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA procedures (40 CFR parts 1500-1508), and Executive Order 12114 "Environmental Effects Abroad of Major Federal Actions," the Department of the Navy announces its decision to implement its preferred alternative for the management of non-hazardous biodegradable solid wastes, (paper, cardboard and food), and non-hazardous non-biodegradable solid wastes (metal and glass) from U.S. Navy surface ships. This decision makes a significant change to present waste disposal practices in the fleet. The Navy will equip surface ships the size of a frigate and larger (approximately 200 ships) with equipment to pulp paper, cardboard and food waste, and shred and bag all metal and glass prior to discharge overboard. The equipment, once installed, will be used to prepare material for discharge throughout the oceans and seas of the globe, including those special areas in effect pursuant to Regulation 5 of Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL). Pulped material will be discharged only outside of 3 nautical miles from land and shredded material will only be discharged outside of 12 nautical miles from land. This record of decision and the EIS on which it is based, do not apply to submarines. A separate solid waste management plan will be prepared for submarines at a future date.

Background

The National Defense Authorization Act for fiscal year 1994 required the Secretary of the Navy to submit to Congress, no later than November 30, 1996, a plan for Navy compliance with Regulation 5 of Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL), which pertains to disposal

of shipboard solid waste in "special areas." The MARPOL Convention, formulated in 1973 and amended in 1978, contains five annexes. Solid waste is addressed in Annex V, "Regulations for the Prevention of Pollution by Garbage from Ships." MARPOL prohibits some discharges altogether, restricts some discharges to set distances from land, and establishes "special areas" within which additional discharge limitations apply, based on the oceanographic characteristics and ecological significance of those areas.

Eight "special areas" have been designated by Annex V: the Baltic Sea, portions of the North Sea, the Antarctic Ocean, the Red Sea, the Black Sea, the Gulf area (including the Persian Gulf and the Gulf of Aden), the wider Caribbean (including the Gulf of Mexico), and the Mediterranean Sea. To date, only the first three are in effect. Areas come into effect following a positive assessment of the waste management capabilities of each area's littoral countries.

The MARPOL Convention limitations on ocean discharges do not expressly apply to warships or naval auxiliaries. The Convention requires, however, that party states ensure their warships and auxiliaries operate consistent with the Convention so far as is "reasonable and practicable."

The United States became a party to MARPOL Annex V in 1997 with the enactment of the Marine Plastic Pollution Research and Control Act (MPPRCA), which amended the Act to Prevent Pollution from Ships (APPS). In MPPRCA, Congress did not adopt the Convention's "reasonable and practicable" requirement for U.S. public vessels, but instead affirmatively required full compliance by U.S. public vessels, including Navy vessels, with all Annex V requirements by 1994. In 1993, the National Defense Authorization Act of 1994 (DDA 94) amended APPS and, with respect to Navy ships, extended the 1994 deadline to the end of 1994 for the plastic discharge prohibition, and to the year 2000 for the special area requirements. Both MPPRCA and the DAA 94 allowed the Navy to petition Congress for relief from the legislatively imposed requirements of Annex V, if the Navy demonstrated that full compliance for U.S. Navy warships and auxiliaries was not technologically feasible while maintaining the necessary level of operational capability.

The DAA 94 also provided that if the plan demonstrated that compliance by certain ships under certain conditions was not technologically feasible, Congress could modify the applicability

of the special area requirements for Navy warships and auxiliaries.

The DAA 94 required that the Navy submit a plan for special areas to Congress by November 30, 1996. If the Navy determined that compliance with the requirements of Regulation 5 of Annex V was not technologically feasible for certain ships under certain conditions, the Navy must document:

- The ships for which full compliance was not technologically feasible;
- The technical and operational impediments for achieving such compliance as rapidly as technologically feasible;
- A proposed alternative schedule for achieving compliance as rapidly as technologically possible; and
- Such other information as the Secretary of the Navy considers relevant and appropriate.

The development of a management plan for the disposal of shipboard solid waste necessarily addressed the design and management of warships. Navy warships have a substantially different mission from merchant marine vessels and cruise ships, which is reflected in warship design.

Critical factors used to develop the Navy shipboard solid waste management plan include the composition, operation, and deployment of the U.S. Navy fleet, waste generation rates and characteristics, available processing technologies and current Navy solid waste management practices. Using this basic information, the Navy identified, in addition to source reduction, three potential categories of alternatives for managing shipboard solid waste:

- Store and retrograde (store and return to shore for landbased processing and/or disposal);
- Process and discharge at sea; and
- Destroy on board.

In each of these alternatives food waste would be comminuted (ground up) and discharged, and plastic waste would be processed using Navy developed plastic waste processors (currently being installed on most Navy ships). The treated plastic will be stored and returned to shore.

The potential environmental effects of the Navy's solid waste management plan were analyzed in an Environmental Impact Statement (EIS). Publication of a Notice of Intent (NOI) to prepare an EIS was published in the Federal Register on October 12, 1995. The NOI broadly described the range of alternatives to be considered and analyses to be conducted for the EIS and also announced the time and place for two public scoping meetings. These

meetings were held in Washington, DC and San Francisco, California on October 24, 1995 and October 26, 1995 respectively. Notice of the availability of a Draft EIS was published in the Federal Register on April 29, 1996. 45-day public review period ended on June 14, 1996. Public hearings were held in Washington, DC and San Francisco, California on May 28, 1996 and May 30, 1996, respectively.

The Draft EIS was prepared pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations in 40 CFR, parts 1500–1508, Navy NEPA regulations in 32 CFR part 775, Presidential Executive Order (EO) 12114 "Environmental Effects Abroad of Major Federal Actions," Secretary of the Navy Instruction 5090.6 and the Chief of Naval Operations Instruction 5090.1B "Environmental and Natural Resources Program Manual."

The notice of availability of the Final EIS was published in the Federal Register on September 6, 1996. A 30-day public review period for the Final EIS ended on October 6, 1996. The National Defense Authorization Act for Fiscal Year 1997 amended section 3(c) of the Act to Prevent Pollution from Ships (APPS) (33 U.S.C. 1902) to allow certain Navy ships, as designated by the Secretary of the Navy, to discharge into MARPOL special areas non-plastic, non-floating garbage that has been pulped and shredded. On November 25, 1996, Secretary of the Navy John H. Dalton signed a determination specifying which ship types, due to military design, construction, manning, or operating requirements, cannot fully comply with the special area requirements of Regulation 5 of Annex V of MARPOL.

Current Situation

The Navy fleet, consisting of approximately 350 vessels (including submarines) is deployed globally, operating under constantly variable conditions and circumstances. Variations include the number of ships and length of deployment. The amount of shipboard solid waste generated is proportional to the size of the operation and its duration.

Most of the designated special areas are strategically important to the United States. In recent years the Navy has operated extensively in the Mediterranean Sea, the Persian Gulf, the Red Sea, and in the Caribbean region. These special areas present more significant solid waste management difficulties for the Navy than those that are currently in effect in the Baltic and North Seas. The Navy has determined

that underway periods of one week or longer makes it impractical for combatant ships to comply with the "zero discharge" requirement (i.e., retain all waste on board). Aircraft carriers face the greatest challenge because they have the longest underway periods between port visits and the largest crews.

Shipboard solid waste generation rates are dependent on crew size. The shipboard solid waste generation rate for Navy ships is 1.36 kilograms (2.99 pounds) per crew member per day. Based on this daily rate, solid waste generated onboard an aircraft carrier with a crew of 6,280 would be 8,450 kg/day (18,590 lbs/day). A smaller frigate class ship with a crew size of 220 would generate approximately 300 kg/day (660 lbs/day).

Of the solid waste stream, food waste poses the least significant disposal problem, as these discharges are readily accommodated by Navy shops using comminuters (grinders). For plastic waste, the Navy has actively pursued elimination for more than a decade through operations changes, technology development, supply system changes (source reduction), and environmental education. Through these efforts, the Navy has reduced the discharge of plastics solid waste by approximately 70 percent. Plastic waste processors, along with new management practices, will eliminate plastic waste discharge at sea by surface combatants by the end of 1998.

Alternatives Considered

The Navy considered the no action alternative, process and discharge alternative, store and retrograde alternative, and the on-board destruction alternative and, for each alternative the available technologies for on-board solid waste management. The analysis made it clear that neither a single alternative nor a single individual technology was appropriate for fleet-wide implementation. The alternatives and technologies were evaluated using nine criteria: safety/health, operational impacts, environmental consequences, cost, habitability and quality of life aboard ship, shipboard requirements, physical ship impacts (space, other ship impacts), technical maturity (equipment), and compliance with APPS. Technologies and equipment were assessed in the light of reliability, maintainability, and the capability to operate under extreme adverse conditions; mission readiness; the ability to sustain battle damage and continue to function, issues related to stability, which concern, in part, the appropriate arrangement of space and

weight in the vessel overall, and existing design criteria for weapons systems, propulsion plants, machinery, auxiliary equipment, work spaces, and living areas.

No Action Alternative

Under the no action alternative, (the alternative in use for existing naval operations), the Navy would implement its plan to install plastic waste processors on approximately 200 ships by 1998 and implement store and retrograde procedures for plastics on ships unable to accommodate the plastic waste processors. All other solid waste would be managed according to the following discharge restrictions:

- Discharge of any solid waste is not permitted within three nautical miles (nm) of any shores;
- Discharge of pulped food waste is permitted at greater than 3 nm except in special areas and off foreign country shores where the restriction is 12 nm; and
- Discharge of other non-plastic solid waste is restricted to greater than 25 nm.

Process and Discharge Alternative

This alternative envisions processing (i.e., pulp and/or shred) biodegradable wastes (paper, cardboard, food) and non-biodegradable wastes (metal and glass) prior to discharge, thereby eliminating floating debris.

Store and Retrograde Alternative

This alternative consists of storage of all solid waste on board while operating in special areas. The stored material is held until it can be off-loaded for land disposal. Given the amount of waste generated and the limited on-board storage space available, it would be necessary to process the waste on the generating ship to reduce volume or encapsulate food-contaminated waste for odor control and sanitation purposes.

On-Board Destruction Alternative

On-board destruction presents a range of technological solutions for consideration, some of which are not presently mature. Currently available options are in the form of incineration, and would combine the shredding and combustion of ship cardboard, paper, metal, and glass. Under this alternative, paper and cardboard would be incinerated. Metal and glass wastes would be shredded prior to combustion, which would reduce the volume of the materials to be burned, but presently available methods of combustion would not further reduce the quantity of these materials. These materials, along with the ash and slag generated from

combustion of combustible materials would require storage aboard ship for disposal on shore or disposal at sea.

Alternatives Analysis

Analysis of the various waste management alternatives in the light of the nine criteria led the Navy to reach the following conclusions. The no action alternative, (continuation of existing solid waste management practices), while the least expensive alternative, would not allow the Navy to comply with MARPOL and APPS, as amended by MPPRCA and DAA 94. Moreover, the no action alternative does not improve solid waste management for special areas.

The storage and retrograde alternative would adversely affect the quality of life of the ship's crew. Living and recreational space is the only space in existing ships that could be converted into waste storage areas without eliminating combat essential equipment. The cost of this alternative would be significant, ranging from \$3.5 million for an auxiliary ship to over \$13 million for an aircraft carrier. The cost of equipment and its installation; the requirement for significantly more shipboard storage space compared to other alternatives under consideration; the need for pier side off-loading and storage facilities; the impact on support ships, including costs to modify existing ships to handle wastes; and the increased time for underway replenishment, with increased risk to ships, helicopters and crew all mitigate against this alternative. Because of these factors, the storage and retrograde alternative was rejected for the larger Navy fleet units.

The on-board destruction or incineration alternative was also rejected. While this alternative would allow APPS compliance, it is the most expensive alternative in terms of space requirements and cost. Costs for the least expensive incinerator would range from \$2.6 million per ship for a cruiser to over \$29 million for an aircraft carrier. Retrofitting the Navy fleet would also disrupt a large amount of space on every ship and cause severe and unacceptable impact on the ships primary mission functions. This alternative includes the following costly requirements: trained operating staff, skilled maintenance staff, space for incineration equipment and support systems aboard ship, and storage space for ash/metal/glass residue to be retrograded. Presently available equipment also presents concerns for fire control.

Environmentally Preferred Alternative

Council on Environmental Quality regulations (40 CFR 1505.2), require the identification of the "environmentally preferred alternative" for major federal actions. None of the alternatives considered can be clearly identified as the "environmentally preferred alternative." The process and discharge and no action alternatives would result in the discharge of solid waste into the oceans of the world, while the destroy on board (incineration) alternative could result in impacts to air, surface waters, and land (due to ash disposal ashore). The store and retrograde alternative would affect land resources or the air as the waste would be disposed of in landfills or incinerated in land-based facilities. The process and discharge alternative is preferred over the other alternatives for the human shipboard environment, as it reduces possible odors, crowding and elimination of the ship's crew spaces. The processing of solid wastes prior to ocean discharge eliminates floating debris, which is a hazard to marine life, as well as being aesthetically undesirable.

Proposed Action

The preferred alternative (proposed action) for shipboard solid waste management for surface ships is a combination of the process and discharge alternative and the storage and retrograde alternative. Under the preferred alternative, the Navy will install pulpers and shredders on all vessels the size of frigates or larger (approximately 200 ships). These include: Frigates, destroyers, cruisers, amphibious helicopter assault ships, aircraft carriers, fleet oilers and supply ships, amphibious landing transport and docking ships; and fleet command and control ships.

The Navy will retain and retrograde waste on smaller ships and patrol craft (approximately 55 ships) when operating within MARPOL special areas. These smaller ships include: Mine countermeasure and mine hunting ships; rescue, salvage and towing ships; and coastal patrol boats, and landing craft that have a limited range and mission duration.

The installation of the pulpers and shredders will have little effect on crew, due to the small footprint and ease of operation. Minor ship alternations will be necessary on Navy vessels and no health and safety impacts are anticipated. With respect to crew morale, this alternative is considered the best among alternatives studied because odor impacts from storing food-contaminated wastes would be

substantially reduced or eliminated, prompt removal of all solid wastes would make the storage of wastes in inappropriate spaces unnecessary, personal crew space would not be affected on any class of Navy ship, and only minimal impacts to crew shared space will occur.

This alternative will enhance mission readiness for Navy ships because waste disposal can proceed during operations, including flight operations. Flight decks, hangars, and other operational space will not be cluttered with the temporary storage of solid waste. This would also enhance safety aboard ship, as access to critical equipment would not be impeded and ship's personnel would not have to repeatedly move containers of garbage, a difficult operation, especially during rainy weather and/or rough seas. The cost impacts of this alternative are significantly lower, at approximately \$340 million for the existing Navy surface fleet, than any other action alternative investigated.

Food waste will continue to be ground up and discharged at sea while paper and cardboard will be processed by a pulper with discharge from the pulper occurring at least three nautical miles from shore. A shredder will be used to process metal and glass waste. The processed metal and glass will be placed in burlap bags and discharged into the sea. This discharge will occur at least 12 nautical miles from shore.

Environmental Impacts

The decision to implement the process and discharge alternative will result in most Navy ships processing (i.e., pulp and/or shred) wastes including paper, cardboard, metal, glass and food waste and discharging the products of the processing. The effects of the process and discharge alternative on the oceans of the world and especially MARPOL special areas were assessed by the Navy in consultation with a number of experts and studies. The assessment of impacts focused on the processes that are most important to determine the fate and effect of the two waste streams and compared these to the range of receiving environment conditions likely to be affected by the discharges.

The Navy considered the potential direct adverse effects of waste disposal of pulped paper and cardboard on the ocean environment to include impacts to water column and benthic organisms, growth rate, reproduction and feeding inhibition, oxygen depletion, and beach litter. The potential adverse effects of waste disposal of the shredded metal and glass (discharged in burlap bags)

considered were impacts to benthic organisms' smothering, ingestion and oxygen uptake, and washing ashore as beach litter. The implementation of the process and discharge alternative will have no direct adverse impacts ashore.

Paper and Cardboard

The pulped paper/cardboard waste stream will consist primarily of white paper and cardboard mixed with sea water. The material is mainly composed of organic carbon as cellulose, with very little nitrogen or phosphorus. Degradation rates for the pulped paper/cardboard could vary, depending on the water temperature, from approximately 0.01 percent to 0.6 percent per day. Analysis of the material indicates that it does not contain significant amounts of toxic chemicals. The rate of discharge of the pulped paper/cardboard waste will be approximately 100 to 3,200 kilograms (220 to 7,040 lbs) per ship per day depending on vessel size.

The fate analysis for the pulped paper and cardboard waste stream considered both water column and sea floor processes under a range of conditions representative of special areas as well as the world's ocean environments. The most critical factor in the fate analysis is the wake dilution rate that occurs in the first 15 to 20 minutes after discharge of the pulped waste stream. Numerical modeling results for both the wake and ambient mixing provided estimates of the lowest dilution of the waste stream to be 1:60,000 (a 1:60,000 dilution rate means, for example, one gallon of pulped paper/cardboard would be diluted with 60,000 gallons of sea water) for an aircraft carrier operating at ten knots. The dilution factor greatly exceeds all other background factors, such as currents and wind mixing, that might also contribute to dilution of the material.

Wake dilution is independent of discharge location, (i.e., the dilution rate would be the same in all special areas and the world's oceans). Also independent of discharge location is the settlement rate of the majority of the material due to the fact that the specific gravity (weight) of the average-sized particle would be so much greater than that encountered in ocean water. About 95 percent of the material discharged would be deposited on the sea floor.

A series of bioassay were conducted by the Navy for a wide range of organisms from bacteria to small fish to determine whether the pulped paper/cardboard mixture would be toxic to water column and/or bottom dwelling organisms and if so, at what concentration and duration. Test results showed no biological effects in any

organisms tested at concentration levels expected in the water column with wake dilution. Further, no biological effects were observed in two benthic organisms tested at concentration levels that would be expected in the sediments after receiving the pulped paper/cardboard discharge from 1000 ship discharges over the same location.

The Navy investigated potential effects of pulped paper/cardboard discharge on coral reefs and other similar benthic filter-feeding organisms and sea grasses found in the wider Caribbean, the Mediterranean, and Red Seas, and the Gulf region. Discharges of pulped paper/cardboard will introduce additional suspended material into the water column and increase sedimentation rates. Possible effects of concern to commenters included reduction in light levels due to increased suspended particle loading, the potential for smothering and interference with filter feeding/respiration, and direct toxicity to coral polyps due to contaminants associated with paper particulate.

None of the laboratory tests or bioassay showed significant toxic effects with the pulped paper/cardboard at the concentrations anticipated to occur in the individual ships' wakes. In addition, detailed chemical analysis of the pulped waste stream indicates that it is composed nearly all of non-toxic organic materials. Direct tests on sardines and two zooplankton species representative of the Black, North, an Baltic Seas, and Antarctica revealed no effects from the anticipated exposure levels from pulped paper/cardboard discharges.

Metal and Glass

After shredding, the metal and glass fragments will be bagged in biodegradable burlap bags and manually discharged over the side of the ship. The number of bags discharged overtime and the distribution of discharge period(s) throughout the day will vary from ship to ship. The primary components of the shredded metal and glass waste stream would be tin-coated steel cans (71 percent by weight) and glass (13 percent by weight). The elemental constituents of this waste material are similar to those occurring naturally in marine environments. Of these, only iron would be significantly enhanced in the waste stream relative to concentrations found in typical marine environments. It is expected that the iron and tin in these metal cans would completely corrode in 2.5 to 10 years. The burlap bags would degrade over a period of months. The rate of degradation of the shredded glass is slow, with most of the material being

incorporated into the sea floor rather than dissolving in the water column.

The analysis of the fate and effects of shredded metal and glass addressed both water column and sea floor processes. Based on tests, biological effects expected only within the bag or near the bag surface. The discharge of shredded metal/glass will produce little opportunity for immediate dispersion of the material, since the metal/glass will be contained in burlap bags that will not trap air. During the time the bag is moving through the water column, organisms in the water column will not be sufficiently exposed to sustain an effect.

Since the shredded waste will reach the bottom rapidly, most of the processes that would influence the fate and effects of the shredded metal/glass waste would occur at or near the sediment/water interface. Once deposited on the bottom, any material that would cause effects would be quickly diluted by the surrounding waters and have no significant impacts on organisms on the sea floor.

The Navy also considered the effects of the discharge of the bagged shredded metal/glass on coral reefs and other similar sensitive organisms. Issues of concern included the potential for a bag landing on a coral reef and the smothering of the reef beneath the bags. With regard to the potential for a bag landing on a coral reef, it is noted that, to avoid navigational hazards, Navy ships avoid operating in shallow water where most coral reefs occur. Additionally, because of discharge restrictions, the actual discharge of bagged metal/glass would occur outside the 12 nm limit. Transport of the bags toward shore would be minimal. Studies have shown that a bag discharged at the 12 nm limit would reach the sea floor only 0.11 nm closer to shore than the drop point. Impacts to coral reefs and other sensitive habitats would only occur where the discharge occurred directly over or within very close proximity to a reef.

Effects would not be found beyond the immediate area of the bag itself. Where bags of shredded metal/glass settle on a coral reef or sea grass community, the scale of the impact would be confined to the frontal area of the bag deposited (approximately 2,000 sq.cm. or 310 sq.in.). Consequently, only the coral underlying the bag would be affected by the settlement of the bag.

Endangered Species

The Navy also investigated the potential exposure and effects of solid waste discharges on threatened and endangered species found in all the

world's oceans, with emphasis on those found within the MARPOL special areas. Both waste discharges were subjected to toxicity testing on a wide range of organisms. None of the organisms showed effects of the pulped paper/cardboard at the concentrations expected to occur in the environment. As for the potential for ingestion of the pulped paper/cardboard by threatened and endangered species, studies indicated that the pulped waste stream is not considered an ingestion problem because of the low concentrations found in the discharge wake and the size of the species of concern. For metal and glass discharges, species evaluated typically would not be vulnerable because there would be no overlap between the species' habitat and the locations at which the proposed discharges would occur, or the species feeding habits are not compatible with ingesting large material from the sea floor.

Because the bags would sink very rapidly, species that feed on the surface or in the water column would not have the opportunity to ingest the material. Another consideration is that the discharges would generally occur in waters deeper than 200 meters (656 feet) and most of the species evaluated feed in near shore or coastal shallow water. Thus the likelihood of shredder bags landing in typical bottom feeding habitats is very small. Finally, the likelihood of encountering a bag on the sea floor would be minimal, considering the low percentage of sea floor that would be covered by bags, even with cumulative discharges.

Based on the analyses conducted, the Navy has concluded that the proposed discharges would have a very low potential to cause any effect on a protected species, or modification of a critical habitat.

Cumulative Impacts

Cumulative environmental impacts were considered through the analysis of multi-ship operational scenarios. Navy ships often operate in groups and these groups may operate in MARPOL special areas. The results of the analysis for the pulped waste stream indicated that pulped paper/cardboard discharges from all Navy ships operating within special areas would be insignificant.

For the shredded metal/glass waste stream, the estimated annual mass loading for the special areas from current Navy shipboard operations would range from 5.8 metric tons in the Baltic Sea to 895 metric tons in the Mediterranean.

Mitigation

Several policy, operational, and design measures will avoid or minimize impacts to the environment: (1) The Navy will discharge pulped paper and cardboard only when a ship is making way, thereby ensuring thorough mixing and dispersion of the discharge in the ship's wake; (2) Packaging of the shredded metal/glass prior to disposal will prevent scattering of metal and glass fragments in the water column that might be accidentally ingested by marine fish and animals; (3) Selection of a packaging material for shredded metal and glass that is durable (resistant to tearing), sinkable (does not contain air pockets), and biodegradable will ensure that the bag sinks rapidly to the sea floor and allows natural deterioration and assimilation of the materials; and (4) Pulped paper and cardboard will be discharged at distances greater than 3 nm from shore and shredded metal and glass will be discharged at distances greater than 12 nm from shore.

Comments Received on the Final EIS

Two federal agencies and one special interest group provided comments on the Final EIS. One federal agency (Department of the Army) comments were limited to corrections in metric conversions noted in the Final EIS. Corrections, where appropriate, have been made.

The U.S. Environmental Protection Agency (EPA) requested that the Navy continue its current practice of zero discharge of solid wastes in the Antarctic region and the Baltic Sea. Additionally, EPA commented on the Final EIS discussion on naval operations noting that the Antarctic was not listed as an "in effect" special area in this discussion and also suggested clarification on the waste discharge distance (from land) requirement. EPA also suggested that the Navy's preferred alternative may not be consistent with the "Antarctic Science, Tourism and Conservation Act" (ASTCA) of 1996 or Annex IV to the Protocol on Environmental Protection to the Antarctic Treaty (PEPAT). Finally, the EPA requested the Navy to reconsider the previous EPA comments concerning waste discharge monitoring, discharge restrictions near sensitive ecosystems, continue the search for a waste management system that would allow full compliance with MARPOL, and develop an environmentally sound ship for the 21st century.

In response to these EPA comments, the Navy notes that it is currently in compliance with MARPOL in the "in-effect" special areas (Antarctic region

and the Baltic and North Seas). This "compliance" is due to the very limited nature of U.S. Navy operations in those areas. However, this "compliance" also results in significant impacts to the shipboard environment of Navy vessels. Chapter 4.1.1 of the EIS documents the impacts of continuing current shipboard waste management practices on the health, welfare, and morale of Navy sailors and on the mission readiness, safety, and logistical operations of Navy vessels. These effects on sailors and ships operating in any ocean of the world are unacceptable, and the preferred alternative has been developed in response to these and other related concerns. Also, the nature of U.S. Navy operations may change in the existing in-effect special areas with changing geo-political conditions, and the Navy must be prepared to respond quickly and efficiently to such world events.

The discussion in the Final EIS on naval operations (Sec. 2.1.1) did not include the Antarctic region because it is not an area where naval operations are routinely conducted. Also the comment concerning the 25 mile discharge distance restriction (Sec. 4.1) applies to the no action alternative or what is currently practiced today by Navy vessels. Under the proposed action, in the world's oceans, including special areas, pulped paper and cardboard would be discharged at distances greater than 3 nm from shore and shredded metal and glass would be discharged in burlap bags at distances greater than 12 nm from shore.

The navy has reviewed the Act and Treaty cited by EPA. Under the ASTCS, " * * * discharges of any wastes in Antarctica would be prohibited except as otherwise authorized by the Act to Prevent Pollution from Ships (APPS)." Congress has modified APPS to permit the discharge of solid wastes in accordance with the proposed action. With regard to Annex IV of PEPAT, Article 11 of this Treaty indicates that the Annex does not apply to warships or naval auxiliaries. Notwithstanding these exemptions, the Navy is keenly aware of the delicate and sensitive environment of the Antarctic region. Also, routine naval operations are infrequent in this region due to its remote location.

With respect to long-term monitoring of waste discharge plumes, the Navy has reconsidered EPA's comments on the Draft EIS and still feels that such monitoring is both unnecessary and impractical for the reasons stated in the Final EIS (p. 10-6 response to comments).

With respect to discharges near sensitive ecosystems, the Navy will not discharge pulped paper/cardboard within 3 nm of land nor discharge shredded metals/glass within 12 nm of land. This naval operational restriction, combined with the fact that smaller, coastal vessels will store and retrograde waste (the process and discharge alternative applies to the larger oceangoing vessels the size of frigates and above) should offer ample protection to sensitive ecosystems.

With respect to future waste management systems, the Navy has established the goal of having environmentally sound ships of the 21st century that will be able to minimize waste generation and treat or destroy unavoidable waste on board. The Navy is investigating integrated waste processing systems that would collect and treat or destroy all shipboard wastes, both liquid and solid. Although the Navy is pursuing this research and development (R&D), it foresees no advanced waste destruction technology being ready for shipboard use in the next decade. In the interim, the Navy will continue to monitor and evaluate technology developments and initiate R&D programs where candidate technologies look promising for future ships.

The special interest group comments, from a representative of a shipboard waste (compaction) processing machine company, provided corrected information on the output characteristics of their processed wastes and the use of such equipment on ships of other world navies.

The Navy appreciates this revised information. However, an analysis, based on this new information, did not alter the findings of the Final EIS.

Conclusion

After comprehensive evaluation of the proposed impacts and review of all comments, the Navy has concluded that its preferred alternative provides for protection of the environment, preserves the Navy's operational flexibility and the quality of life of shipboard personnel and can be implemented at a reasonable cost.

Accordingly, the Navy will install pulpers and shredders on all vessels the size of frigates and larger, and use the equipment worldwide, not just in MARPOL special areas. For the Navy's smaller, coastal vessels that have mission durations of only a few days, the Navy will implement a store and retrograde policy for solid waste management (except food wastes) for

these ships will operating in MARPOL special areas.

Questions regarding the Final EIS prepared for this action may be directed to Mr. Robert Ostermueller, Head, Environmental Planning, Northern Division, Naval Facilities Engineering Command, 10 Industrial Highway, Lester, PA 19113, telephone (610) 595-0759, fax (610) 595-0778.

Dated: January 31, 1997.

Elsie L. Munsell,

*Deputy Assistant Secretary of the Navy
(Environment & Safety).*

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Notice of Public Hearing for the Supplemental Draft Environmental Impact Statement for Construction and Operation of a Relocatable Over the Horizon Radar, Puerto Rico

SUMMARY: Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969, as implemented by the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and the Commonwealth of Puerto Rico Public Law Number Nine, Section 4(c), the Department of the Navy, has prepared a Supplemental Draft Environmental Impact Statement (SDEIS) for the construction and operation of a Relocatable Over the Horizon Radar (ROTHR) system in Puerto Rico.

The ROTHR, a wide area surveillance high frequency (HF) radar system, is proposed as an addition to the national and local counter-narcotic strategy. The ROTHR provides early detection of illegal drug activity and would complement existing ROTHR systems in Virginia and Texas by providing coverage of the northern portion of South America.

A Draft Environmental Impact Statement (DEIS) addressing the impacts of the proposed ROTHR system was released to the public in July 1995. Public comments received on the DEIS included concerns over the loss of 100 acres of farmland at a candidate receiver site in Lajas Valley. Based on these concerns, the Department of the Navy re-evaluated potential sites for the ROTHR system, and determined that a shortened receiver array could be installed completely on federal property at Fort Allen, a US Army installation located about 4 miles south of the town of Juana Diaz and 10 miles east of Ponce. The SDEIA includes information previously presented in the DEIS, as well as new information on anticipated impacts if the receiver were installed at

Fort Allen. The document has also been expanded to address other issues raised during the DEIS public review process.

The preferred receiver site is now identified as Fort Allen. The construction area would consist of a 100 acre site. The required buffer zone would be completely contained within the Fort boundary. The preferred transmitter site continues to be the Playa Grande site located on Navy property on the Southwestern coast of Vieques Island.

The Navy has forwarded copies of the document to various federal and Commonwealth agencies, local municipalities and individuals. Additionally, the SDEIS is available for review at the following locations: (1) Town Hall, Municipality of Vieques Island; (2) Public Library, Municipality of Lajas; (3) Mayor's Office, Lajas; (4) Environmental Quality Board, Hato Rey; (5) Environmental Quality Board, Regional Office at the Commercial Center, Ponce; (6) Environmental Quality Board, Mayaguez Regional Office, Mayaguez; (7) City Hall, Municipality of Juana Diaz, Puerto Rico; (8) Public Library, City of Juana Diaz, Puerto Rico; (9) City Hall, Municipality of Ponce; (10) City Hall, Municipality of Santa Isabel; (11) City Hall, Municipality of Salinas; (12) Carnegie Public Library, San Juan.

ADDRESSES: The Department of the Navy will be participating in a public hearing held by the Puerto Rico Environmental Quality Board on March 15, 1997 at 10:00 AM at Calle Braschi # 50 in Juana Diaz, Puerto Rico. All comments received at the public hearing, as well as written comments will be considered in a Final Environmental Impact Statement prepared by the Navy. All written comments must be postmarked no later than March 31, 1997 to become part of the official record. Written comments should be mailed to the address noted below.

FOR FURTHER INFORMATION CONTACT: Additional information concerning this notice may be obtained by contacting Ms. Linda Blount, (Code 2032LB), Atlantic Division, Naval Facilities Engineering Command, 1510 Gilbert Street, Norfolk, VA 23511-2699, telephone (757) 322-4892.

Dated: February 11, 1997.

D.E. Koenig,

LCDR, JAGC, USN, Federal Register Liaison Officer.

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