

**2014 NOMINATION FOR CHIEF OF NAVAL OPERATIONS  
ENVIRONMENTAL QUALITY LARGE SHIP AWARD**

**1. Introduction.** USS ESSEX (LHD 2) is home ported in San Diego, CA. Proactive environmental compliance and crew-led initiatives have helped ESSEX preserve the environment and natural beauty of the San Diego Bay. With 1,075 shipboard personnel, ESSEX led the way in environmental stewardship, combat effectiveness, and worldwide power projection.

**2. Background.**

**2.1 Environmental Challenges.** ESSEX faced many challenges over the last two years. Two of these challenges included:

**2.1.1 CMAV OVERHAUL:** ESSEX underwent the largest and most expensive dry-docked planned maintenance availability (DPMA) in SURFOR history with final cost exceeding \$245 million dollars. Despite daunting pressures, significant growth work, and constant shifts during a period of economic uncertainty, sequestration, ESSEX exceeded all expectations and completed the DPMA only one month after the original projected completion date. Although at times seemingly overwhelmed with the amount of work taking place onboard, the crew kept environmental protection at the forefront and no environmentally detrimental incidents occurred.

**2.1.2 WORKUPS:** Immediately following the DPMA ESSEX began a compressed training cycle. During this period ESSEX balanced their environmental requirements with all the other challenges they faced.

**2.2 Environmental Management, Organization, and Staffing.** Environmental compliance was pervasive across all departments, with major contributions from engineering, operations, weapons, air, aircraft intermediate maintenance department (AIMD), supply, and safety. The ship's assistant chief engineer was designated by the commanding officer (CO) as the afloat environmental protection coordinator and worked with the safety officer to ensure compliance across all aspects of ESSEX's environmental protection program.

**2.2.1** Auxiliaries division professionally operated trash processing equipment which ensured only legal waste discharges. Under direction of the auxiliaries officer, work center EA03 trained 5 personnel in operating and maintaining waste processing equipment. ESSEX efficiently processed 2.3 million pounds of solid waste during underway days in 2012-2014.

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**2.2.2** Under the direction of the fire marshal, ESSEX ran 16 oil and hazmat spill drills throughout the reporting period ensuring all emergency response teams were properly trained to handle accidental discharges. The ship's fire marshal was a vital component to the organized damage control environmental protection plan.

**2.2.3** Aviation fuels division handled the movement of fuels and oils onboard ESSEX, maintained oil spill kits in the hangar bay and pump rooms, and trained fuel spill responders in case of emergency. The fuels bos'n managed environmental protection efforts for fuel and was instrumental in the prevention of JP-5 spills.

**2.2.4** Engineering department guaranteed all oil used in shipboard machinery remained onboard, properly maintained the oil-water separator, and ensured only clean water was discharged overboard. Engineering also ran damage control central efficiently to constantly monitor fluid levels and prevent HAZMAT from being pumped over the side.

**2.2.5** Operations and weapons departments planned events to minimize environmental impact using the latest Protective Measures Assessment Protocol (PMAP) software. They ensured all watch standers were properly trained to identify marine mammals and stop evolutions when they presented an environmental hazard. The meteorology and oceanography officer performed PMAP analysis of all weapon shoots, anchor details, and other required evolutions.

**2.3 Environmental Guidance, Directives, and Plans.** ESSEX annually reviewed, revised, and updated the following instructions:

- (a) LHD2INST 3120.6B, Commanding Officer's Standing Orders, 21 Mar 14
- (b) CWIS PACFIRE INST
- (c) LHD2INST 5090.3A, Oil Spill Contingency Plan, 9 Jan 14
- (d) Solid Waste Management Plan
- (e) Gas Free Bill

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**3. Program Summary.**

**3.1 Environmental Program and Compliance with Chapter 35 and Appendix D of OPNAV M5090.1.** ESSEX maintains a strong commitment to preserving the environment and routinely conducts self-assessments using the checklist from Appendix D of OPNAV M5090.1. Hazardous Material Minimization Center (HAZMINCEN) operations saved \$1.6 million dollars by reusing excess hazardous materials and reducing the volume of hazardous material ordered in just the last year. Engineering department provided continuous support and ensured ESSEX's environmental protection equipment and solid waste processing capabilities stayed fully operational. Environmental stewardship was stressed at quarterly compliance meetings, and crew environmental compliance was addressed at every stand-down occurring from 2012-2014.

**3.2 Most Outstanding Program Features and Accomplishments.**

**3.2.1** ESSEX flawlessly performed during the TYCOM material inspection receiving a "green" grade and was praised for being above standards throughout the assessment.

**4. Accomplishments.**

**4.1 Air Pollution Control Practices and Improvements.** ESSEX technicians took great pride in maintaining the ship's refrigeration systems. Technicians aggressively ensured the proper disposal of refrigerant, and strictly adhered to procedures which prevented the unintentional release of hazardous compounds. All six of ESSEX 300-ton air conditioning plants were optimized to use environmentally friendly R-236FA refrigerant. Ship's force equipped each air conditioning plant with an installed recovery receiver. This pumped down refrigerant and minimized the amount necessary to maintain the system. Thirteen highly sensitive parasense detectors were installed in every space containing refrigerant. These systems indicate the slightest release of refrigerant and are monitored constantly by technicians, food service personnel, and engineering watch-standers. Refrigerant management was streamlined by using secure bottle storage racks adjacent to the air conditioning plants. Procedural compliance and innovative management led to a flawless environmental safety record during the extended DPMA and workups in 2014.

**4.2 Water Pollution Control:**

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**4.2.1 CHT System Management Practices.** ESSEX collection, holding, and transfer (CHT) operations were consistently conducted in accordance with the Sewage Disposal Operational Sequencing System (SDOSS) guidelines and maintained the highest levels of cleanliness. Repair Division ensured assigned personnel were experts in all facets of the CHT system. By using an in-depth qualification process that included PQS and hands on training. Technicians completed more than 35 welds, braze, and ring repairs to sewage and flushing piping and corrected 150 sewage related flushing trouble calls. ESSEX also completed 12 transits within restricted waters and during the Seattle Seafair safely flow metered and transferred 500,000 gallons of sewage to barges and trucks with zero spills.

**4.2.2 Oil and Hazardous Substance Spill Prevention and Response.** ESSEX conducted 7 replenishments at sea transferring 4 million gallons of fuel without incident since exiting DPMA in March 2014. Duty sections trained extensively to respond promptly to both onboard and overboard spills. Immediate response teams consisted of the fire marshal, affected repair locker personnel, fuels bos'n, and the fuels LCPO. These personnel are experts at isolating the source of a leak, preventing overboard discharge through the use of absorbents, and ultimately cleaning any spill while minimizing damage to the environment or harmful exposure to personnel.

**4.2.3 Oily Waste System (OWS) Management and Oil Content Monitor Capabilities.** During the past two years, ESSEX's ability to reduce oily waste through efficient plant maintenance practices significantly minimized bilge water production and enhanced processing productivity. The replacement of pump packing, piping gaskets, and the elimination of leaks into bilges contributed to a decrease in the generation of oily waste. Stringent maintenance practices and aggressive corrective maintenance over the last two years have greatly enhanced the efficiency of the OWS. For the first time in seven years ESSEX NR 1 OWS was repaired and utilized gravity coalescence separation to efficiently remove oil from oily water. The separated water is then monitored by oil content monitors (OCM) that are set at 15 parts per million (ppm) of oil and automatically control solenoid diverting valves. The OCM only allowed processed water to be discharged overboard. Water exceeding limits was recycled back to the oily waste holding tank and reprocessed to prevent oily water from being discharged over the side. This reprocessing further reduced the volume of

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oily waste that must be transferred off-ship by continuously separating free water from oily waste.

### **4.3 Solid Waste Management and Resource Recovery**

**4.3.1 Solid Waste Management Practices.** During the past two years, ESSEX processed between 3.5 and 4 tons of solid waste per day. Diligent use of the shredders and four plastic waste processor compressed melt units reduced the volume of 1,400 pounds of plastic waste per day by 30 to 1, saving 217,000 cubic feet of landfill space. This volume reduction allowed ESSEX to store and transfer plastic waste to military sealift command ships for proper disposal ashore. One large solid waste pulper converted an average of 4,600 pounds per day of food, paper waste, and cardboard into slurry for overboard discharge. ESSEX also shredded and disposed of 1,220 pounds of metal and glass, daily. The greatest strength of ESSEX's solid waste management program was facilitating the culture of environmental stewardship. Every space contained labeled containers utilized to divide waste into three disposal categories or recycling. The crew was trained on the environmental significance of separating waste and why to recycle. Trained waste room operators verified trash was properly separated before disposal, and ESSEX employed a second look strategy to provide a final check before waste was processed in the shredder or pulper. This diligence assured ESSEX discharged zero plastic waste into the ocean, and allowed the ship to operate for extended periods with confidence in environmentally sensitive areas of California, per maritime pollution regulations.

**4.3.2 Source Reduction Techniques.** ESSEX employed practical but effective source reduction techniques to minimize the amount of solid waste and pollution generated by its disposal. Sensitive documents were confetti shredded and then pulpered prior to overboard discharge. This method of disposal was far more economical and environmentally friendly as opposed to alternatives.

**4.4 Hazardous Material (HM)/Hazardous Waste (HW) Management.** Hazardous materials were controlled by the HAZMINCEN under the guidance of HAZMAT Officer (HAZMO). Toxic substances were replaced with more environmentally friendly products, such as biodegradable detergents. In coordination with the Industrial Hygiene Officer and Afloat Environmental Protection Coordinator, new product requests were screened for personnel and environmental safety IAW M5090. Materials turned in for

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disposal were consolidated in to a single container and re-used once there was sufficient quantity. The HAZMINCEN worked with shore-side facilities to use excess hazardous material and ensured they didn't order materials that ESSEX had in excess.

**4.5 Protective Measures Assessment Protocol (PMAP).** The meteorology and oceanography officer performed analysis prior to all major exercises. Quarterly inspections were conducted to ensure the latest version of the PMAP software was run and operations weren't conducted near any environmentally sensitive areas. Briefings were provided to the bridge watch, lookouts, and other personnel involved in the exercises. All lookouts and watchstanders were vigilant for nearby marine mammals, floating debris, and other sea life habitats. PMAP was an essential element of ESSEX's environmental awareness culture.

**4.6 Environmental Awareness.** Multiple command and crew initiated programs focused on environmental awareness. These included:

**4.6.1** ESSEX's community relations (COMREL) program emphasized environmental stewardship by encouraging volunteers to clean up the environment in conjunction with local groups. ESSEX conducted COMRELS routinely. Every six months ESSEX spearheads the San Diego Main Street cleanup effort for Naval Base San Diego. ESSEX typically has the most volunteers attend.

**4.6.2** Environmental education during safety stand-down's included topics such as the Admiral Kuznetsov oil spill off the coast of Cork, Ireland, and energy conservation in port, at home, and at sea.

**4.6.3** Firefighting and spill drills were held in hazardous material space with special considerations given to the toxic gasses produced and ensured quick containment of hazardous materials before they impacted the environment.

**4.6.4** An in port recycling program was developed due to the extensive time spent in port during DPMA. The program was initiated by the environmentally concerned second class association and their recommendations had cost savings of \$50,000.