

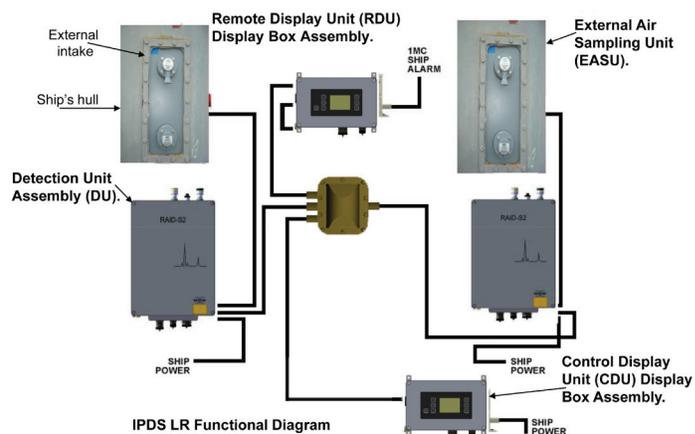
Improved (Chemical Agent) Point Detection System – Lifecycle Replacement (IPDS-LR)

Executive Summary

- The Navy completed integrated testing and FOT&E of the Improved (Chemical Agent) Point Detection System – Lifecycle Replacement (IPDS-LR) in September 2010.
- The system meets key requirements for reliability, availability, and false alarms.
- DOT&E published a classified IPDS-LR Beyond Low-Rate Initial Production (BLRIP) report in April 2011.

System

- The IPDS-LR is a ship-based Chemical Warfare Agent (CWA) detector that will serve as a form/fit/function replacement to the existing IPDS on all U.S. Naval ships. The Next Generation Chemical Point Detection System, which is still under development, is projected to replace the IPDS-LR in FY18.
- The commercially-available detector unit is designed to automatically detect and identify CWA vapors by agent class (nerve, blister, and blood) and type agent within a specified concentration level and time period.
- The IPDS-LR CWA detection performance is measured against the requirements in the September 1994 IPDS Operational Requirements Document, the IPDS-LR Performance Specification, and the latest toxicological guidance provided by the U.S. Army Center for Health Promotion and Preventive Medicine.
- The IPDS-LR can be integrated into the Main Circuit general shipboard announcing system in order to provide ship-wide alerts. The IPDS-LR shipboard system is composed of several components:
 - Two Detector Units (DUs). Located near each bridge wing, port, and starboard side, the DUs sample air for the presence of CWA vapors and provide an alert message to the display units.
 - Two External Air Sampling Units (EASU). Located near each DU, it draws in air from outside the ship, filters out particulates, and transfers that air to the DU for analysis. Exhaust from the DU exits the ship through the EASU.
 - One Control Display Unit. Located in Damage Control Central, it is the primary user interface that provides the



control functions, selects the state of the system, reports the system status, and provides audible and visual alarms upon detection.

- One Remote Display Unit. Located inside the bridge, it provides system status and alarm information to the ship's primary control station.

Mission

- The Navy intends to use the IPDS-LR to serve as a fixed-point detector to monitor external air for CWA. The system is required to detect and alert ship personnel to the onset of CWA vapor hazards.
- Successful detection of a CWA at the required threshold concentration warns a ship of an imminent chemical attack and should provide sufficient time for the crew to seek shelter inside a collective protected zone or don personal protective equipment, including a filtered mask, before the concentration reaches a critical level.

Major Contractor

Bruker Detection Corporation – Billerica, Massachusetts

Activity

- The Navy completed integrated testing and FOT&E in September 2010. Integrated testing and FOT&E were conducted in accordance with a DOT&E-approved test plan.
- DOT&E published a classified IPDS-LR BLRIP report in April 2011.

NAVY PROGRAMS

- With the completion of the FOT&E and BLRIP report, DOT&E removed IPDS-LR from oversight.

Assessment

Based on the system performance in integrated testing and FOT&E:

- IPDS-LR was able to detect 7 of 10 CWAs tested. IPDS-LR detects vaporized agents; therefore, it does not perform well against agents that do not readily vaporize.
- IPDS-LR has a comparable detection performance to the legacy system it replaced; it met or exceeded reliability,

maintainability, and availability requirements. In exceeding its false alarm requirement, the IPDS-LR demonstrated significant improvement in false alarm performance compared to the legacy IPDS.

- IPDS-LR was found to be operationally effective and suitable.

Recommendations

- Status of Previous Recommendations. The Joint Program Executive Officer for Chemical and Biological Defense and the Navy addressed all previous recommendations.
- FY11 Recommendations. None.