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A 1/10 Scale Pilot Plant for the Ecological Demilitarization of Mk 25 Marine Location Markers/Red Phosphorus Composition,

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Abstract: NAVSEA (0332) under WR 74026 tasked NWSC Crane to develop a 1/10 scale pilot plant to reclaim phosphoric acid and other components from the disposal of Mk 25 Marine Location Markers. The typical pyrotechnic formulation for the Mk 25 and Mk 58 Marine Location Markers plus the Mk 6 Aircraft Smoke and Illumination Signal is 53 percent **red phosphorus**, 34 percent manganese dioxide, 7 percent magnesium, 3 percent zinc oxide and 3 percent linseed oil. The process includes breakdown equipment to extract the **red phosphorus** composition from the markers and an incineration complex to convert the composition to phosphoric acid suitable for fertilizer application. Processing the composition from the Mk 58 Marine Location Markers and that from the Mk 6 Aircraft Smoke and Illumination Signal through the incineration complex would be identical to that of the Mk 25 - only the composition extraction procedure would differ. As part of the overall development efforts by NWSC Crane, breakdown machines and an incineration complex were designed, fabricated and individually tested in order to obtain necessary data.

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