DEFENSE LOGISTICS AGENCY

ENVIRONMENTAL ASSESSMENT FOR TRANSPORT OF POLYCHLORINATED BIPHENYL-CONTAINING ITEMS FROM JAPAN AND WAKE ISLAND TO THE UNITED STATES

November 2002

EXECUTIVE SUMMARY

United States (U.S.) Military Services at bases in Japan and on Wake Island have an urgent need to remove obsolete electrical equipment that contains or may have contained polychlorinated biphenyls (PCB). This environmental assessment (EA) addresses the proposed transport of this equipment and associated items to the U.S. for treatment and disposal at Environmental Protection Agency (EPA) permitted facilities. This equipment is used for the benefit of the U.S. Military and is removed from service when it reaches the end of its useful life. An estimated 2.8 million pounds of material including packaging is currently in storage at U.S. installations in Japan and Wake Island, and an estimated 4.3 million pounds of electrical equipment still is in use and will be removed from service during the next several years. Once taken out of service, the equipment will be packaged in a safe manner and placed into storage, but will need to be transported because of lack of PCB storage capacity. In Japan, there are no government-permitted PCB disposal facilities available to the U.S Military; however, there are more than 20 EPA-permitted facilities in the U.S.

It is notable that approximately 96 percent (by weight) of the material addressed in this EA is not regulated for disposal as PCB items by the U.S. EPA because the PCB concentrations are below the EPA threshold of 50 parts per million (ppm), (see 40 CFR 761.20 (c) (4)). The Defense Logistics Agency (DLA) has included this equipment to fully inform the public and to ensure applicable environmental factors were considered.

This EA includes equipment manufactured both in the U.S and overseas. DLA does not contemplate transporting foreign manufactured items to the U.S. until EPA grants permission. The Toxic Substances Control Act does not permit the importation of foreign manufactured PCB at any concentration.

This EA evaluated three alternatives:

- Alternative A: air transport to the U.S.
- Alternative B: water transport to the U.S.
- Alternative C: no action.

This EA assesses the impact of the above alternatives on the environment in accordance with the Council on Environmental Quality Regulations and with DLA Regulation 1000.22, “Environmental Considerations of DLA Actions in the United States.” This EA also satisfies the requirements of Executive Order 12114, “Environmental Effects Abroad of Major Federal Actions;” DoD Directive 6050.7, “Environmental Effects Abroad of Major Department of Defense Actions;” the Japan Environmental Governing Standards; and DLA Regulation 1000.29, “Environmental Considerations in DLA Actions Abroad.” The sections of this document addressing the effect of this action outside the U.S. are intended to address the requirements of Executive Order 12114 and other associated documents, while the sections of this document addressing the effect of this action within the U.S. are intended to address the requirements of the National Environmental Policy Act, Council on Environmental Quality regulations, and other associated documents.

The environmental issues considered in this EA are as follows:

- Air Quality
- Water Quality
- Noise
- Natural Resources
- Safe Handling of Hazardous Materials & Waste
- Transportation
- Cultural & Archaeological Resources
- Environmental Justice

Neither of the proposed transportation alternatives would significantly impact the environment or public safety. The calculated accident frequency for both alternatives are very similar. The foreseeable consequences of a transportation accident are considered minimal. Both transportation alternatives are analyzed from a risk standpoint and the data shows that there is a low probability of an accident and therefore a release of PCBs to the environment.

Shipment by water is the preferred transportation mode. Air shipment may be used based on operational considerations such as cost and availability of military aircraft vs. commercial ships. The no action alternative is considered the least practical option due to a number of factors, including specific storage requirements, space limitations, container deterioration, and other issues associated with long-term storage.

The EA concludes that alternatives A and B are not major Federal actions that significantly affect the quality of the human environment and do not require the preparation of an environmental impact statement. Therefore, a Finding of No Significant Impact can be prepared.

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1.0—PURPOSE OF AND NEED FOR THE PROPOSED ACTION

Department of Defense (DoD) activities at United States (U.S.) Military bases on Japan and Wake Island have an urgent requirement to remove obsolete electrical equipment containing polychlorinated biphenyls (PCB) from storage. This equipment is used for the benefit of the U.S. Military Services and is removed from service when it reaches the end of its useful life.

The Defense Logistics Agency (DLA) proposes to package and transport this property to the U.S. by either sea or air and then proceed within the U.S. via roadway to an Environmental Protection Agency (EPA) approved facility. The shipments will take place over several years, as used equipment is taken out of service and is turned in to the Defense Reutilization and Marketing Offices (DRMO) in Japan. Approximately 2.8 million pounds of material including packaging is currently in storage at U.S. installations in Japan and Wake Island, and an estimated 4.3 million pounds of electrical equipment still is in use and will be removed from service during the next several years. Approximately 96 percent (by weight) of the material addressed in this Environmental Assessment (EA) is not regulated for disposal as PCB items by the EPA because the PCB concentrations are below the EPA regulatory threshold of 50 parts per million (ppm). However, this EA includes equipment that is not regulated as PCB for disposal in order to inform the public and to ensure that all applicable environmental factors are considered.

Although the majority of the PCB items are less than 50 ppm, DLA will manage the low concentration PCB items (less than 50 ppm) in the same manner as items with concentrations greater than 50 ppm. A Certificate of Disposal will thereby be obtained for all of the items processed. DLA decided to take these extra steps to provide additional assurance that these materials are safely removed from Japan and Wake Island and to further reduce the possibility of releasing even low concentration PCB-containing material into the environment.

The Toxic Substances Control Act (TSCA) prohibits the import of foreign manufactured PCB without regard to concentration. As a result, the material on Wake Island cannot be transported to the U.S. unless the TSCA restriction is lifted. This EA addresses the transportation of foreign manufactured PCBs from Wake Island and Japan in the event that the import restriction is lifted

Table 1-1 provides an estimate of PCB items currently in storage and still in use on U.S. Military installations at Wake Island and in Japan.

Table 1-1
Estimate of all PCB Items in Storage and in Use

Concentration, ppm	<50		50 to <500		=>500	
Total Quantity, lbs	6,834,000		171,000		89,000	
Place of Manufacture	U.S.	Foreign	U.S.	Foreign	U.S.	Foreign
Quantity, lbs	2,390,000	4,444,000	71,000	100,000	37,000	52,000

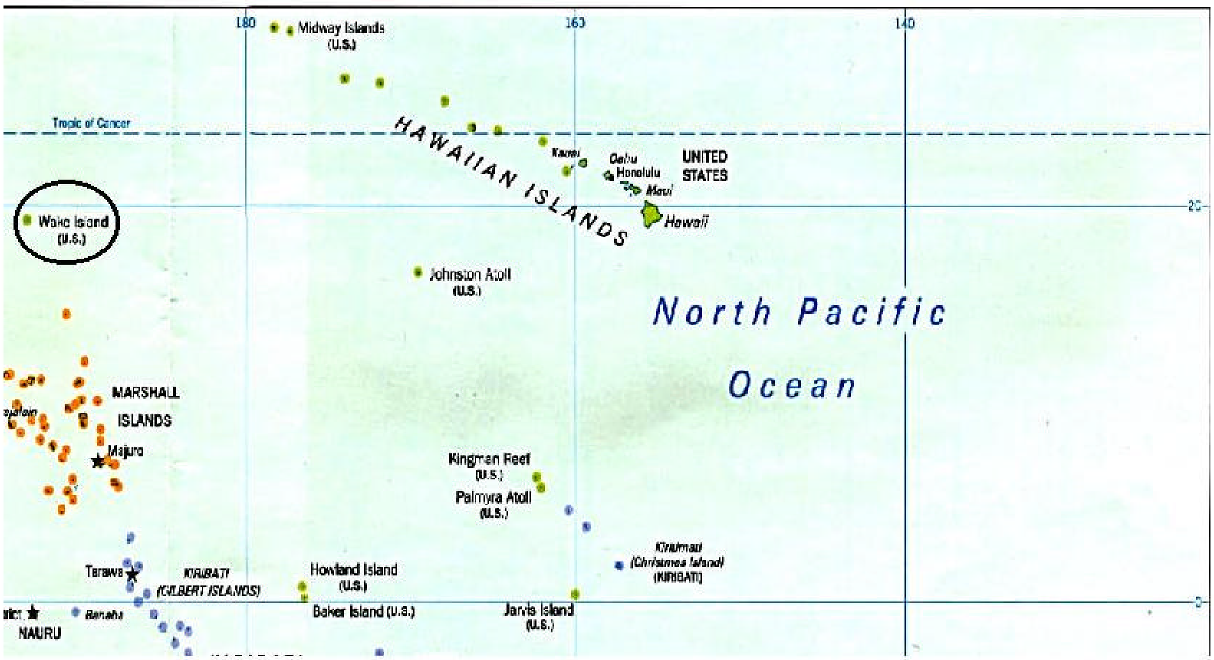

Figure 1-1

Map of Wake Island

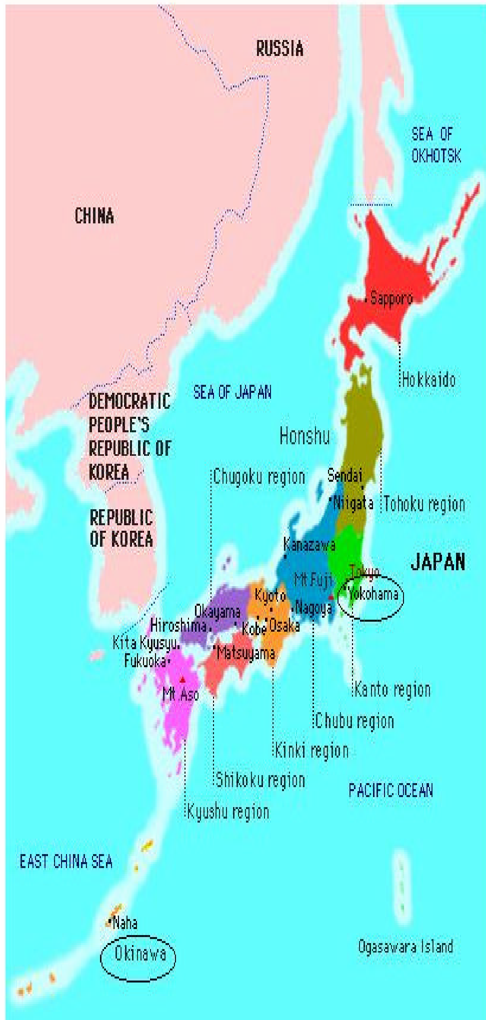

Figure 1-2
Map of Japan

DLA is considering transporting the PCB items from Japan to the United States for the following reasons.

- Currently, existing PCB storage facilities at the Defense Reutilization and Marketing Offices (DRMO) in Japan are full. PCB-containing equipment requires secure storage, along with provisions for spill containment. Equipment being taken out of service must be stored in secure storage facilities on U.S. Military installations. These facilities are at a premium in Japan, and the storage of PCB items greatly reduces the space available for material readiness purposes. The problem of lack of available storage will only be exacerbated as more equipment reaches the end of its useful life and is taken out of service in the coming years.

- The Japanese public is concerned about PCBs. Storage of PCBs at the U.S. Military facilities in Japan is contrary to the Japanese Government's wishes, strains relations at the national government level, and causes tension between U.S. installations and local Japanese communities. The long-term presence of PCB stored by the U.S. Military in Japan has attracted adverse attention from elected officials, the press, environmental groups, and local citizenry.[(1)]

- Storing PCB items requires the use of trained personnel to monitor and inspect the condition of the property. This is an added burden on military units.

- There is also the potential for spills or release of material currently in storage due to material handling errors, accidents, severe weather, earthquakes, and container deterioration.

As a result of the above considerations, a solution for the problems of continued storage in Japan is required. DLA's objectives in this effort are to relieve the overcrowding of DoD storage facilities resulting from continued PCB storage and help resolve the other problems cited above.

Approximately 220,000 pounds of equipment is stored on Wake Island. All of the Wake Island equipment contains less than 50 ppm PCB and originated from the U.S. Military at bases in Japan and is of foreign manufacture. As noted earlier in this section, TSCA prohibits the import of foreign manufactured PCB without regard to concentration. Therefore, the material on Wake Island will not be transported to the U.S. unless the restriction is lifted by EPA.

The following alternatives other than transport to the U.S. were reviewed but are considered impractical and eliminated from detailed study:

- Transport to in-country disposal facilities is not an available alternative. There are no government-permitted PCB disposal facilities available to DoD in Japan. Recent environmental legislation in Japan has opened the door to in-country PCB treatment in the future; however, treatment sites have not been selected. Currently, PCB equipment taken out of service must be placed in storage.

- Construction of an on-site treatment facility in Japan or on Wake Island is not considered a practical alternative. DLA examined technologies that may be suitable for the treatment of the diverse kinds of PCB items in storage. The treatment technologies are very costly, logistically problematic, and are likely to require a lengthy permitting process.

- Construction or leasing of additional storage space was not considered a practical alternative based on the same concerns outlined in section 2.3.3, Alternative C, No Action.

- Third country disposal is not available. PCBs fall under the 1989 Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal. Over a period of several years, DLA and its primary disposal contractor made extensive contacts with Japanese officials and with disposal facilities in numerous locations outside the U.S. in an effort to identify firms that could dispose of the waste while satisfying Basel requirements. DoD and the Department of State also attempted to coordinate third country PCB disposal without success.

Based on this EA, DLA will decide whether to transport the PCB equipment to the U.S. for disposal or continue storing it in Japan and Wake Island. This EA is not intended to address every conceivable environmental issue or resource involved in the PCB disposal process in the U.S. The treatment and disposal process in the U.S. is closely regulated by EPA. Contractors disposing of DoD-owned PCBs in the U.S. use properly licensed transportation firms and EPA-permitted treatment and disposal facilities.

This EA assesses the impact of the proposed alternatives on the environment in accordance with the Council on Environmental Quality Regulations and with DLA Regulation 1000.22, “Environmental Considerations of DLA Actions in the United States”. This EA also satisfies the requirements of Executive Order 12114, “Environmental Effects Abroad of Major Federal Actions;” DoD Directive 6050.7, “Environmental Effects Abroad of Major Department of Defense Actions;” the Japan Environmental Governing Standards; and DLA Regulation 1000.29, “Environmental Considerations in DLA Actions Abroad.” The sections of this document addressing the effect of this action outside the U.S. are intended to address the requirements of Executive Order 12114 and other associated documents, while the sections of this document addressing the effect of this action within the U.S. are intended to address the requirements of the National Environmental Policy Act, Council on Environmental Quality regulations, and other associated documents.

2.0 PROPOSED ACTION INCLUDING THE ALTERNATIVES CONSIDERED

2.1 Introduction

This section describes the proposed action and summarizes the environmental consequences. The three alternatives considered are air transport to the U.S., water transport to the U.S., and no action.

2.2 Proposed Action

The proposed action is to transport the material from Japan and Wake Island to the U.S. The transport activities could begin in the year 2002. Removal actions will continue until all PCB equipment (domestic and foreign) is taken out of service, and provided that all permissions are in place, or until in-country disposal becomes available.

The PCB items will be packaged, marked, labeled, and shipped with proper documentation in conformance to the applicable modal and inter-modal (sea, air, or land) national and/or international regulations. Packaging will be in accordance with the United Nations (UN) Performance Oriented Packaging standards. Activities will also comply with modal or inter-modal regulatory requirements outlined in the International Maritime Dangerous Goods (IMDG) Code, International Maritime Organization, International Civil Aviation Organization Technical Instructions, the International Air Transport Association Dangerous Goods Code, United Nations Recommendations on the Transport of Dangerous Goods Code, and the U.S. Code of Federal Regulations, 49 CFR 100-199. Proper handling and shipping includes blocking, bracing, over packing, and inclusion of spill containment devices as required by applicable transportation regulations. The packaged items at the three overseas locations will be loaded onto trucks, transported to a port of embarkation (POE), and loaded onto the appropriate vessel for shipment by sea or air.

The proposed plan to transport the PCB items includes four phases:

- Phase 1 is the initial transport of U.S.-manufactured PCB electrical equipment currently in storage.

- Phase 2 is the transport of foreign manufactured electrical equipment currently stored at Wake Island. This equipment was originally used by the Military Services in Japan. Transport would begin upon EPA approval to import the property into the U.S.

- Phase 3 is the transport of foreign-manufactured electrical equipment and items from storage in Japan. Movement will occur only after EPA approves the importation of the property into the U.S.

- Phase 4 is to continue with the transport of PCB items as they are removed from service and accumulated at DRMOs in Japan.

The priority for transporting the PCB items will be based on transportation approvals, storage impacts, as well as legal and political considerations. It is anticipated that transport of the U.S.-manufactured PCBs from Japan will occur before the foreign-manufactured PCBs. Foreign-manufactured PCBs cannot be imported into the U.S. unless and until EPA grants DLA's pending request for an exemption under the TSCA. Priorities will be shifted as needed to transport foreign-manufactured PCBs once a TSCA exemption is granted.

Following arrival in the U.S., the material will be removed from the sea or air vessel, then loaded onto U.S. Department of Transportation (DOT) and EPA-permitted ground carriers and transported to an EPA permitted facility for processing. Rail transport within the U.S. was considered but not reviewed in detail due to scheduling issues with rail transport and the lack of control over rail shipments between the arrival port/airfield and the initial processing facility. The material will be transported, handled, treated, and disposed of in conformance with DOT regulations and the EPA regulations in 40 CFR Part 761.

2.3 Alternatives Considered

2.3.1 Alternative A - Transport by Air to the U. S.

Transportation by air may be used based on operational considerations. Air shipment would require additional expenditures of military resources. Specialized personnel and or special equipment that may be needed for each shipment at the points of embarkation and debarkation will be specified in the documentation requesting movement by air (i.e., Special Assignment Airlift Mission requests).

Using Alternative A, the items at the 3 overseas locations will be packed for air shipment on specially designed 463L pallets. The 463L pallet is a cargo handling system that reduces aircraft ground time, loads aircraft more fully, and provides for easier ground handling of cargo. The pallets are 108 inches by 88 inches by 2-¼ inches in size. They weigh 337 pounds and have a total load capacity of 10,000 pounds with a desired load capacity of 7,500 pounds.

Intra-Japanese transport by truck from the U.S. Military site on Sagami to Yokota Air Base (AB) is approximately 20 miles. The 463L pallets would be loaded onto ground carriers and transported to the air base for loading onto cargo planes for shipment. The route from DRMO Sagami to Yokota AB is via Route 16, a high traffic road that includes a tollgate that is easily traveled by trucks. Driving time from the Sagami Depot to Yokota AB is approximately 30-60 minutes depending on traffic volume. Commercial or military trucks will be used to transport the property. Transporters will be required to assure that the trucks meet Japanese requirements for safe transport of hazardous items. There is no significant environmental risk associated with transporting pallets for the 20-mile trip to Yokota AB. The ground shipment of items from Kadena AB, or from other local military installations, to the Kadena air terminal will not result in significant environmental risk.

For purposes of this EA, the U.S. Air Force C-17 cargo plane was selected because of its potential availability, long range, cargo capacity, ability to use short runways, and in-air refueling capability.

The PCB items stored at Wake Island are currently stored in 20 foot SEAVANs and will likely be shipped in these SEAVANs instead of being repackaged onto the 463L pallets. SEAVANs are cargo-type carriers, similar to the cargo hold of a tractor-trailer truck. SEAVANs are typically 20 feet or 40 feet long and approximately 8 feet wide.

The points of origination for the air shipments are proposed to be Yokota AB in Japan, Kadena AB in Okinawa, and Wake Island. For purposes of this EA's transportation risk analysis, Maxwell Air Force Base (AFB), Alabama, is assumed to be the point of termination for air shipments. A representative processing facility was selected for purposes of calculating the accident frequency analysis in this EA. Trans-Cycle Industries (TCI) at Pell City, Alabama, (EPA No. ALD983167891) is the current DLA contractor for processing and disposing of this material until February 2003, by which time a new contract will be competed and awarded. The transportation risk analyses are based on the assumption that the PCB materials would be sent to Pell City. Maxwell AFB is the destination air terminal for calculating air shipment risk because of its proximity to Pell City. In addition, Maxwell AFB has the capability to handle the size and number of planes required. Other military installations in the southeastern U.S., which have the capability to receive cargo flights, could be used in conjunction with or in lieu of Maxwell AFB. In light of the distance of Pell City from potential entry points into the U.S., the transportation analysis in this EA will apply regardless of the final U.S. destination.

As noted in paragraph 2.2, the items will be transported to the U.S. in four phases throughout a period of several years. DLA expects that the U.S.-manufactured items will initially be transported, followed by the foreign-made items. The air transport for all PCB equipment located in Japan and Wake Island requires approximately 176 military C-17 cargo aircraft (5 planes for Wake Island, 55 for Sagami, and 116 for Okinawa). Wake Island shipments will require four planes for the property and one plane for material handling equipment and personnel. Flight times are approximately 14 hours from each of the 3 Pacific sites to Maxwell AFB. The aircraft could refuel at Elmendorf AFB, Alaska, or refuel in midair. For the purposes of this EA, it is assumed that the aircraft will refuel in midair.

Upon arrival at Maxwell AFB, the pallets would be unloaded from the cargo planes and then loaded onto permitted ground carriers for the 142-mile trip to the permitted facility in Pell City. Approximately 351 truck trailers (7 for Wake Island, 112 for Sagami, and 232 for Okinawa) would be required.

2.3.2 Alternative B – Transport to the U.S. by Water

PCB items at the 3 overseas locations would be loaded into 20-foot SEAVANs for shipment by water. Twenty-foot SEAVANs will likely be used due to their abundance in the Asian theater. The SEAVANs would be loaded onto ground carriers and transported to the appropriate POE for loading onto ships for transport to the U.S. The ships will be military contracted commercial ships (or commercial ships on which the military buys cargo space). The size of the shipments will be limited to a quantity that the contractor can orderly process (about 360,000 pounds per week). Therefore, because the shipment size is limited, transportation by water (Alternative B) would require 20 shipments. A shipment of 360,000 pounds requires 12 to 14 SEAVANs (20-

feet long). Each ship has the capability of carrying approximately 4,000 SEAVANs. The total PCB material loaded on each ship uses only about 0.3 percent of the ship's capacity (by volume). The shipment quantities could change should the treatment and disposal contractor's processing capacity increase or if shipping availability so dictates.

Transport of the items from the U.S. Military sites to the nearby ports will be via commercial or military vehicles. The equipment will be packaged for transport prior to being placed into 20-foot SEAVANs. For Okinawa, the SEAVANs will be transported from Kadena AB, or other local military installation, to Naha Port. The route from Kadena AB to Naha Port is approximately 15 miles via Highway 58, a 3-lane roadway that easily accommodates large trucks. Driving time is estimated to be 1-2 hours depending on traffic volume. The route from Sagami to Yokohama Port is approximately 30 miles on a high traffic toll road. Driving time is 60-90 minutes, depending upon traffic volume. Transporters will be required to assure that their trucks meet Japanese requirements for safe transport of hazardous items. The environmental risk associated with transporting the property for the relatively short distances to the ports of Naha and Yokohama is not considered significant.

The POEs will be Yokohama Port for items stored at Sagami, Naha Port for items stored at Okinawa, and an onsite port at Wake Island. The Port of Debarkation (POD) for all marine shipments will be a West Coast port in the U.S. For the purposes of this EA's transportation risk analysis, the POD is assumed to be Port Hueneme, California. Port Hueneme was selected as the POD for the ocean surface shipment risk analysis because it was used for prior shipments. Other military or commercial West Coast ports could also be used in conjunction with or in lieu of Port Hueneme. Military Traffic Management Command does not provide scheduled service to the U.S. East Coast and Gulf Coast ports from the POE ports in Japan. If another POD were to be used, the analysis in this EA would still be applicable.

As noted in the air transport alternative, the items will be transported to the U.S. in phases over several years. The current inventory of U.S.-manufactured items will likely be transferred first, followed by the foreign-made items. Shipments will be scheduled to accommodate the facility's quantity requirements for orderly processing. Twenty water shipments using 20-foot SEAVAN containers (see Appendix A) would be required (1 shipment from Wake Island, 6 from Sagami, and 13 from Okinawa).

The SEAVAN containers will be unloaded from the ships at the POD and loaded onto permitted 40-foot truck trailers for the 2,128-mile trip to the permitted processing facility in Pell City, Alabama. Approximately, 123 truck trailers (7 for Wake Island, 38 for Sagami, and 78 for Okinawa) would be required.

2.3.3 Alternative C – No Action

Under the no action alternative, PCB items would continue to be stored at U.S. Military installations in Wake Island, Okinawa, and Sagami, Japan.

Continued storage in Japan raises the following concerns:

- Installation storage space is at a premium.

- The communities and local government officials are opposed to long-term storage, which continues to cause public concern. Continuing to store PCB equipment in Japan could adversely affect U.S.-Japanese relations. The long-term presence of PCBs on U.S. Military bases in Japan has attracted adverse attention from the Japanese Government, environmental groups, and local citizens.(1)

- Indefinite long-term storage of this material may, in time, lead to degradation of the storage containers and to potential releases. There is also a potential for spills or release of material currently in storage due to material handling errors, accidents, severe weather, earthquakes, and container deterioration.

- Property presently in storage will need to be relocated to accommodate additional PCB items that are taken out of service. Additional PCB containing equipment is expected to be taken out of service at DoD facilities in Japan in the next several years.

The problem of limited storage space and the potential for releases will continue until other solutions are devised. This alternative may not be available indefinitely due to external circumstances beyond the control of DoD.

2.4 Other Alternatives Considered

Treatment and disposal in Japan were considered but are regarded as being impractical. There are no permitted Japanese operators available for treatment and disposal of PCB owned by the U.S. Military. A report by the United Nations Environment Programme lists three companies in Japan offering alternate technologies for processing and treatment of PCBs(2) . Construction of an on-site treatment facility would be expected to raise local objections. If on-site treatment were to be contemplated, the U.S. Government would consult with appropriate Japanese Government officials; however, the U.S. Government would expect difficulties to arise from such consultations.

Disposal of the PCB items on Wake Island is impractical. DLA examined the alternative of transporting and constructing a PCB processing and treatment facility on Wake Island. Treatment on site is logistically problematic and is likely to require a lengthy permitting process. In general, land disposal of PCB residue does not appear to be appropriate on Wake Island due to its small land area and because the entire island is near sea level. In addition, on-island treatment could generate thousands of pounds of residual material (transformers) that would still require disposal off-island. Processing PCBs on-site at a mobile facility may also present added safety risks. Worker accidents, spills, and other incidents would be more difficult to resolve at a remote location. Safety risks increase when constructing and operating a remote facility. Based on the concerns cited above, treatment on Wake Island presents somewhat higher safety and environmental risks than transporting the material to an existing facility in the U.S.

DLA will continue to explore on-site treatment in consultation with the Military Services, as new technologies are developed.

Construction or leasing of additional storage space was not considered a practical alternative based on the same concerns outlined in section 2.3.3, Alternative C, No Action.

Third country disposal is not available. As noted in Section 1, PCBs fall under the 1989 Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal. DLA and its primary disposal contractor made extensive contacts with Japanese officials and with disposal facilities in numerous locations outside the U.S. in an effort to identify firms that could dispose of the waste while satisfying Basel requirements.

2.5 Comparison of Transportation Alternatives

The bulk of items to be transported is electrical equipment such as transformers (drained and not drained), large and small capacitors, electrical light ballasts, voltage regulators, switches, electromagnets, circuit breakers, electrical cable, transformer oils, used oils, contaminated soil, and debris (rags, small parts, and packaging materials). The solid items are less likely to release PCBs to the environment than liquid items. Table 1-1 shows that approximately 96 percent (by weight) of the material addressed in this EA is not regulated for disposal as PCB items by the EPA because it is below the EPA threshold of 50 ppm. The consequences of an accidental spill of the material being transported are shown in Section 3 to be minimal for either transportation alternative.

The accident frequency for each transportation alternative is shown in Section 4 to be similar. The difference between the accident frequencies is small enough to be considered insignificant.

Neither alternative is likely to result in an accidental release of PCB and should an accidental release occur, it is expected to have minimal consequences. Therefore, the accident risk for both alternatives is essentially the same. Neither the air nor the sea transportation alternative proposed in this EA has the potential to significantly affect the environment.

For Alternative C (no action), the short-term consequence of a PCB leak or spill due to an accident would be less than that of alternatives A or B. However, long-term storage can result in deterioration of containers and could require repackaging in future years.

3.0 ENVIRONMENTAL CONSEQUENCES AND AFFECTED ENVIRONMENT

3.1 Introduction

The terms “hazard” and “risk” are synonymous in everyday usage but are quite different in technical language. A hazard is the inherent characteristic of a material, condition, or activity that has the potential to cause harm to people, property, or the environment. Risk is the combination of the likelihood and the consequence of a specific hazard being realized. Likelihood can be expressed as either a frequency or a probability. Consequence is the direct effect of the accident.

This section addresses the PCB hazard and the relevant resource components of the existing environment that would be affected by the proposed action and alternatives. The consequences of both normal transportation and of transportation accidents are addressed and summarized in this section, and the frequencies of an accident are addressed in Section 4.

The National Fire Protection Association hazard ratings are listed below for PCB and are contained in the Material Safety Data Sheet (MSDS) for PCB. The hazard units are based on a range of zero – to four, where zero represents no hazard and four is the greatest hazard.

- Health - 2
- Fire - 1
- Reactivity - 0

Pure PCB can be colorless, white, black, or yellow. They may be in liquid or solid form. Health hazards associated with PCBs are due to contact with the skin and the eyes. They may cause liver damage when ingested in high concentrations and are a suspected cancer hazard in humans. PCBs are not combustible, although toxic byproducts may be generated in a fire.

3.2 Air Quality

In a recent study detailing the state of the environment of Asia and the Pacific, it was noted that in the past quarter of a century, atmospheric pollution has increased significantly in much of this region including Japan.[(3)] Much of the increase in atmospheric pollution can be attributed to escalating energy consumption and greater use of motor vehicles that burn leaded fuel.

In the U.S., EPA has established the National Ambient Air Quality Standards (NAAQS) to protect the public health and the environment. NAAQS are criteria expressed in terms of air pollution concentrations in the ambient atmosphere from all natural and man-made sources. There are six criteria air pollutants: carbon monoxide, sulfur dioxide, particulate matter, ozone, nitrogen dioxide, and lead. An area is considered a non-attainment area if it does not meet one or more of the NAAQS.

For Alternative A (air transport), principal pollutant emission sources are motor vehicles and aircraft operation. DoD owned and operated motor equipment in Japan is required to be inspected every two years to ensure that all factory installed emission control equipment is intact and operational. It is expected that any aircraft used will meet all Federal Aviation Administration (FAA) requirements and applicable emission regulations.

The potential for PCB to affect air quality was considered in the remote event of an air accident. The potential consequence of PCB released to the atmosphere is expected to be insignificant. The TSCA does not require notification of a release of PCB when the concentration of the releases less than 50 ppm (an estimated 96 percent of the items considered for transport contain less than 50 ppm PCB). Therefore, the proposed shipments are not considered to have a significant impact on air quality.

Alternative A would produce some air pollutants from truck emissions when the cargo is land transported from the temporary storage locations to the airfields at the three sites. Emissions from trucks engines would occur from the point of destination (Maxwell AFB) to Pell City, Alabama. These shipments will take place over a period of years and would have no measurable effect on the environment, because during this time there will be thousands of trucks traveling though the same area. The impact on air quality from trucks for Alternative A will be minimal.

The probability of inhalation of PCB in oil is considered small as oil has a low vapor pressure and evaporates slowly. There may be a potential exposure in a confined space such as a truck trailer. The MSDS on PCB oil states that a harmful contamination of the air will be reached rather slowly on evaporation of the oil at 20^{o}C. Should liquid be spilled, evaporation of PCB oil to the air is slow, and the clean up of the fluid will remove the PCB contamination before significant evaporation has occurred. The truck drivers are required to be trained in response procedures outlined in the DOT Emergency Response Guidebook. A potential release of the cargo to the roadside would likely consist of solid-state electrical equipment, rags, and soil/debris but may also include of PCBs in liquids. The bulk of items to be transported are composed of electrical equipment such as described above. The solid items are less likely to release PCB to the environment than liquid items. Table 1-1 shows that approximately 96 percent (by weight) of the material addressed in this EA is not regulated for disposal as PCB items by the EPA because it is below the EPA threshold of 50 ppm.

If a truck accident occurs en route to Pell City, there could be a potential release of contaminant to the atmosphere during a fire. Hazardous combustion products could be produced during a fire; these could include carbon halides, chlorine, hydrogen chloride, and oxides of carbon. Local emergency responders would be called upon to extinguish a large fire or to mitigate a large spill. The relative frequency of a truck accident occurring is provided in Section 4.0. If an accident on the highways should occur while transporting the PCB items, the effect on air quality would be negligible.

For Alternative B (water transport) there will not be an appreciable effect on air quality from the exhaust produced by the diesel engines on the ships while en route to the U.S. (these ships would be traveling to the same U.S. ports whether the PCB-containing material is on board or not). Once the ships reach Port Hueneme, California, the equipment will be transferred to truck trailers for the 37-hour drive (2,128 miles) to Pell City, Alabama. The impact on air quality during the land transport will be minimal because the shipments will occur over a period of years. Also, as noted earlier, there will be thousands of trucks traveling through these same areas during this time period, so these trucks will have virtually no incremental effect. Should another West Coast port be used, the impact on air quality should be similarly insignificant.

Under Alternative C (no action), a potential spill, or leak of PCB liquids during storage will not result in a significant release of PCB to the atmosphere. Spill response teams are on duty at military bases 24 hours a day and will clean up any solid or liquid release that might occur. The probability of a fire is considered remote based on storage history, safe work practices, and the low combustibility of the material.. Were a fire to occur, the release of potential hazardous combustion products might include carbon halides, chlorine, hydrogen chloride, and oxides of carbon.

3.3 Water Quality

To protect the earth's oceans and seas, the Inter-Governmental Maritime Consultive Organization, a UN Agency, promotes international cooperation. Limitation on ocean dumping, including from sea-going vessels, was proposed at the 80-nation London Conference in 1972. An international ban on ocean dumping in 1988 set additional restrictions.

All shipments from the three sites will cross the Pacific Ocean en route to Port Hueneme or another port on the U.S. West Coast. The surface water shipment from Sagami will depart from the Port of Yokohama and will navigate the Tokyo Bay and Sagami Sea before reaching the Pacific. The POEs for the other two sites are located directly on the Pacific Ocean.

For Alternative B, any waste generated is expected to be that which is typically associated with the routine operation of ocean-going vessels (i.e., domestic waste, waste from the bilge, etc.). The bilge (which is a collection area for fuel, oil, on-board spills, and wash waters generated during the daily operation) is usually pumped to a waste holding tank. Fuel used by ocean-going vessels is another potential waste that can be spilled into the water or onto one of the decks during a fueling operation. In the unlikely event of a spill while en route, it will immediately be remediated by trained personnel using booms, absorbent pads, and other associated clean-up equipment and operations.

Maintaining fuel tanks, lines, and fueling systems substantially reduces the possibility of accidental spillage. Overall, Alternative B will not cause an increase in the amount of pollution or waste products generated by these container ships. Moreover, these ships are on schedules and would travel to the same U.S. ports with or without PCB-containing material.
Unless transport accidents are encountered, alternatives A and B will have no environmental effect on the oceans or seas. Should a catastrophic accident occur during shipment via military air or sea transport, the expected environmental consequence of PCBs on the oceans or seas would be minimal. As noted above, approximately 96 percent of the items contain less than 50 ppm concentration of PCB. In addition, section 3.7.1 describes existing and active local, state, and federal hazardous substances response plans and resources capable of handling any incident that might occur in or near a U.S. West Coast port as a result of the movement of the PCB items. The use of vehicle transportation could result in minor discharges of petroleum on the highways such as oil film and spills at refueling stations. These are not expected to have a significant environmental consequence on surface water or groundwater quality.

3.4 Noise

Noise is defined as unwanted sound. Military installations in Japan with high noise sources, such as air operations, must develop and maintain a noise contour map for the areas immediately next to the installations. The installations are required to identify noise sources that cause noise impacts, investigate possible mitigation measures, and provide resources to reduce noise impacts when practical. In the U.S., EPA, FAA, and the Federal Highway Administration (FHA) have issued applicable noise guidelines.

For alternatives A and B, noise will be produced at the military storage sites by the engines and tires of the forklifts, cranes, and trucks used to move the PCB material from storage to the ships or aircraft. The noise from these material-handling operations will not be greater than that which is normally encountered at these sites.

Using Alternative A, noise will consist of jet engine noise occurring during takeoffs and landings. Jet noise from transport planes is a daily occurrence at military air bases; therefore, these flights are not expected to cause a significant impact on the environment. Typical jet engine noise would be produced during the approach and landing at Maxwell AFB in Montgomery, Alabama. The majority of noise would be created during takeoff and landing. The aircraft engines would be throttled at full power during take off and reverse thrust would be used during landing. Very low noise levels are expected on the ground when the plane is cruising at a high altitude.

Using Alternative B, noise that is typically associated with a marine harbor operation is expected to occur during the loading and unloading of the ships. Engine noise on the open seas and along harbor shipping routes would be minimal and is not expected to have no adverse effects.

Once the shipment reaches the U.S., noise would be minimal along the land route for Alternatives A and B. Engine and tire noise will be produced by trucks moving the equipment from a West Coast port, or from Maxwell AFB to Pell City, Alabama. This noise is similar to other trucks currently traveling the route. Using Alternative A, the majority of the truck route from Montgomery to Pell City will be along interstates 65 and 20. Using Alternative B, the proposed truck route will be along interstate highways 10, 15, 40, 35, and 20. Each of these highway systems have been in place for many years and allow tolerance for transportation noise. All trucks are expected to have approved exhaust systems. Also, as noted previously, there will be thousands of trucks traveling the same roadways. Therefore, these trucks will have virtually no added incremental effect. Noise from Alternatives A and B would not result in significant impacts on the environment.

The only noise from Alternative C would be from forklifts and from highway trucks if the material were required to be moved from one storage location to another. Alternative C will not cause noise impacts on the environment.

3.5 Natural Resources

Natural resources include all landforms, soils, water, and their associated flora and fauna. In Japan, the DoD installations are required to manage natural resources. Installations are required to use a sound approach to conservation that maximizes mission effectiveness while protecting the long-term environmental diversity through the use of conventional conservation practices. It is the responsibility of the installation commander to resolve situations in which the military mission may adversely affect natural resources. Each installation is required to maintain a current Integrated Natural Resources Management Plan (INRMP). The INRMP contains a complete inventory of all natural resources found on the installation including: geological, topography soils, wetlands, flood plains, scenic areas, vegetation, agricultural use, bird aircraft strike hazard issues, climatic conditions, surface water, hydrology, outdoor recreation use, and wildlife. The INRMP also details topics such as endangered species, migratory birds, erosion control, special habitats, and applicable U.S. and host country laws. The Natural Resources Manager at each installation is responsible for maintaining the current list of species protected under the U.S. and Government of Japan wildlife laws. The Natural Resources Manager is to inform the installation commander annually of all protected species found on the installation. Before beginning any major action, each installation is required to conduct an analysis of the proposed site to determine the impact on the natural resources.

For Wake Island, a rather lengthy description of the natural resources can be found in the 1998 *Terrestrial Resources Survey*, which identifies and characterizes the terrestrial biota at Wake Atoll, including flora, fauna, and avifauna. The 1998 *Baseline Marine Biological Survey* documents the primary species of reef fishes, corals and other macroinvertebrates, and algae encountered at several marine discharge sites.

Appendix I provides a summary of the many plants, fish, seabirds, and mammals found in the habitats of the nearshore and offshore waters at Ports of Los Angeles/Long Beach, Port Hueneme, San Francisco Bay, and the waters of Puget Sound.

In the U.S., the truck transport route to Pell City from Port Hueneme and Maxwell AFB will be along public land primarily on interstate highways for the entire distance. Land use along the truck transport routes is quite varied, ranging from deserts to open cattle ranges to major urban developed cities to remote forests and wooded areas. A wide variety of wildlife and plants is characteristic of the truck transport routes, which include eight states from California to Alabama. Each state will have some species of animals and plants that are listed as threatened or endangered.

Neither alternative is expected to impact wildlife or endangered species. All activities associated with the loading and unloading of the ships and the aircraft at the three overseas sites are normal transport operations, having no known potential for endangering a protected species.

3.6 Cultural and Archaeological Resources

For the purposes of this EA, cultural and archaeological resources are defined as any physical evidence of pre-historic or historic human life or activities. Such resources include above and below ground structures, shelters, and caves; by-products, waste concentrations, and debris scatters; tools, implements, weapons, clothing, and ornaments; human remains and graves; painting or artwork; and all portions of shipwrecks.

Okinawa has many cultural and archaeological sites dating back to early in the 14th century, when it was an independent kingdom until Japan annexed it in 1879. During World War II (WWII), Okinawa was the site of the last major amphibious operation when the U.S. Forces landed on the western coast. Sagami and the Port of Yokohama, Japan, also contain several cultural and archaeological sites. The port was established in 1859 allowing the city to maintain a rich historical heritage. Wake Island was designated as a National Historic Landmark in 1985 to preserve both the battlefield where important WWII events occurred and Japanese and American structures from that period.

The areas that would be used for transporting the material from its current storage at the three sites to the airfield or harbors are not considered archaeologically sensitive. No impacts to cultural resources will result from relocating and loading the equipment for transport to the U.S.

In the U.S., the land transportation routes from the West Coast ports and from Maxwell AFB to all EPA permitted PCB treatment sites are essentially U.S. interstate highway routes. There are no expected impacts on cultural and archaeological resources due to truck transport using established roadways.

There are no expected impacts on cultural or archaeological resources for Alternatives A, B, and C.

3.7 Other Disclosures

3.7.1 Safe Handling of Hazardous Materials and Waste

PCBs are regulated by EPA. PCB items at or above 50 ppm are considered capable of posing a consequence to health, safety, or the environment if improperly handled, stored, issued, transported, labeled, or disposed. PCBs are classified as Class 9, Miscellaneous Hazardous Material under Department of Transportation Hazardous Material Transportation Regulations in 49 CFR 171 – 180, the lowest classification of hazardous material. Approximately 96 percent by weight of the material addressed in this EA is not regulated for disposal as PCB items by the EPA because it is below the Federal threshold of 50 ppm. Most of the items are not combustible and will present a very low probability or no probability of fire. In addition, the safe methods used for packaging, storing, and monitoring the equipment at the storage sites further reduce the probability of fire and spills. In order to help reduce the potential consequence associated with PCB during fires, all personnel who use, handle, or store these materials are trained to recognize and identify the hazardous properties of hazardous materials. Employees are trained in emergency response and hazardous material handling procedures. All transportation and storage operations are subject to Occupational Safety and Health Administration and/or Service specific safety and health regulations.

On the federal level, national, regional, and local area contingency plans are required. The U.S. Environmental Protection Agency (EPA) has developed the National Contingency Plan (found in Title 40, Code of Federal Regulations, Part 300) and regional contingency plans that provide general procedures, guidance, and response objectives for oil discharges and hazardous substances releases. For coastal regions of the United States, local response plans are developed by the applicable Area Committee, which is led by the U. S. Coast Guard. Each area contingency plan identifies a standing response organization and provides information on the operations, planning, logistics, and finance requirements for a response to a hazardous substance release or an oil discharge. Each plan outlines response strategies, identifies resources at risk, and provides listings of response resources and equipment that are available 24 hours a day, 7 days a week within the local area.

Each coastal state also provides guidance for hazardous material response. The State of California Office of Emergency Services has a Hazardous Material Incident Contingency plan that requires any company handling hazardous materials to have a business plan that includes a hazardous materials emergency response plan. Components of this hazardous material emergency response plan include: (1) immediate notification guidance, (2) identification of local emergency medical assistance, (3) mitigation, prevention, or abatement of hazards to persons, property, or the environment, (4) immediate notification and evacuation of the facility, and (5) identification of areas of the facility and mechanical or other systems that require immediate inspections or isolation because of their vulnerability to earthquake related ground motion. Other state regulations identify the responsibility of a state lead agency to develop an emergency response plan. Each state works closely with the Federal On-Scene Coordinator during response to any hazardous material release.

U.S. ports have emergency response plans to respond to hazardous material incidents. The Port of Seattle's plan provides procedures for organization, communications, notifications, and action by appropriate response agencies. Cognizant local, state, and federal agencies provide additional local guidance. The EPA's "Environmental Screening Checklist and Workbook for the Water Transportation Industry" is an example of a readily available publication that addresses this issue.

For the ports of Los Angeles, Long Beach, and Port Hueneme, the applicable area contingency plan is the 2000 Los Angeles-Long Beach Area Contingency Plan. Section 7000 of this plan provides specific guidance on hazardous material responses, outlining the federal and state policy and describing the standardized emergency management system. It outlines local responding agency requirements on notification, coordination, communications, pre-planning, etc. for this type of emergency. Hazardous material response resources are listed in this publication. For the Port of Oakland, the applicable area contingency plan is the 2000 North Coast, San Francisco Bay and Delta, and Central Coast Area Contingency Plan. The format of this plan is very similar to the Los Angeles – Long Beach plan. Additional guidance is also provided in the Marine Safety Office, San Francisco Bay Marine Fire Fighting Plan. For the Port of Seattle, the applicable area contingency plan is the 1998 Northwest Area Contingency Plan. The format of the Port of Seattle contingency plan is very similar to the other two plans. Based on this information, the use of any major West Coast port would not present a significant risk to the environment.

Shipping papers will accompany each shipment in accordance with DOT regulations from the port of origin to the final destination. Air shipments originating from DoD installations will adhere to Title 49 CFR and AFJMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAI 4145.3, as appropriate. Water shipments will comply with the International Maritime Dangerous Goods (IMDG) Code. Truck drivers in the U.S. are required to carry a copy of the DOT Emergency Response Guidebook in their vehicles and drivers must be trained in its use.

Emergency response personnel will be available during loading and unloading operations The items will be packaged using multiple containment (drums, over-packing, and shrink-wrapping) to minimize the probability of release during storage and transport. All containers will be secured to prevent movement or displacement during transit. During transport, the trucks will be tracked and the containers will be monitored frequently for leaks. All transport vehicles will have a spill contingency kit in the event of a release If any environmental media should become contaminated, it will be cleaned up in accordance with appropriate cleanup requirements.

Other operations that may use hazardous materials are aircraft flight and maintenance activities, normal sea vessel operations, base operations, and infrastructure support activities. Jet fuel, diesel fuel, and gasoline comprise the bulk of the hazardous materials that are used at various DoD installation sites. In addition, other hydrocarbon-based products are stored for base operations, maintenance, and infrastructure support. At each site, hazardous waste is normally collected at the point of generation and then transferred to DOT-approved shipping containers until ready for proper disposal.

Hazardous materials used and wastes generated from activities associated with Alternatives A or B are not expected to have environmental impacts on the surroundings. Removing the PCB items and equipment from U.S. Bases provides an environmental benefit for those sites. Removal of the material will lessen the probability of potential leaks or spills during storage. Used oils can be recycled for fuel or energy recovery after treatment.

The material will be disposed of in conformance with EPA regulations in 40 CFR Part 761, using properly licensed transportation firms and EPA-permitted treatment and disposal facilities. These rules were promulgated under TSCA's no unreasonable risk standard, and EPA's technical assessment of each disposal facility ensures that its operations will not present an unreasonable risk of injury to health or the environment. The Defense Reutilization and Marketing Service (DRMS) has extensive experience in contracting for disposal of PCB items, using firms who are contractually obligated to perform in accordance with applicable environmental and transportation statutes and regulations. During calendar year 2001, DRMS disposed of over 300,000 pounds of PCB in the U.S. using 14 EPA permitted disposal facilities identified in Appendix F. Approximately 160,000 pounds of those items were treated at Trans-Cycle Industries, located in Pell City, Alabama.

The EPA regulations set out specific treatment and disposal methods for PCBs and PCB items depending on the type of item and the concentrations of PCB in the item or fluid. The U.S. Government anticipates that metals will be separated from other components, cleaned using a vapor degreasing process, and then shredded for shipment to an approved smelter for recycling. Other components may be buried in a chemical waste landfill or incinerated, as some material cannot be decontaminated. Used oils or liquids will be treated and disposed of by dechlorination whenever appropriate or will be sent for energy recovery as fuel. Non-recyclable components such as ceramics and wood will be disposed of at permitted facilities. Alternative disposal methods may be used if approved by the EPA. Appendix F describes other permissible disposal options. Certificates of Disposal for PCB items will be provided.

As a quality control measure, DRMS conducted an environmental assessment audit of Trans-Cycle Industries, Inc (TCI), its current PCB disposal contractor, in October 2001[4]. During the visit, a review of the entire facility was performed. The review resulted in no specific findings and no outstanding regulatory violations or issues related to TCI facility operations.

A description of the TCI Decontamination Facility in Pell City, Alabama, is as follows:

The TCI PCB processing facility is capable of disassembling and decontaminating transformers, capacitors, other electrical and non-electrical equipment, and other non-porous metallic surfaces of all PCB concentrations (DRMS, 2001). Also, the facility acts as a transfer facility for non-recyclable waste (i.e., debris, wood, soils, water, etc.) contaminated by PCBs. This type of waste is received, consolidated, and then shipped off-site for final disposal.

The TCI facility receives, examines, and classifies all PCB articles according to concentration in an indoor facility. Determination of PCB concentration dictates the process method used in the decontamination process. Equipment containing liquids with PCB concentrations greater than or equal to 500 ppm are disassembled and decontaminated in a steel-lined shop, or within steel containment pans outside the steel-lined shop. Disassembly and decontamination of equipment containing less than 500 ppm of PCB liquid, or any concentration of non-liquid PCBs, can take place anywhere within the curbed and lined area of the building.

TCI utilizes the following process for the disassembly and decontamination of PCBs articles:

- PCB items are first separated into recoverable metals and non-recoverable materials.

- After separation, recovered metals are decontaminated in accordance with 40 CFR 761.79. TCI has developed two proprietary techniques for the decontamination of the PCBs materials. As required by the above regulation, TCI tests to verify that PCB levels are less than 10µg of PCB/100cm^2 after the decontamination process is completed. Articles that are decontaminated are recycled to minimize waste.

- All PCB solid articles that are considered non-recoverable or are fluids that are greater than or equal to 50 ppm PCBs are bulked into containers and are shipped off for proper disposal at another EPA TSCA approved PCB disposal facility.

- All fluids that are less than 50 ppm qualify for burning onsite for energy recovery power; however, some of the low level PCB fluid is shipped off-site to an approved disposal facility.

PCB equipment disassembly and decontamination is performed indoors in a 1.5-acre building, which is curbed and lined. No storm water originates from the site. There are no wells as the facility is on city water. The facility is authorized to store specified quantities of PCBs and PCB items. Laboratory analysis is performed at the laboratory in the main building using a gas chromatograph, pH meter, and other support equipment.

All manifests, tracking documents, inspection procedures, and other documents were found to be in order, well organized, and accurate. Permits maintained by the facility included the PCB Commercial Storage and Decontamination Permit issued by EPA Region IV (EPA I.D. ALD 983 167 891), expires October 23, 2010; Major Source Operating Permit (Air) issued by ADEM, permit no. 410-0015, expires September 4, 2005; and NPDES Permit no. ALG250006.

U.S. EPA Region IV performed a TSCA inspection in November 2001, and the Alabama Department of Environmental Management found no violations during its most recent inspection in May 2001.

Under Alternative C, it is unlikely that the integrity of the packaging and containers will be compromised in the near term considering the safeguards taken to store the material.

3.7.2 Transportation

Using Alternative A to move all of the PCB-contaminated items would require approximately 176 shipments using C-17 aircraft. The flights would occur over a period of several years as used equipment is taken out of service. The flights would leave from Wake Island, Yokota AB and Kadena AB, Japan, arriving at Maxwell AFB, Alabama or another proximate military airfield. The flight time from each site is about 14 hours. PCBs are regulated by DOT as a Class 9 (low hazard) transportation hazard. Material packaged for surface-water movement at all three storage locations will meet the requirements of the IMDG and AFJMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAI 4145.3, as appropriate. The limit for all air shipment weight is expected to be 40,000 pounds per plane.

The size of the shipments will be limited to the quantity that the disposal contractor can orderly process (about 360,000 pounds per week). Therefore, because the shipment size is limited, transportation by water (Alternative B) would require 20 shipments. A shipment of 360,000 pounds requires 12 to 14 SEAVANs (20-feet long). Each ship has the capability of carrying approximately 4,000 SEAVANs. The total PCB material loaded for each ship is only about 0.3 percent of the ship's capacity (by volume). Quantities may change based on the disposal contractor's processing capacity or availability of shipping.

If Alternative B were used, the Military Traffic Management Command (MTMC) would reserve container space for the Government on commercial vessels. Material moved from Sagami, or other local military installation, will depart from the Port of Yokohama and will travel through

Tokyo Bay, the Sagami Sea, and then across the Pacific Ocean to Port Hueneme, California, (approximately 4,780 nautical miles). Material shipped from Okinawa will depart from the Port at Naha and will travel across the Pacific Ocean to a West Coast port, such as Port Hueneme, California (approximately 5,582 nautical miles). Material shipped from Wake Island will travel also travel across the Pacific Ocean to a West Coast port, (approximately 4,000 nautical miles). The shipments could occur either concurrently or sequentially from Naha and Yokohama. For purposes of calculating the transportation risk in this EA, Port Hueneme, California is used as the notional port, although other West Coast ports may be used. Shipment to the Port of Mobile, Alabama, through the Panama Canal was considered, but it was not studied in detail because the MTMC does not provide scheduled service to U.S. East Coast and Gulf Coast ports from Japan.

For water shipment, all the electrical equipment and material in Japan will be packaged and loaded into 20-foot SEAVANs prior to transport to the ship. Surface shipments will be scheduled based upon ship availability and military cargo priorities. The SEAVANs at Wake Island are ready for shipment. The harbor at Wake Island is not deep enough to anchor a commercial ship; therefore, a loading barge will be required to move the SEAVANs from the dock area to a vessel offshore. A crane will be used to hoist the SEAVANs from the dockside truck trailers onto the loading barge. The container ship used at Wake Island must have a crane on board to provide self loading/unloading capabilities

At Port Hueneme, California, or another West Coast port, the SEAVANs will be transferred from the pier to the commercial trucks. Information from the Bureau of Transportation Statistics indicates the volume of hazardous materials moving though four potential POD ports was over one million twenty-foot SEAVAN equivalents in one year (1997). The DoD proposes to use an estimated 245 SEAVANs over a period of several years to move all of the PCB material. Adding 245 SEAVANs to the quantity of hazardous material already shipped though these ports presents no significant increase to the quantities already moved through these ports (see Appendix H). The potential risk to the environment is further minimized by the response systems and response plans already in place to control any potential release of PCB or other hazardous material in the port area.

Prior to transport via roadway, a DRMO representative will be available on-site at Port Hueneme to oversee the operation. As noted earlier, DLA anticipates the contractor will transport the shipment via truck directly to the processing facility at Pell City, Alabama (approximately 2,128 miles). A DRMO representative will be available on-site at Pell City to verify that the PCBs were received at the contractor's site. Figures 3-1 and 3-2 show the routes from Port Hueneme to Pell City and from Montgomery to Pell City, respectively.

The Government utilizes contractors to transport items containing PCBs via highway to approved disposal facilities. All contractors are required to transport PCBs in compliance with DOT hazardous materials regulations (HMR) which are found in 49 CFR 100-185, and to be consistent with the EPA PCB requirements in 40 CFR Part 761 et seq. In addition, contractors must comply with regulations posed by state agencies. The HMR govern the transportation of hazardous materials in interstate, intrastate, and foreign commerce. The regulations were established to protect the safety of the public and those individuals directly involved in the transportation process (preparation, packaging, loading, hauling, etc.). The regulations consist of four general categories:

- hazardous materials identification and classification;
- hazard communication (shipping papers, markings, labels, and placards);
- packaging requirements; and
- operational rules

PCBs are defined by DOT as a Class 9, miscellaneous hazardous material. A Class 9 material presents a hazard during transportation, but does not meet the definition of any other hazard class (explosives, flammable, poisonous, etc.). During transportation of PCB waste at concentrations equal to greater than 50 ppm a manifest must be prepared on EPA Form 8700-22.

Suitable packaging types for PCB items are presented by the federal regulations in terms of non-bulk and bulk packaging. The bulk packaging requirements involve cargo tank motor vehicles, portable tanks and closed bulk bins, and intermediate bulk containers.

The primary risk associated with transporting the material by Alternatives A and B is the consequences of a release due to an accident. The frequencies of accidents for the modes of transportation have been analyzed and are presented in Section 4.0. EPA has already previously investigated and requested comment on the risks inherent in the transportation of imported PCB items and determined these risks to be insignificant.[5] There are no transportation risks associated with Alternative C.

Figure 3-1
Transport Route from Port Hueneme to Pell City AL (purple)

Figure 3-2
Transport Route from Montgomery to Pell City

3.7.3 Environmental Justice

As defined by the EPA, Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The impact of the proposed transport of these materials is not considered significant from an environmental justice perspective for the following reasons:

Quantities of PCB-containing materials to be returned from Japan and Wake Island during the timeframes in this analysis are extremely small when compared with the total quantity transported nationally (see Appendix H). During this time period, there will be thousands of cargo trucks traveling through and around the same areas as contemplated in this analysis. The trucks transporting this material will have no cumulative effect. There will be no new transportation routes or facilities used to transport the material in this analysis.

As noted above, the TCI facility in Pell City, Alabama, is the current DLA contractor for processing PCB items. Based on 2000 U.S. Census data the tract and county in which the TCI facility is located has substantially fewer (determined as a 10 percent or greater difference) minorities or persons living below the poverty level than the state of Alabama as whole. This facility is located in tract 402.02 in St. Clair County. Both the tract and the county have approximately five percent fewer residents living below the poverty level than the state as a whole. In addition, both the tract and the county have approximately 18 percent fewer African Americans than the entire state.

U.S. Census information indicates that the population of Alabama is approximately 26 percent African American. This is substantially higher than the percentage of African Americans residing in tract 402.02 which is 8.6 percent or within St. Clair County which is 8.1 percent. The Hispanic population makes up less than 2 percent of the overall population in the tract, county or state. The percentage of children under the age of 18 is statistically similar in the tract, county and state and ranges from 22.6 percent (within the tract) to approximately 25 percent (within both the county and the state). Therefore, it is reasonable to conclude that there are few, if any, negative environmental justice impacts to minorities, low income sectors, or children with regard to the TCI facility in Pell City.

As long as PCB items are disposed of in accordance with a facility's approved permit, treatment and disposal of the waste should not produce risks greater than those calculated at the time the PCB disposal approval was issued, which EPA determined would not pose an unreasonable risk to the surrounding community.

3.8 Environmental Risk and Consequences

As noted earlier in this document, risk is the combination of the likelihood and the consequence of a specific hazard being realized. Consequence is the direct effect of the accident. The risks of an accident occurring for both transportation alternatives are essentially the same as shown in Section 4.

Regarding the overall hazard for each of the alternatives, 96 percent (by weight) of the material addressed in this EA is not regulated as PCB items by the EPA because it is below the Federal threshold of 50 ppm. The items generally consist of electrical equipment such as transformers (drained and not drained), large and small capacitors, electrical light ballasts, voltage regulators, switches, electromagnets, circuit breakers, electrical cable, transformer oils, used oils, contaminated soil, and debris (rags, small parts, and packaging materials). The solid items are not likely to release PCBs to the environment.

Regarding Alternative A (transport by air) and Alternative B (transport by water), the environmental consequences are minimal from an accidental release of the material.

Neither transportation alternative has the potential to significantly affect the environment. Unless transport accidents are encountered, Alternatives A and B will have no environmental effect on the oceans or seas beyond that of normal shipping of other cargo through the sea-lanes. Should a catastrophic accident occur during shipment of military air or sea transport, the expected environmental consequence on the oceans would not be different from that of a similar incident involving any other cargo. The consequence of dispersal due to an accident would be minimal because approximately 96 percent of the equipment will contain less than 50 ppm concentration of PCBs.

As with any truck transport traveling from the seaport or airfield, there could be minor discharges of petroleum on the highways such as oil film or minor fuel spills at refueling stations. The proposed shipments would not result in a significant environmental consequence on surface water or groundwater quality. In the event of a catastrophic accident, the impacts would be minimized due to the bulk of equipment containing low level PCB concentrations.

The foreseeable consequence upon air quality for either transportation alternative is expected to be minimal. Transportation by plane or ship will result in a certain level of air emissions, but is not different from similar planes and ships that carry other cargo. Table 1-1 data shows that approximately 96 percent (by weight) of the material addressed in this EA is below the EPA threshold of 50 ppm. Hundreds of planes and ships will travel through the same routes over the same time period; consequently, this action would have no impact. Transportation from the seaports or airfields via truck will result in some air pollutants from truck emissions, but again the effect would be no different from that of other cargo vehicles for the same reasons. If a truck accident were to occur en route to Pell City, there is the potential for a minimal release of PCB contaminant to the atmosphere. The hazard is minimized because PCBs are not a fire hazard. The potential inhalation of PCB in oil is considered small as oil has a low vapor pressure, evaporates slowly, and the clean up of the oil will remove the PCB before significant evaporation has occurred. Should a fire occur, hazardous combustion products could be produced. Local emergency responders would be called upon to extinguish a large fire or to mitigate a large spill.

Based on the same considerations as those used to analyze the consequences of Alternatives A and B cited above, the consequences of these alternatives on noise, other natural resources, and cultural and archaeological resources are expected to be minimal.

Regarding Alternative C – No-Action, the consequence of a PCB leak or spill on air or water quality due to an accident would be less than that of Alternatives A or B, but the risk of a release increases over time as long-term storage can result in deterioration of containers and could require repackaging in future years. In addition, the communities and local government officials are opposed to long-term storage. This issue continues to cause significant public concern and could adversely affect U.S.-Japanese relations. Installation storage space is at a premium and property currently in storage may need to be relocated to accommodate additional PCB items that are taken out of service.

Based on the same considerations as those used to analyze the consequences of Alternatives A and B cited above, there are no foreseeable adverse consequences of these alternatives on natural resources, and cultural and archaeological resources for Alternative C.

4.0 ACCIDENT ANALYSIS FOR MODES OF TRANSPORTATION

The purpose of this analysis is to present the accident frequency for the two alternatives for transporting electrical equipment containing PCBs (see: Appendices B, C, and D). The risk of the two transportation alternatives is presented in Section 4.3. The transportation will originate from U.S. Military installations in Japan; Okinawa, Japan; and Wake Island. The destination in each case is Pell City, Alabama. The transport alternatives are: (1) air transport to Maxwell AFB, Alabama, followed by truck transport to Pell City and (2) water transport to Port Hueneme, California, or other West Coast port, followed by truck transport to Pell City.

The assumed values for which each alternative was evaluated from the point of origination to the final destination are given in Tables 4-1 and 4-2 for air and water transport, respectively. The logistics data are presented in more detail in Appendix A and the accident rate data is presented in Appendices B, C, and D for marine, highway, and air transport modes, respectively.

Table 4-1
Alternative A (Air Option)

Flight time from Wake Island to Maxwell	Approximately 14 hours
Flight time from Sagami to Maxwell	Approximately 14 hours
Flight time from Okinawa to Maxwell	Approximately 14 hours
Driving distance from Maxwell to Pell City	Approximately 142 miles

Table 4-2
Alternative B (Water Option)

Distance from Wake Island to Port Hueneme	Approximately 4,000 nautical miles
Distance from Sagami to Port Hueneme	Approximately 4,780 nautical miles
Distance from Okinawa to Port Hueneme	Approximately 5,582 nautical miles
Driving distance from Port Hueneme to Pell City	Approximately 2,128 miles

4.1 Air Transport Option, Alternative A

The accident/hour rate for the C-17 aircraft is given in the calculations shown in this section. The driving distance is in miles by highway class (e.g., urban, rural). The accident frequencies and calculations for the air transport options are shown in Tables 4-3 to 4-5. The data used for the calculations are shown in Appendices B, C, and D.

Table 4-3
Accident Frequency for Air Transport from Wake Island

MODE	ACCIDENT FREQUENCY CALCULATIONS	ACCIDENT FREQUENCY
C-17	(14 hours/aircraft)(3.57 x 10^{-5} accidents/hour)	5.0 x 10^{-4}
	TOTAL FOR 5 AIRCRAFT	2.5 x 10^{-3}
TRUCK	(25 urban miles)(5.77 x 10^{-7} accidents/mi)	1.4 x 10^{-5}
	(107 rural miles)(3.27 x 10^{-7} accidents/mi)	3.5 x 10^{-5}
	(10 4-lane miles)(3.93 x 10^{-7} accidents/mi)	3.9 x 10^{-6}
	TOTAL PER TRUCK	5.3 x 10^{-5}
	TOTAL FOR 7 TRUCKS	3.7 x 10^{-4}
TOTAL		2.9 x 10^{-3}

Table 4-4
Accident Frequency for Air Transport from Sagami, Japan

MODE	ACCIDENT FREQUENCY CALCULATIONS	ACCIDENT FREQUENCY
C-17	(14 hours/aircraft)(3.57 x 10^{-5} accidents/hour)	5.0 x 10^{-4}
	TOTAL FOR 55 AIRCRAFT	2.8 x 10^{-2}
TRUCK	(25 urban miles)(5.77 x 10^{-7} accidents/mi)	1.4 x 10^{-5}
	(107 rural miles)(3.27 x 10^{-7} accidents/mi)	3.5 x 10^{-5}
	(10 4-lane miles)(3.93 x 10^{-7} accidents/mi)	3.9 x 10^{-6}
	TOTAL PER TRUCK	5.3 x 10^{-5}
	TOTAL FOR 112 TRUCKS	5.7 x 10^{-3}
TOTAL		3.3 x 10^{-2}

Table 4-5
Accident Frequency for Air Transport from Okinawa, Japan

MODE	ACCIDENT FREQUENCY CALCULATIONS	ACCIDENT FREQUENCY
C-17	(14 hours/aircraft)(3.57 x 10^{-5} accidents/hour)	5.0 x 10^{-4}
	TOTAL FOR 116 AIRCRAFT	5.8 x 10^{-2}
TRUCK	(25 urban miles)(5.77 x 10^{-7} accidents/mi)	1.4 x 10^{-5}
	(107 rural miles)(3.27 x 10^{-7} accidents/mi)	3.5 x 10^{-5}
	(10 4-lane miles)(3.93 x 10^{-7} accidents/mi)	3.9 x 10^{-6}
	TOTAL PER TRUCK	5.3 x 10^{-5}
	TOTAL FOR 232 TRUCKS	1.2 x 10^{-2}
TOTAL		7.0 x 10^{-2}

4.2 Water Transport Option, Alternative B

The accidents/mile for the surface water shipment is given in the calculations shown in this section. The driving distance is in miles by highway class (e.g. urban, rural). The accident frequencies and calculations for the water transport option are shown in Tables 4-6 to 4-8. The data used for the calculations are in Appendices B, C, and D.

Table 4-6
Accident Frequency for Water Transport from Wake Island

MODE	ACCIDENT FREQUENCY CALCULATIONS	ACCIDENT FREQUENCY
BARGE	(5 mi)(3.9 x 10^{-6} accidents/mi)	1.9 x 10^{-5}
SHIP	(100 nm)(2.6 x 10^{-6} accidents/nm)	2.6 x 10^{-4}
	(3900 nm)(1.3 x 10^{-7} accidents/nm)	5.0 x 10^{-4}
	(2 ports)(0.5 port call/port)(1.3 x 10^{-4} accidents/port call)	1.3 x 10^{-4}
	TOTAL PER SHIP	8.9 x 10^{-4}
TRUCK	(440 urban miles)(5.77 x 10^{-7} accidents/mi)	2.5 x 10^{-4}
	(180 suburban miles)(4.52 x 10^{-7} accidents/mi)	8.1 x 10^{-5}
	(1408 rural miles)(3.27 x 10^{-7} accidents/mi)	4.6 x 10^{-4}
	(100 4-lane miles)(3.93 x 10^{-7} accidents/mi)	3.9 x 10^{-5}
	TOTAL PER TRUCK	8.3 x 10^{-4}
	TOTAL FOR 7 TRUCKS	5.8 x 10^{-3}
TOTAL		6.8 x 10^{-3}

Table 4-7
Accident Frequency for Water Transport from Sagami, Japan

MODE	ACCIDENT FREQUENCY CALCULATIONS	ACCIDENT FREQUENCY
SHIP	(100 nm)(2.6×10^{-6} accidents/nm)	2.6×10^{-4}
	(4680 nm)(1.3×10^{-7} accidents/nm)	6.0×10^{-4}
	(2 ports)(0.5 port call/port)(1.3×10^{-4} accidents/port call)	1.3×10^{-4}
	TOTAL PER SHIP	9.9×10^{-4}
	TOTAL FOR 6 SHIPS	6.0×10^{-3}
TRUCK	(440 urban miles)(5.77×10^{-7} accidents/mi)	2.5×10^{-4}
	(180 suburban miles)(4.52×10^{-7} accidents/mi)	8.1×10^{-5}
	(1408 rural miles)(3.27×10^{-7} accidents/mi)	4.6×10^{-4}
	(100 4-lane miles)(3.93×10^{-7} accidents/mi)	3.9×10^{-5}
	TOTAL PER TRUCK	8.3×10^{-4}
	TOTAL FOR 38 TRUCKS	3.0×10^{-2}
TOTAL		3.6×10^{-2}

Table 4-8
Accident Frequency for Water Transport from Okinawa, Japan

MODE	ACCIDENT FREQUENCY CALCULATIONS	ACCIDENT FREQUENCY
SHIP	(100 nm)(2.6×10^{-6} accidents/nm)	2.6×10^{-4}
	(5482 nm)(1.3×10^{-7} accidents/nm)	7.1×10^{-4}
	(2 ports)(0.5 port call/port)(1.3×10^{-4} accidents/port call)	1.3×10^{-4}
	TOTAL PER SHIP	1.1×10^{-3}
	TOTAL 13 SHIPS	1.4×10^{-2}
TRUCK	(440 urban miles)(5.77×10^{-7} accidents/mi)	2.5×10^{-4}
	(180 suburban miles)(4.52×10^{-7} accidents/mi)	8.1×10^{-5}
	(1408 rural miles)(3.27×10^{-7} accidents/mi)	4.6×10^{-4}
	(100 4-lane miles)(3.93×10^{-7} accidents/mi)	3.9×10^{-5}
	TOTAL PER TRUCK	8.3×10^{-4}
	TOTAL FOR 78 TRUCKS	6.5×10^{-2}
TOTAL		7.9×10^{-2}

4.3 Summary of Accident Frequency Results

The accident frequencies for transporting PCB items from Japan are summarized in Tables 4-9 through 4-11. The air option accident frequency for each site is 2.9×10^{-3}, 3.3×10^{-2}, and 7.0×10^{-2} which totals 1.1×10^{-1} for the overall calculated accident frequency for Alternative A.

In like manner, the water option accident frequency for each site is 6.8×10^{-3}, 3.6×10^{-2}, and 7.9×10^{-2}, totaling 1.2×10^{-1} for the overall calculated accident frequency for Alternative B. Thus, the calculated frequency of an accident is not significantly different for either of the transport alternatives (1.1×10^{-1} vs. 1.2×10^{-1}).

Considering the minimal difference in the two numbers obtained from calculating the accident frequency for the two transport alternatives and the minimal consequences of an accident, the risk for both alternatives is considered to be very low.

Table 4-9
Summary of Accident Frequency for Wake Island

WATER OPTION		AIR OPTION	
MODE	ACCIDENT FREQUENCY	MODE	ACCIDENT FREQUENCY
Barge	1.9×10^{-5}	C-17	2.5×10^{-3}
Ship	8.9×10^{-4}	Truck	3.7×10^{-4}
Truck	5.8×10^{-3}		
TOTAL	6.8×10^{-3}	TOTAL	2.9×10^{-3}

Table 4-10
Summary of Accident Frequency for Sagami, Japan

WATER OPTION		AIR OPTION	
MODE	ACCIDENT FREQUENCY	MODE	ACCIDENT FREQUENCY
Ship	6.0×10^{-3}	C-17	2.8×10^{-2}
Truck	3.0×10^{-2}	Truck	5.7×10^{-3}
TOTAL	3.6×10^{-2}	TOTAL	3.3×10^{-2}

Table 4-11
Summary of Accident Frequency for Okinawa, Japan

WATER OPTION		AIR OPTION	
MODE	ACCIDENT FREQUENCY	MODE	ACCIDENT FREQUENCY
Ship	1.4×10^{-2}	C-17	5.8×10^{-2}
Truck	6.5×10^{-2}	Truck	1.2×10^{-2}
TOTAL	7.9×10^{-2}	TOTAL	7.0×10^{-2}

5.0 CONCLUSION

Based on this EA, we conclude that neither of the alternatives will cause a significant impact on the environment or on public safety. The accident risk data are essentially the same for both transportation alternatives and the data demonstrates that there are low probabilities of an accident and therefore low probabilities of releasing PCBs to the environment. The implementation of safe handling, packaging, and transportation requirements further reduce the risk to the environment. Therefore, selection of either transportation alternative is considered acceptable.

For Alternative C (no action), the short-term risk of a release of PCB due to an accident is less than for Alternatives A or B. However, the no action alternative is not a practical solution over the long term because there is a lack of available DoD storage capacity for additional PCB items. Also, no action presents potential environmental impacts over the long term. Potential long term impacts include degradation of the storage containers and accidental spills due to material handling errors, severe weather or even earthquakes. These potential impacts take on added importance because of Japanese opposition to PCB storage. Public opposition is causing continuing tension between U.S. installations and local communities, resulting in adverse attention from elected officials, the press, environmental groups, and local citizenry.

This EA is expected to apply to the transportation of PCBs to Pell City and to all EPA permitted processing facilities in the event that other processing destinations are used.

Shipment by sea is the preferred transportation mode based on costs and operational considerations such as availability of aircraft vs. commercial ships; however, air shipment may also be used if needed.

The actions proposed in this EA are not major federal actions having the potential to significantly impact the environment, and an environmental impact statement is not required. A Finding of No Significant Impact can be prepared.

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7.0 REFERENCES

FOOTNOTES:

1. See, *Defense Agency will Inspect PCB Storage*, The Yomiuri Shimbun (Tokyo), August 20, 2000, page 2; *Pollution at Okinawa Bases Cannot be left Uncorrected*, Asahi Shimbun, January 14, 1999; David Armstrong, *U.S. Presence on Foreign Soil is Tainted*, Boston Globe, November 15, 1999; Danielle Knight, *Environment: Asian Women Demand Cleanup of U.S. Military Bases*, Inter Press Service, October 16, 1998; *Japan: Probe Fails to Confirm Source of Pollutant at Kadena Air Base*, Kyodo News Service, September 28, 1998; *High Level of PCB Detected in Okinawa*, Jiji Press Ticker Service, February 21, 1997; *Toxic PCB Detected at Ex-U.S. Facility*, Jiji Press Ticker Service, October 2, 1996.

2. United Nations Environment Programme (UNEP), August 2000, "Survey of Currently Available Non-Incineration PCB Destruction Technologies," Annex 2.

3. United Nations Environment Programme (UNEP), August 2000, GEO-2000; Chapter Two: *"The State of the Environment – Asia and the Pacific"*.

4. PMC Environmental, December 2001, *"Environmental Assessment of Trans-Cycle Industries, Inc., 101 Parkway East, Pell City, Alabama."*

5. 67 Fed. Reg. 58567, 58574 (2002).

GENERAL REFERENCES:

1. Defense Logistics Agency. 2001. "DLA Petition to the EPA Administrator for Exemption Under the Toxic Substances Control Act to Import and Dispose of PCBs and PCB Items" (foreign-source PCB items used on DoD installations in Japan and currently stored on Wake Island), January 19, 2001.

2. Defense Logistics Agency. 2001. "DLA Petition to the EPA Administrator for Exemption Under the Toxic Substances Control Act to Import and Dispose of PCBs and PCB Items" (foreign-source PCB items used on DoD installations in Japan), April 16, 2001.

3. Department of Commerce and the Interior. March 1999. Final Baseline Marine Biological Survey, Peacock Point Outfall and Other Point-Source Discharges, Wake Atoll, Pacific Ocean. Honolulu, Hawaii.

4. Department of Defense. May 2000. Environmental Assessment, Temporary Storage of Polychlorinated Biphenyl (PCB)-containing Materials at Wake Island. Washington, D.C.

5. Department of the Interior. June 1999. Terrestrial Resources Survey, Wake Atoll, Mid-Pacific Ocean, June 18-29, 1998. San Francisco, California.

6. Environmental Protection Agency. 2002. "Polychlorinated Biphenyls; Manufacturing (Import) Exemptions"; Proposed Rule, Federal Register, v. 67, No. 180, Tuesday, September 17, 2002, pgs. 58567-58578.

7. Environmental Protection Agency. 1998. "Disposal of Polychlorinated Biphenyls (PCBs)"; Final Rule, Federal Register, v. 63, No. 124, Monday, June 29, 1998, pgs. 35383-35474.

8. Environmental Protection Agency. 1996. "Disposal of Polychlorinated Biphenyls; Import for Disposal"; Final Rule, Federal Register, v. 61, No. 53, Monday, March 18, 1996, pgs. 11096-11109.

9. EPA's National Ambient Air Quality Standards (NAAQS).

10. Federal Motor Carrier Safety Administration. 2001. "Comparative Risks of Hazardous Materials and Non-Hazardous Materials Truck Shipment Accidents/Incidents," Final Report, Prepared by Batelle, Columbus, Ohio, March 2001. (FMCSA, 2001).

11. International Atomic Energy Agency. 1999. "Accident Severity at Sea during Transport of Radioactive Material: Final Report of the Coordinated Research Project on Accident Severity during Sea Transport." Draft 1, Week 12, 1999. To be published by IAEA as a TECDOC report.

12. PCCI, Inc., "DLA PCB/Hazardous Material/Waste Cargo Movement Supplemental Information," October 25, 2002.

13. PMC Environmental, December 2001, "Environmental Assessment of Trans-Cycle Industries, Inc., 101 Parkway East, Pell City, Alabama."

14. Saircks, C., and T. Kvitek. 1994. "Longitudinal Review of State-Level Accident Statistics for Carriers of Interstate Freight." ANL-ESD/TM-68 (DE94 016625). Argonne National Laboratory.

15. Sprung, J.L. et al. 1998. Data and Methods for the Assessments of the Risks Associated with the Maritime Transport of Radioactive Materials: Results of the SeaRAM Program Studies. SAND98-1171. Sandia National Laboratories.

16. United Nations Environment Programme (UNEP), August 2000, "Survey of Currently Available Non-Incineration PCB Destruction Technologies," Annex 2.

<u>LIST OF AUTHORITIES</u>:

1. 40 C.F.R. Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

2. 40 C.F.R. Parts 1500-1508, Council on Environmental Quality NEPA Regulations

3. 49 C.F.R. Parts 171-180, Research And Special Programs Administration, Department Of Transportation

4. DoD Directive 6050.7, Environmental Effects Abroad of Major Department of Defense Actions, 1979

5. DLA Regulation 1000.22, Environmental Considerations of DLA Actions in the United States, 1981

6. DLA Regulation 1000.29, Environmental Considerations in DLA Actions Abroad, 1981

7. Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 1979

8. National Environmental Policy Act, 42 U.S.C. 4321 et. seq.

9. Resource Conservation and Recovery Act, 42 U.S.C. 6901 et. seq.

10. Toxic Substances Control Act, 15 U.S.C. 2601 et. seq.

APPENDIX A

TRANSPORTATION HANDLING LOGISTICS FOR PCB EQUIPMENT

A.1 Wake Island – Water transport by ship

Assumptions:
- Port of Departure – Wake Island
- Port of Destination – Port Hueneme, CA (Oxnard, CA)
- Number of ships required – 1 (360,000 pounds scheduling limit per ship)
- Number of SEAVANs required – 14 (20-foot SEAVANs, 30,000 pound capacity)
- Two SEAVANs can be loaded per truck trailer (7, 40-foot trucks)

1. Forklift to move 14 SEAVANs from storage on to 7 truck trailers for transport to the dock.
2. Crane to move 14 SEAVANs from 7 truck trailers to loading barge (LCM8) for transport to ship (5 miles from dock to ship).
3. Crane on ship to move 14 SEAVANs from loading barge on to ship.
4. Ship departs for Port Hueneme, CA (4,000 nautical miles).
5. At Port Hueneme, CA, crane will be used to move the 14 SEAVANs from ship to dock.
6. Forklift to move 14 SEAVANs from dock onto 7 truck trailers for transport to Pell City, AL.
7. Seven, 40-foot truck trailers travel from Oxnard, CA to Pell City, AL (total distance is 2,128 miles).
8. Forklift used to unload 14 SEAVANs from 7 truck trailers at Pell City, AL.

A.2 Sagami, Japan – Water transport by ship

Assumptions:
- All equipment in storage will have already been loaded into SEAVANs
- Port of Departure – Yokohama Port
- Port of Destination – Port Hueneme, CA
- Number of ships required – 6 (360,000 pounds scheduling limit per ship)
- Number of SEAVANs required – 75 (20-foot SEAVANs, 30,000 pound capacity)
- Two SEAVANs can be loaded per truck trailer (38 truck trailers (40-foot))

1. Forklift to move 75 SEAVANs from storage on to 38 truck trailers for transport to the dock.
2. Crane on ship to move 75 SEAVANs from 38 truck trailers on to ship(s) for transport to Port Hueneme, CA.
3. Ship departs for Port Hueneme, CA, (15 nautical miles to the sea and then 4,780 nautical miles).
4. At Port Hueneme, CA, crane will be used to move the 75 SEAVANs from ship to dock.
5. Forklift to move 75 SEAVANs from dock onto 38 truck trailers for transport to Pell

City, AL.
6. Thirty-eight truck trailers travel from Oxnard, CA, to Pell City, AL, (distance of 2,128 miles).
7. Forklift used to unload 75 SEAVANs from 38 truck trailers at Pell City, AL.

A.3 Okinawa – Water transport by ship

Assumptions:
- All equipment in storage will have already been loaded into SEAVANs
- Port of Departure – Naha Port, Japan
- Port of Destination – Port Hueneme, CA
- Number of ships required – 13 (360,000 pounds scheduling limit per ship)
- Number of SEAVANs required – 156 (20-foot SEAVANs, 30,000 pound capacity)
- Two SEAVANs can be loaded per truck trailer (78 truck trailers (40-foot))

1. Forklift to move 156 SEAVANs from storage onto 78 truck trailers for transport to the dock.
2. Crane on ship to move 156 SEAVANs from 78 truck trailers onto ship(s) for transport to Port Hueneme, CA.
3. Ship(s) departs for Port Hueneme, CA, (3 nautical miles to the sea then 5,582 nautical miles).
4. At Port Hueneme, CA, crane will be used to move the 156 SEAVANs from ship(s) to the dock.
5. Forklift to move 156 SEAVANs from dock onto 78 truck trailers for transport to Pell City, AL.
6. Seventy-eight truck trailers travel from Oxnard, CA, to Pell City, AL, (distance of 2,128 miles).
7. Forklift used to unload 156 SEAVANs from 78 truck trailers at Pell City, AL.

A.4 Wake Island – Air transport

Assumptions:
- 14 SEAVANs will be loaded onto aircraft
- Point of Departure – Wake Island
- Point of Destination – Maxwell AFB, AL
- Number of C-17 aircraft required – 5 (40,000 pounds per plane for planning purposes)
- Two SEAVANs can be loaded per truck trailer (7 truck trailers (20-foot SEAVANs, 30,000 pound capacity))

1. Forklift to move 14 SEAVANs from storage onto 7 truck trailers to transport to the C-17 aircraft.
2. Forklift to unload 14 SEAVANs from 7 trailers into cargo hold of 5 C-17 aircraft.
3. Aircraft travels from Wake Island to Maxwell AFB, AL, (14 hours each).
4. Forklift removes 14 SEAVANs from 5 aircraft and loads on to 7 truck trailers for transport to Pell City, AL, (distance of 142 miles).

5. Forklift removes 14 SEAVANs from 7 truck trailers at Pell City, AL.

A.5 Sagami, Japan – Air transport

Assumptions:

- All equipment to be shipped has been placed on the 463L pallets for transport
- Point of Departure – Yokota AB, Japan
- Point of Destination – Maxwell AFB, AL
- Number of C-17 aircraft required – 55 (40,000 pounds per plane for planning purposes)
- Number 463L pallets per C-17 aircraft: 18

1. It is estimated that 112 truck trailers (40-foot) will be used to transport material to Yokota AB.
2. Transfer material from 112 truck trailers to 55 C-17 aircraft.
3. Fifty-five C-17 aircraft travel from Yokota AB, Japan, to Maxwell AFB, AL, (14 hours each trip).
4. Transfer property from aircraft and load onto an estimated 112 truck trailers for transport to Pell City, AL, (distance of 142 miles).
5. Offload truck trailers at Pell City, AL.

A.6 Okinawa – Air Transport

Assumptions:

- All equipment to be shipped has been placed on the 463L pallets for transport
- Point of Departure – Kadena AB, Okinawa
- Point of Destination – Maxwell AFB, AL
- Number of C-17 aircraft required – 116 (40,000 pounds per plane for planning purposes)
- Number 463L pallets per C-17 aircraft - 18

1. It is estimated that 232 truck trailers (40-foot) will be used to transport material to Yokota AB.
2. Transfer material from 232 truck trailers to116 C-17 aircraft.
3. One hundred sixteen C-17 aircraft travel from Yokota AB, Japan, to Maxwell AFB, AL, (14 hours each).
4. Transfer property from aircraft and load onto an estimated 232 truck trailers for transport to Pell City, AL, (distance of 142 miles).
6. Offload truck trailers at Pell City, AL.

A.7 Characteristics of highway from Port Hueneme, CA to Pell City, AL.

1. Estimated urban interstate miles (large cities): 440.
2. Estimated suburban interstate miles (small cities): 180.
3. Estimated rural interstate miles: 1,408.
4. Estimated 4-lane highway (non-interstate) miles: 100.

A.8 Characteristics of highway from Maxwell AFB, AL to Pell City, AL.

1. Estimated urban interstate miles: 25.
2. Estimated rural interstate miles: 107.
3. Estimated 4-lane highway (non-interstate) miles: 10.

APPENDIX B

MARINE ACCIDENT DATA

B.1 Sandia National Laboratories

Sprung, et al. (1998) [a] developed ship collision and ship fire rates based on the Lloyd's Casualty File for the years 1979 to 1993. Ship collision rates were found to be dependent on location, being much more frequent where ship traffic was high. Fire rates were found to have only a weak dependence on distance from shore.

Collision rates were developed for 19 congested ocean regions, including several in the vicinity of Japan and for two catchall regions: all coastal waters (up to 50 miles from land) and the remaining ocean surface. The open ocean value of 6.8×10^{-9} collisions/nautical mile is the lowest, as would be expected. The coastal waters value of 1.9×10^{-7} collisions/nautical mile is significantly lower than some of the 19 congested areas that range from 3.7×10^{-8} to 1.9×10^{-6} collisions/nautical mile. The latter value is for the East Coast of Japan, where Sagami is located. Details of the routes to be used are not known at this time, and to be conservative, the coastal rate will be increased to that for the East Coast of Japan. (Using this higher value for coastal waters is very conservative for Wake Island and conservative for Okinawa. The results given in Section 5.3 are not sensitive to these assumptions.) The following values will be used in this analysis for collision frequency: open ocean - 6.8×10^{-9} collisions/nautical mile and coastal waters - 1.9×10^{-6} collisions/nautical mile. Sprung et al. (1998) [a] also computed an average collision frequency of 7.6×10^{-8} collisions/nautical mile.

Collision frequency for port approaches have values that are often significantly larger than the value for the region in which the port is located (3×10^{-7} to 5.6×10^{-6} collisions/nautical mile). Lacking specific route data, this contribution to the overall collision frequency is ignored. This assumption is non-conservative, but not drastically so, and is compensated for by the large coastal value used.

The collision frequency per port call was found to be about the same for high, (3.1×10^{-5} collisions/port call), medium, (4.6×10^{-5} collisions/port call), and low (4.3×10^{-5} collisions/port call) traffic ports; the highest value of 4.6×10^{-5} collisions/port call will be used in this analysis for all ports.

The fire frequencies were found (Sprung, et al., 1998) [a] to be: 9.6×10^{-8} fires/nautical mile and 5.4×10^{-5} fires/port call.

B. 2 Foundering

Foundering is the category of ship losses due to heavy weather, springing of leaks, breaking in two, etc., but not due to missing, fire, collision, grounding, or wreck on natural features. Foundering represents about half of the total losses in the Lloyd's database (International Atomic Energy Agency (IAEA), 1999)[b]. The Sandia results do not appear to include foundering accidents. A probable reason is that foundering types of accidents were not considered a threat to spent fuel shipping casks, which is the application that the Sandia study addressed. An average frequency of 4.95×10^{-8} founderings/nautical mile is reported by the Japanese in support of the IAEA sea transport accident severity study (IAEA, 1999)[b]. It is assumed that loss of a ship due to foundering is an appropriate accident scenario for inclusion in this study for PCB electrical equipment.

B.3 Conclusion for ships

The average accident frequencies determined by Sandia are 7.6×10^{-8} collisions/nautical mile and 9.6×10^{-8} fires/nautical mile. Both of these values are much higher than the 4.95×10^{-8} founderings/nautical mile, reported by the Japanese. The sum of the two Sandia values is 1.7×10^{-7} collisions or fires/nautical mile, and the reported foundering value is about 30 percent of this sum. To account for foundering, the Sandia values will be increased by 30 percent. The final marine accident frequencies used in this analysis are:

open ocean
$((6.8 \times 10^{-9}$ collisions/nm$) + (9.6 \times 10^{-8}$ fires/nm$))(1.3)$
$= 1.3 \times 10^{-7}$ accidents/nm

coastal waters
$((1.9 \times 10^{-6}$ collisions/nm$) + (9.6 \times 10^{-8}$ fires/nm$))(1.3)$
$= 2.6 \times 10^{-6}$ accidents/nm

port calls
$((4.6 \times 10^{-5}$ collisions/pc$) + (5.4 \times 10^{-5}$ fires/pc$))(1.3)$
$= 1.3 \times 10^{-4}$ accidents/pc

Each ocean route will be assumed to involve 50 miles of coastal waters at both the origin and destination.

Note that a complete port call involves a movement in and a movement out. At origin and destination ports, only one half of a port call (one movement) is applicable.

B.4 Barge Data

Saricks and Kvitek (1994) [c] compiled data for U.S. inland waterways and the Mississippi River, and associated river systems. The accident frequency values were the same for both to two significant figures, 2.4×10^{-6} accidents/km (3.9×10^{-6} accidents/mile). Accidents considered involved reportable damage (greater than $25,000), fatality, or injury producing incapacitation for more than 72 hours.

(a) Sprung, J.L. et al. 1998. *Data and Methods for the Assessments of the Risks Associated with the Maritime Transport of Radioactive Materials*: *Results of the SeaRAM Program Studies*. SAND98-1171. Sandia National Laboratories.

(b) International Atomic Energy Agency. 1999. *Accident Severity at Sea during Transport of Radioactive Material: Final Report of the Coordinated Research Project on Accident Severity during Sea Transport.* Draft 1, Week 12, 1999. To be published by IAEA as a TECDOC report

(c) Saircks, C., and T. Kvitek. 1994. *Longitudinal Review of State-Level Accident Statistics for Carriers of Interstate Freight*. ANL-ESD/TM-68 (DE94 016625). Argonne National Laboratory.

APPENDIX C

HIGHWAY ACCIDENT DATA

Transportation risk analyses for Department of Energy environmental impact statements are usually based on heavy truck accident frequencies determined by Saricks and Kvitek (1994) [(a)]. Frequencies are presented for (1) rural interstates, (2) urban interstates, (3) Federal-aid primary highways, and (4) Federal-aid secondary (rural) highways. The accident frequencies are for heavy truck accidents that involve either an injury or a fatality; thus, accidents involving only collision damage are excluded.

Average U.S. values are:

Urban interstate – 3.58 x 10^{-7} accidents/km
(5.77 x 10^{-7} accidents/mi)

Rural interstate – 2.03 x 10^{-7} accidents/km
(3.27 x 10^{-7} accidents/mi)

Federal-aid primary highways – 2.44 x 10^{-7} accidents/km
(3.93 x 10^{-7} accidents/mi)

Federal-aid secondary highways – 3.48 x 10^{-7} accidents/km
(5.60 x 10^{-7} accidents/mi)

Driving distances for this analysis are given for four highway types: urban interstate, suburban interstate, rural interstate, and 4-lane (non-interstate). The average of urban and rural interstate accident frequencies will be used for suburban interstates, and, lacking additional information, Federal-aid primary highway accident frequencies will be used for 4-lane (non-interstate) highways. The final accident frequency values used in this analysis are:

Urban interstate	– 5.77 x 10^{-7} accidents/mi
Suburban interstate	– 4.52 x 10^{-7} accidents/mi
Rural interstate	– 3.27 x 10^{-7} accidents/mi
4-lane (non-interstate)	– 3.93 x 10^{-7} accidents/mi

(a) Saircks, C., and T. Kvitek. 1994. *Longitudinal Review of State-Level Accident Statistics for Carriers of Interstate Freight*. ANL-ESD/TM-68 (DE94 016625). Argonne National Laboratory.

APPENDIX D

C-17 ACCIDENT DATA

The C-17 Globemaster has experienced 3 Class A accidents (greater than $1,000,000 damage or a fatality) in 224,480 flying hours for an accident rate of 1.34×10^{-5}/hr. Class B accidents involve damage between $200,000 and $1,000,000, permanent partial disability, or in-patient hospitalization of 3 or more people. The Class B accident rate is 2.23×10^{-5}/hr. The truck accident frequency used in this study (Appendix C) is based on injuries and fatalities, and the use of Classes A&B for the C-17 would be consistent with the truck frequencies. Therefore, the C-17 accident frequency used in this analysis is 3.57×10^{-5} accidents/hr.

APPENDIX E

ACRONYMS AND ABBREVIATIONS

AB	Air Base
AFB	Air Force Base
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DLA	Defense Logistics Agency
DoD	Department of Defense
DOT	Department of Transportation
DRMS	Defense Reutilization and Marketing Service
DRMO	Defense Reutilization & Marketing Office
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHA	Federal Highway Administration
FONSI	Finding of No Significant Impact
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMCO	Inter-Governmental Maritime Consultative Organization
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
JEGS	Japan Environmental Governing Standards
MSDS	Material Safety Data Sheet
MTMC	Military Traffic Management Command
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated biphenyl
POD	Port of Debarkation
POE	Port of Embarkation
PPM	Parts Per Million
SAAM	Special Assignment Airlift Mission
TCI	Trans-Cycle Industries
TSCA	Toxic Substances Control Act
UN POP	United Nations Performance Oriented Packaging
U.S.	United States
WWII	World War II

APPENDIX F

PCB DISPOSAL AND TREATMENT TECHNOLOGY

Federal regulations for disposal of PCBs are established in 40 CFR 761.50 through 40 CFR 761.70. Conformance with these rules is mandated by the 1976 Toxic Substances Control Act. The U.S. Environmental Protection Agency (EPA) has developed a set of five specific PCB disposal methodologies that include: Incineration, High Efficiency Boilers, Scrap Metal Recovery Ovens and Smelters, Chemical Waste Landfills, and Decontamination. Disposal techniques chosen for PCB destruction depend on the concentration of PCB in the contaminated items. Also, some PCB- contaminated items are disposed of using more than one of the four disposal techniques. For example, transformers containing 500 ppm or more PCBs are drained of all PCB-containing liquids. The liquids are disposed of by either through incineration or high efficiency boilers, whereas the carcass of the transformer may be placed in scrap metal recovery ovens or smelters or a chemical waste landfill. Further discussions of each disposal technique and their performance specifications are summarized herein.

High Temperature Incineration

All PCB materials, including both liquid and non liquid, can be disposed of by incineration. High-temperature incineration is required for all PCB liquids that are 500 ppm and greater and for large PCB capacitors. However, any incinerator used for the purpose of destroying PCBs must be approved prior to operation by an EPA Regional Administrator or the Director of the National Programs Chemical Division. To obtain approval, the proposed incinerator must meet a set of nine requirements specified in 40 CFR 761.70. The requirements include criteria for both operation and monitoring of the incineration process. Operation criteria requires an incinerator to operate at greater than 1,600 ^{o}C (2,912 ^{o}F) for all liquid PCBs greater than 499 parts per million (ppm) and for large PCB capacitors. Additionally, the combustion efficiency for both carbon dioxide and monoxide must be at least 99.9 percent and mass air emissions from the incinerator must be no greater than 0.001g PCB/kg of the PCB introduced into the incinerator. Monitoring criteria requires the recording of the rate and quantity of PCBs being incinerated and combustion products produced by incineration emissions (e.g., PCBs, O_2, CO, and CO_2).

High Efficiency Boilers

High efficiency boilers are used to dispose of PCB liquids containing a PCB concentration greater than 50 ppm, but less than 500 ppm. Regulations have been established in 40 CFR 761.60 for using high efficiency boilers for both the destruction of PCB-contaminated mineral oil dielectric fluid and other PCB containing liquids. According to the regulations, specific requirements have been established for both operating and monitoring boilers. A boiler used for PCB disposal must operate at a rate greater than 50 million British Thermal Units (BTUs) per hour. Additionally, PCB contaminated liquids are not to be fed into a boiler unless the boiler is operating at its normal operating temperature (this prohibits feeding PCB fluids during either start up or shut down operations).

Chemical Waste Landfills

Chemical waste landfills are considered the primary options for the disposal of PCB-contaminated solids and large amounts of soil and debris (sorbent materials, porous concrete, etc.) contaminated from spills or from the excavation of former PCB disposal facilities. Liquids containing PCBs or damaged PCB articles with concentrations 500 ppm or greater are not to be placed into a landfill. Liquids containing PCBs that are less than 500 ppm and are stabilized can be landfilled.

Federal regulations for disposal of PCBs by chemical waste landfill are established in 40 CFR 761.75. According to the regulations, a chemical waste landfill used for the disposal of PCB and PCB items must be approved by the EPA's Regional Administrator the EPA Region in which the landfill is located. In order for a chemical waste landfill to obtain approval for the disposal of PCBs, the placement and construction of the landfill must meet a series of technical requirements to ensure safety to the environment and human health. In addition to these technical requirements, a chemical waste landfill operator must prepare an operation plan that is approved by the EPA Regional Administrator prior to disposal of any PCB-contaminated item. The plan is required to include a detailed description of procedures to be used for record-keeping, surface water handling procedures, excavation and backfilling, waste segregation burial coordinates, vehicle and equipment movement, use of roadways, leachate collection systems, sampling and monitoring procedures, monitoring wells, environmental emergency contingency plans, and security measures to protect against vandalism and unauthorized waste placements. If the facility plans to dispose of liquid PCBs containing concentrations between 50 ppm and 500 ppm, the operation plan is required to contain a description of procedures used for their disposal. These procedures must incorporate the use of inert and sorbant material that is capable of absorbing all of the liquid contents of a PCB container, if the container should rupture. A chemical waste landfill cannot dispose of liquid PCBs that have a PCB concentration that is greater than 500 ppm nor can they dispose of ignitable waste.

Scrap Metal Recovery Ovens and Smelters

Scrap metal recovery ovens and smelters can be used for the disposal of PCB-contaminated carcasses and residuals according to 40 CFR 761.75. The EPA has established standards for both burning and smelting PCB-contaminated carcasses and residuals. Under the standards, the following forms of PCBs may be disposed of in a scrap metal recovery oven or smelter: PCB contaminated articles, metal surfaces in PCB remediation waste, and metal surfaces in PCB bulk product waste. Scrap metal ovens and smelters that accept such material must have either a RCRA permit or state air permit with a PCB limit. Additionally, the operator of the facility must notify the EPA of their PCB disposal operations and comply with all associated requirements. The EPA regulations have also established technical requirements for both scrap metal recovery ovens and smelters.

Decontamination

On June 29, 1998, the EPA promulgated a series of changes in the PCB regulations under the TSCA expanding the role of decontamination. The amendment established standards and procedures for removing PCBs from water, organic liquids, non-porous surfaces (including scrap metals from disassembled electrical equipment), concrete, and non-porous surfaces covered with porous surfaces. The amended rule allows decontamination based on "performance-based" standards or in accordance with "self-implementing" decontamination procedures. Performance-based standards set maximum levels that must be met. Self-implementing decontamination procedures are an alternative to performance-based standards; however, the decontamination procedure must comply with EPA guidelines as established in 40 CFR 761.79.

EPA established performance standards for the various PCB-contaminated articles that may be considered for decontamination. Achieving these standards allows for either the reuse or less restrictive disposal of the article from which PCBs have been removed. The PCB regulations also require confirmatory sampling after decontamination to ensure that the decontamination levels have been achieved. Self-implementing decontamination requires the use of the decontamination procedures as established by the EPA in 40 CFR 761.79. Decontamination procedures have been established for PCB-contaminated containers, movable equipment, non-porous surfaces with various concentrations of PCB, piping and airlines, and metal surfaces.

Alternative Methods for Disposal

Alternative methods are currently being developed and implemented for the destruction of PCBs and PCB items. Any alternative method proposed or used for the disposal of PCBs must achieve a level of performance equivalent to incineration or a high efficiency boiler as discussed above. Also, a written request for approval must be sent to the EPA Regional Administrator or the Director, National Program Chemicals Division for a waiver from the regulations established for the incinerator and the high efficiency boiler. More importantly, the applicant must demonstrate that the proposed PCB disposal method will not present an unreasonable risk of injury to health or have an adverse impact to the environment.

Currently, some alternative disposal methods have been approved by the EPA for both the decontamination and the disposal of PCBs. For instance, chemical destruction of PCBs was developed to chemically transform the polychlorinated biphenyl molecules into nontoxic polyphenyls and other end products.

Technologies used at TSD Facilities to which DRMS has sent domestic PCBs and PCB items (January – August 2002)

Facility Name	Location	Disposal Technologies	Landfill	Incineration	Mechanical Processing	Scrap Metal Recovery Oven	Encapsulation	Chemical Fixiation
ECDC (Allied)	East Carbon City, UT		x					
Pollution Control Industries of TN	Millington, TN							x
Onyx Environmental Services, LLC	Port Arthur, TX		x	x	x			
Safety-Kleen	Deer Park, TX			x				
Modern Landfill	York, PA		x					
Safety-Kleen	Waynoka, OK		x				x	
Mercury Waste Solutions, Inc.	Albany, NY				x			
U.S. Ecology, Inc.	Beatty, NV		x					x
U.S. Ecology Idaho, Inc.	Grand View, ID			x				
Perma-Fix of Orlando, Inc.	Orlando, FL		x					
Chemical Waste Management, Kettleman Hills	Kettleman City, CA		x				x	x
Superior Special Services, Inc.	Phoenix, AZ					x		
Chemical Waste Management, Emelle Facility	Emelle, Al		x	x				x
Trans-Cycle Industries	Pell City, AL		x	x	x			

Source: DLA/DRMS, 2002 (Environmental Reporting System).

APPENDIX G

RESPONSE TO PUBLIC COMMENTS

On August 28, 2002, DLA published a Notice of Availability in the Federal Register announcing a draft this Environmental Assessment (EA). DLA received two comments regarding the draft EA during the public comment period that concluded September 27, 2002.

The first comment concerned the PCB items currently in storage on Wake Island. The comment expressed concern that the draft EA and the proposed EPA rule include the PCBs at both Wake Island and Japan. The comment requested that a separate EA address the PCBs at Wake Island only. DLA responded with a letter explaining that DLA provided separate petitions for Wake Island and Japan to EPA. EPA decided to combine the petitions into a single rule for Wake Island and Japan. DLA also explained that the PCB items on Wake Island are listed in the EA as the first foreign-manufactured PCBs to be transported and were a top priority for DLA action.

The second comment was from a firm that offered on-site treatment for the PCBs. Construction of an on-site treatment plant was considered in the EA as an alternative but was considered impractical. DLA had examined technologies that could be suitable for the treatment of PCBs, but determined treatment was very costly, logistically problematic, and required a lengthy permitting process.

APPENDIX H

CONTAINERIZED HAZMAT SHIPMENT DATA

Commercial Port	Year	TEUs[1]	TEUs Hazmat[2]
Los Angeles/Long Beach	2001	9,646,487	771,719
Port Hueneme	2001	17,221	1,377
Oakland	2001	1,643,585	131,487
Seattle/Tacoma	2001	2,635,383	210,831
Source: AAPA Website			
Note 1: TEU means twenty-foot equivalent unit (a measure identifying the number of 20-foot containers that would have been used to move the applicable cargo. One 40-foot container is equal to two TEUs.)			
Note 2: While the U.S. Coast Guard has initially estimated that approximately 10% of the total amount of TEUs that pass through U.S. ports contain hazardous substances, experience has shown that this amount is closer to 8%, therefore this figure is used in the calculation of the total amount of TEUs that contain hazmat.			

APPENDIX I

West Coast Port Natural Resources

Los Angeles/Long Beach: The waters within the Ports of Los Angeles/Long Beach include some of the last sheltered subtidal habitats in Southern California. They provide nursery and year-round habitats for over 130 different species of fish such as the California Halibut and the White sea bass. Sea lions are common inside the harbor. The shoreline within the harbor is generally a man-made structure such as concrete seawalls and rock dikes. Much of the harbor bottom is soft sand and clay. However, just outside the harbor are fine sand and gravel beaches. Local coastal wetlands provide a habitat for a number of endangered species, as well as a refuge for numerous migratory birds, such as the endangered Least Tern. Within the nearshore and offshore waters, rich and varied habitats are found for many plants, fish, seabirds, and mammals, including Giant Kelp, the California Spiny Lobster, seals, dolphins, and whales. There are several species of concern and threatened and endangered species (as listed by either Federal or State guidelines) within the Los Angeles/Long Beach port region. This includes 6 species of fish, 17 birds (including the endangered California Brown Pelican and the Least Tern), and 8 mammals.

Port Hueneme: The waters in and surrounding Port Hueneme provide a habitat for a variety of shellfish, fish, plant, and bird species. There are several species of concern and threatened and endangered species that reside within this area, including the Southern Sea Otter, the Southern California Steelhead, the California Brown Pelican, the Western Snowy Plover, and the Least Tern. The interior of the harbor is sheltered and consists of man-made structures such as concrete seawalls and boulder riprap. The entrance consists of riprap jetties. There is also a local water intake within the harbor. The surrounding coastline is generally fine to medium-grained sandy beaches.

San Francisco Bay: San Francisco Bay provides a habitat for several species of concern and threatened and endangered species. On this list, there are six fish (including the Central Valley Steelhead and the Chinook Salmon), eight birds (including the Western Snowy Plover, the Least Tern, and the Brown Pelican), and nine mammals (including the Guadalupe Fur Seal and the Northern Sea Lion). The waters of the bay also provide a critical habitat for Dungeness Crab and Pacific Herring. There are also several environmentally sensitive wetlands that surround the interior of the bay.

Seattle: The waters of Puget Sound and the adjoining environmentally sensitive salt marshes, rocky shores, tidal flats, and beaches provide habitats for a variety of marine vegetation, shellfish, salmon, groundfish, birds, and marine mammals such as whales, sea lions, otters, and orcas. Several species are either endangered or threatened (e.g. the American White Pelican, Brown Pelican, Snowy Plover, and Bald Eagle; the Black Right Whale and Blue Whale; the Chinook Salmon and Bull Trout, the Sea Otter and Steller Sea Lion; and the Leatherback and Green Sea Turtle).