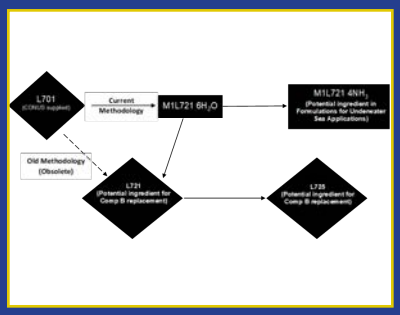
# Scale-Up of L-Series Materials for CONUS Explosive Fills




PERIOD OF PERFORMANCE:
February FY2024 to December FY2026

PLATFORMS:
Clandestine Delivered Mine (CDM) MK 68 MOD2
Long Range Aerial Delivered Maritime Mine (LRADMM)

CENTER OF EXCELLENCE:
Energetics Manufacturing Technology Center (EMTC)

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STAKEHOLDER:
N957 for PMS 495


S3027 — L-Series Process Development and Scale-Up

## Objective

Many of the currently fielded naval underwater weapons programs require materials that do not have reliable continental United States (CONUS) sources and the underwater explosive (UNDEX) formulations for those systems are in need of updating. These programs are continually faced with material-related issues due to: 1) material obsolescence – current qualified supplier(s) have discontinued products or product lines; 2) the quality or characteristics of material coming from current manufacturers is inconsistent; and/or 3) critical materials only have a sole-source point of domestic manufacture. In many instances the materials that are being discontinued are no longer available from alternate domestic manufacturers.

These issues make it necessary for alternate materials and/or sources to be identified to perform the same or similar function as the material being replaced. The updating of these UNDEX formulations will be aided by the production of these L-series products at Naval Surface Warfare Center Indian Head Division (NSWC IHD).

The Energetics Manufacturing Technology Center (EMTC) will support the chemical scale-up team at NSWC IHD with the manufacturing of the L-series energetic products: L721, M1L721*6H2O, M1L721*4NH3 and L725 . Although a certified lab-scale process from the inert precursor, L701 to L721 has been submitted before, prior attempts at scale-up of the process proved difficult and inefficient. In collaboration with the Naval Research Laboratory and Combat Capabilities Development Command Armaments Center, EMTC is designing and executing modern scalable processes for these selected L-series materials that can be fitted for pilot-scale production.

## Payoff

This effort will establish a reliable CONUS source for the production of selected L-series materials to be utilized in naval UNDEX. The L725 product will be a key gateway material to an extensive line of other L-series materials.

## Implementation

This effort benefits the Navy, as well as the defense industry community, by establishing a CONUS source of a critical energetic material for use in naval underwater weapon systems. Due to a limited source of material, NSWC IHD has proposed a method to demonstrate the scalability of the L-series products that are highly significant and can potentially resolve an ongoing issue related to the product sourcing. Under this effort, NWSC IHD will work with Defense Threat Reduction Agency and Office of the Chief of Naval Operations N957 for PMS 495 to establish a process to produce reliable L721, L725, M1L721*6H2O and M1L721*6NH3.