Deactivated Nuclear Power Plant Program

Presenter

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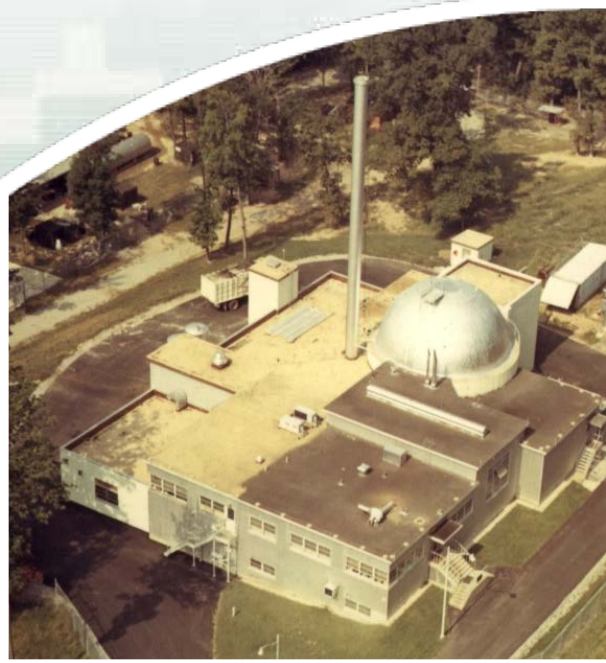

US Army Corps of Engineers

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Agenda

- History
- All Hazards Assessments (AHA)
- Baltimore Support to Army Reactors
- STURGIS

Historical DoD Reactor Uses

- Atomic weapons production
- Naval Nuclear Propulsion
- Army Nuclear Power Program
- DoD research missions

U.S. Army Nuclear Power Program

- 1952 DoD study to determine the feasibility of developing reactor plants to serve military power needs on land
- Joint program between DoD and the Atomic Energy Commission
- Each service participated in the Army managed program

U.S. Army Nuclear Power Program

- DOD exempted from the Atomic Energy Act (AEA) –1954
  - Section 91(b) – Military Application of Atomic Energy (Authority)
  - Section 110(b) – Atomic Energy Licenses (Exclusions)

U.S. Army Nuclear Power Program

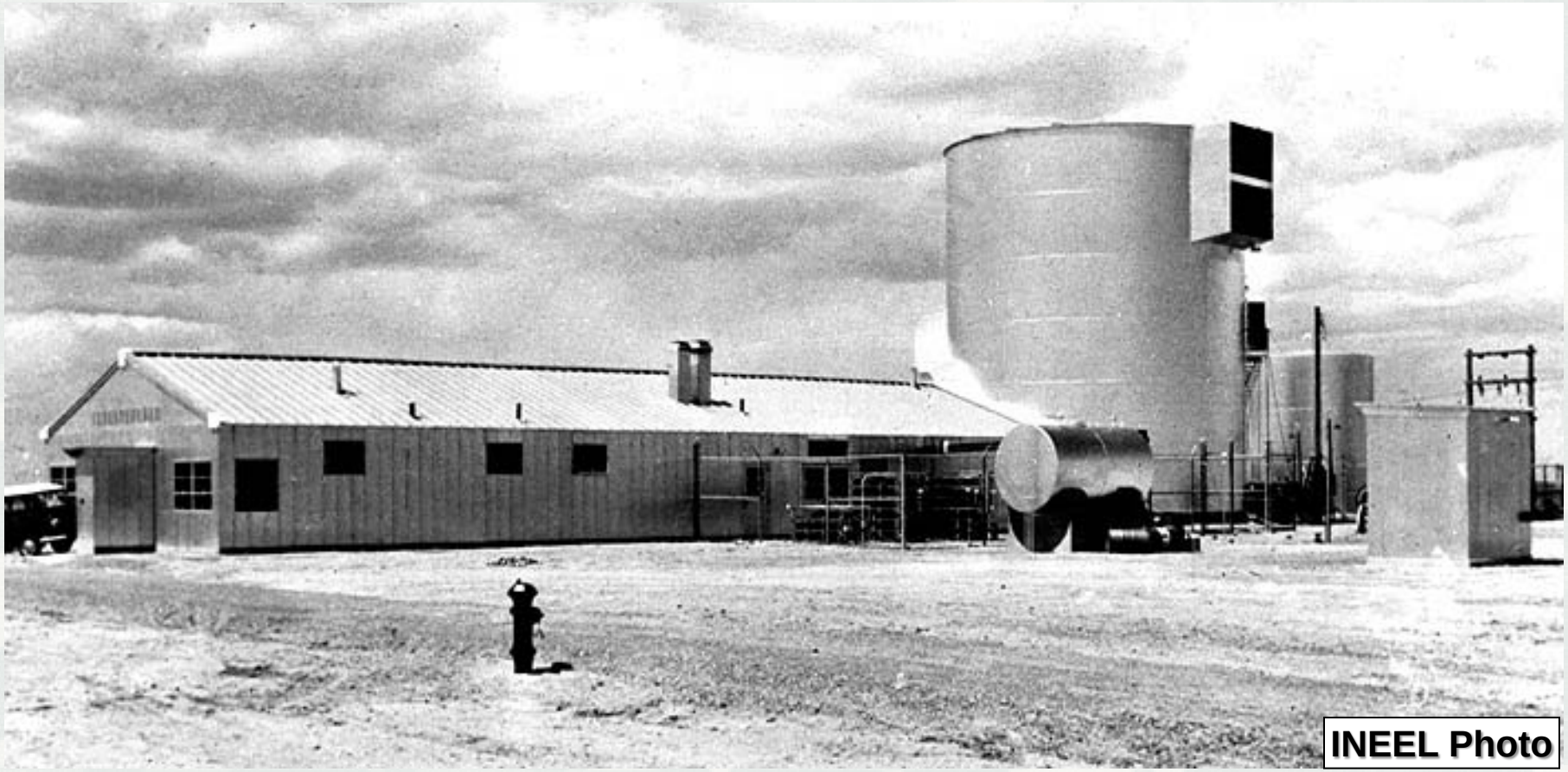
- Army implements its authority in AR 50-7, Army Reactor Program
  - Army utilizes a permitting process for all phases of operation to include decommissioning
  - Whenever feasible, the Army uses NRC procedures to manage exposure and contamination.
- The NRC concurred in a similar situation that the Army Reactor Program material was not under NRC authority for licensing or disposal.

U.S. Army Nuclear Power Program

- A total of 9 reactors were built and operated between 1957 and 1977
- 6 DoD Reactors (4 Army, 1 AF, 1 Navy)
- 3 prototype reactors developed at the National Reactor Testing Station in Idaho
- Benefited the concurrent development of commercial nuclear power

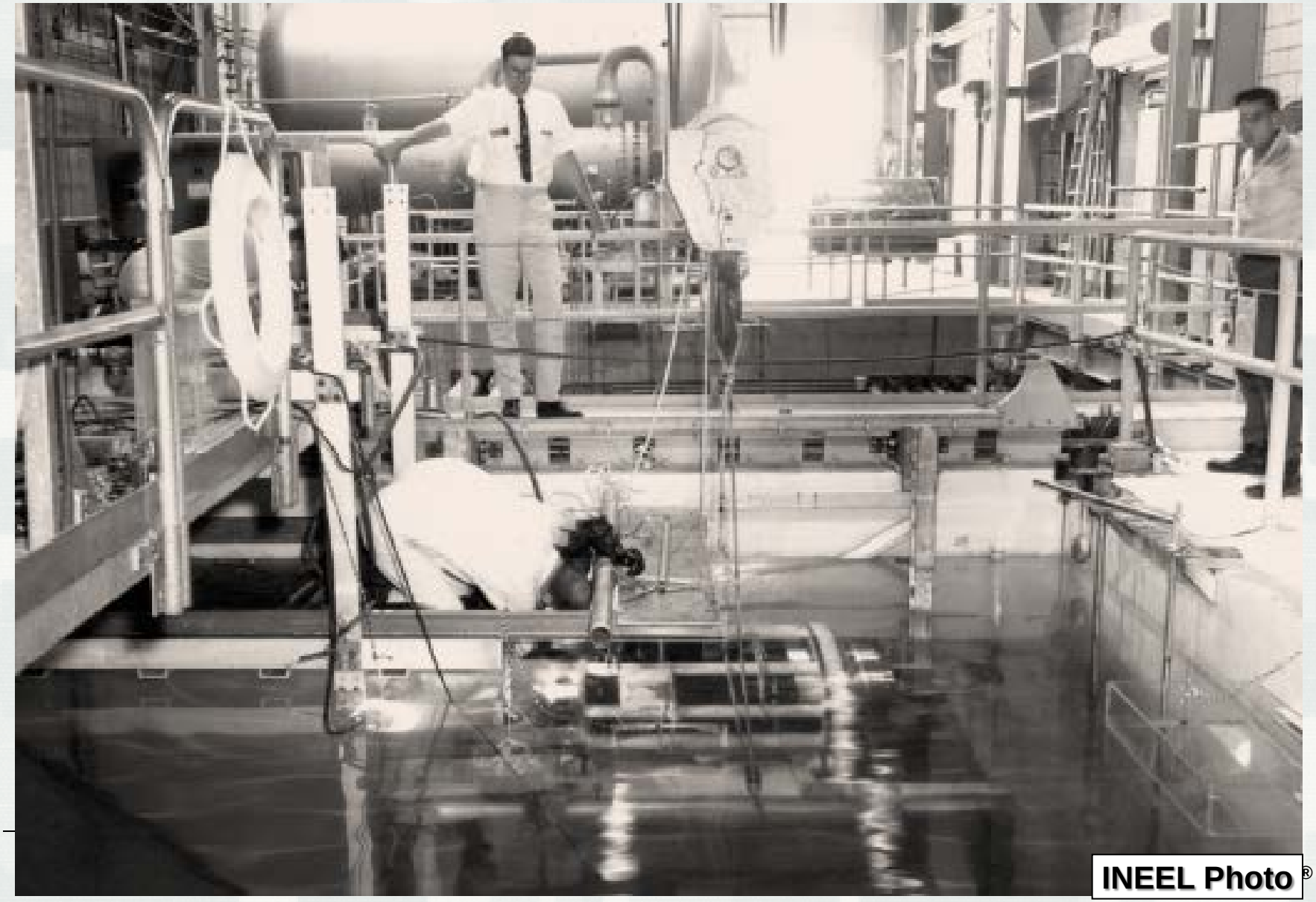
SM-1 During Operation at Fort Belvoir, VA

SL-1 During Operation at NRTS



INEEL Photo

GCRE During Operation at NRTS

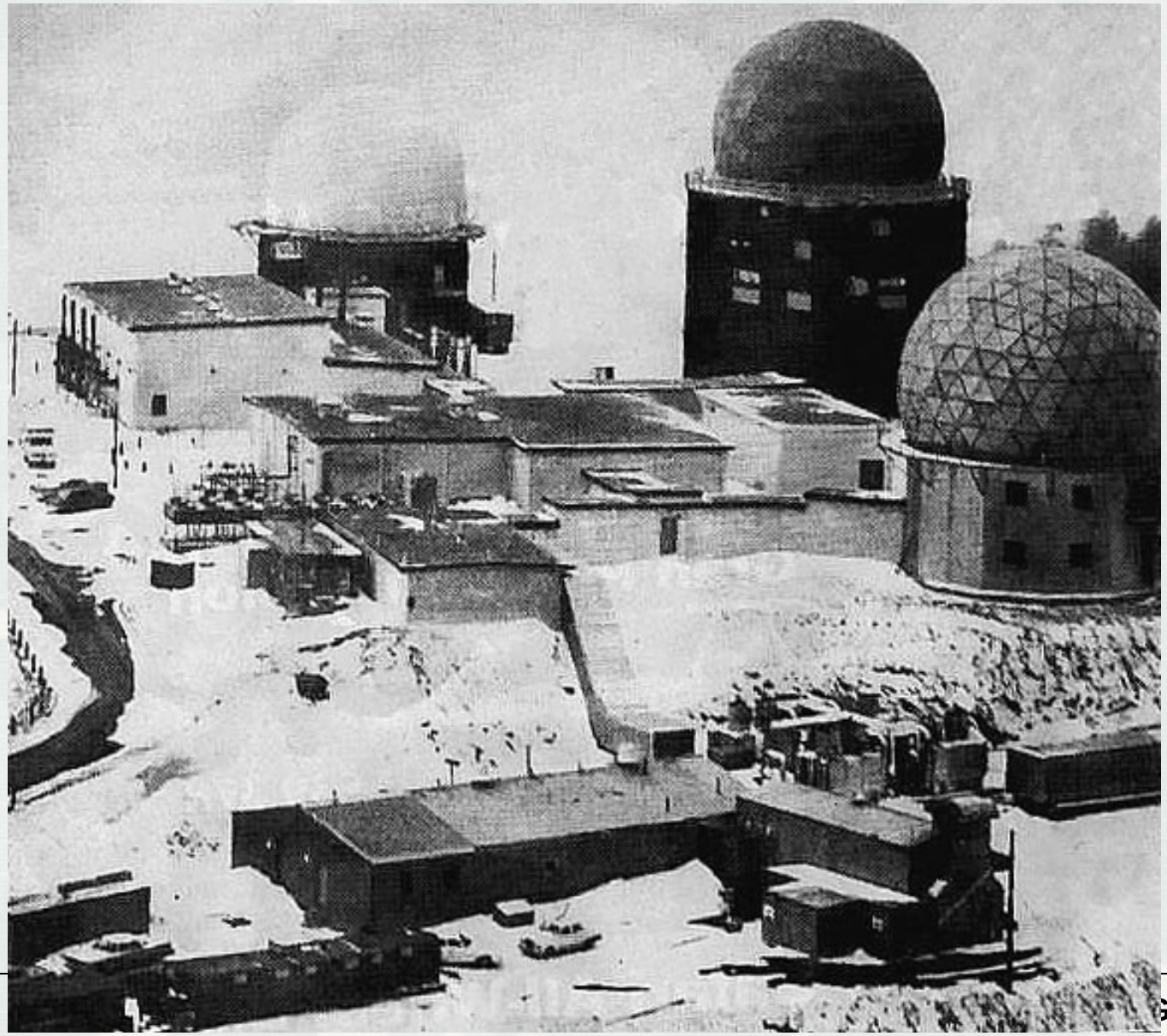


INEEL Photo®

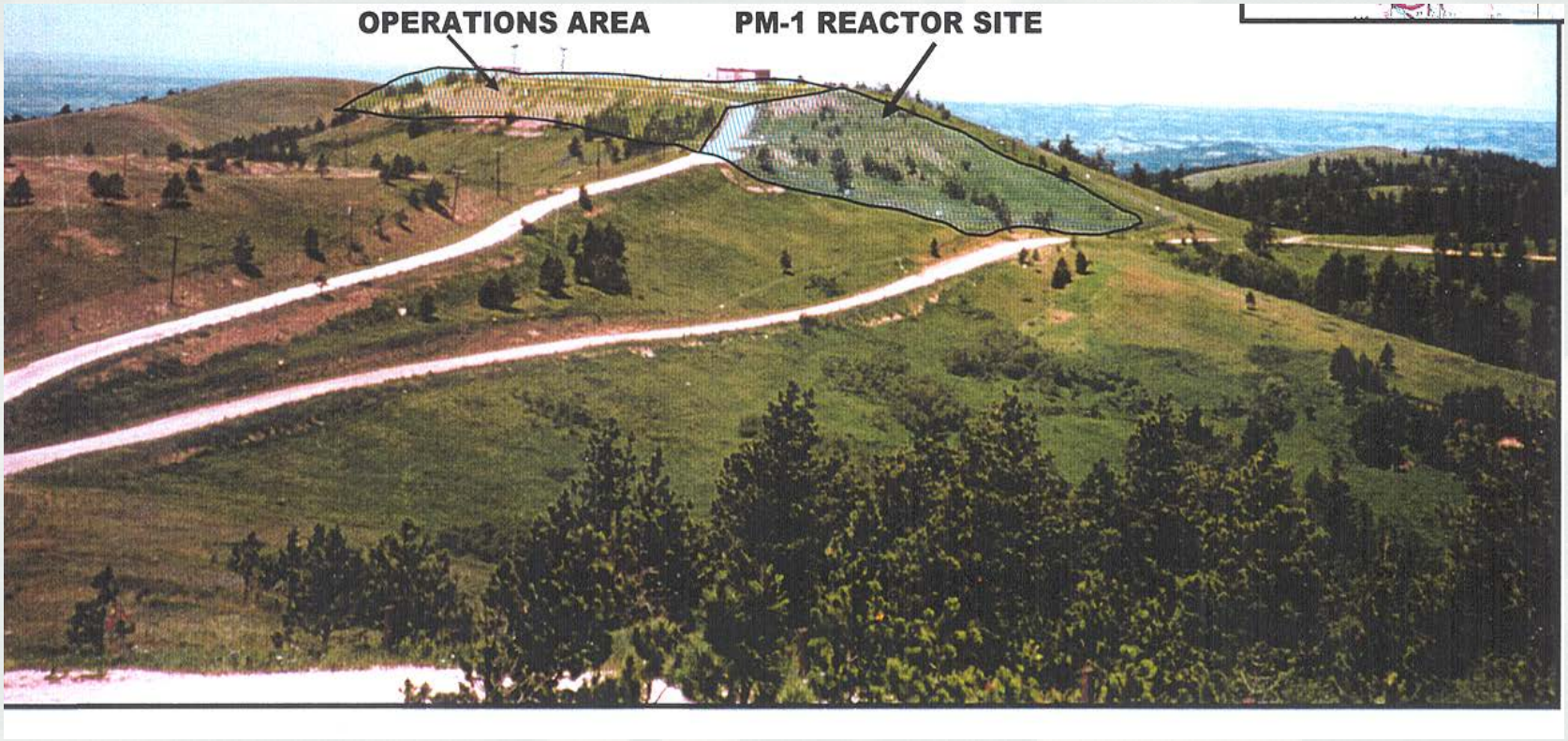
ML-1 During Operation at NRTS

PM-2A During Construction at Camp Century, Greenland

PM-1 During Operation at Sundance, WY



PM-1 Site After Decommissioning at Sundance, WY

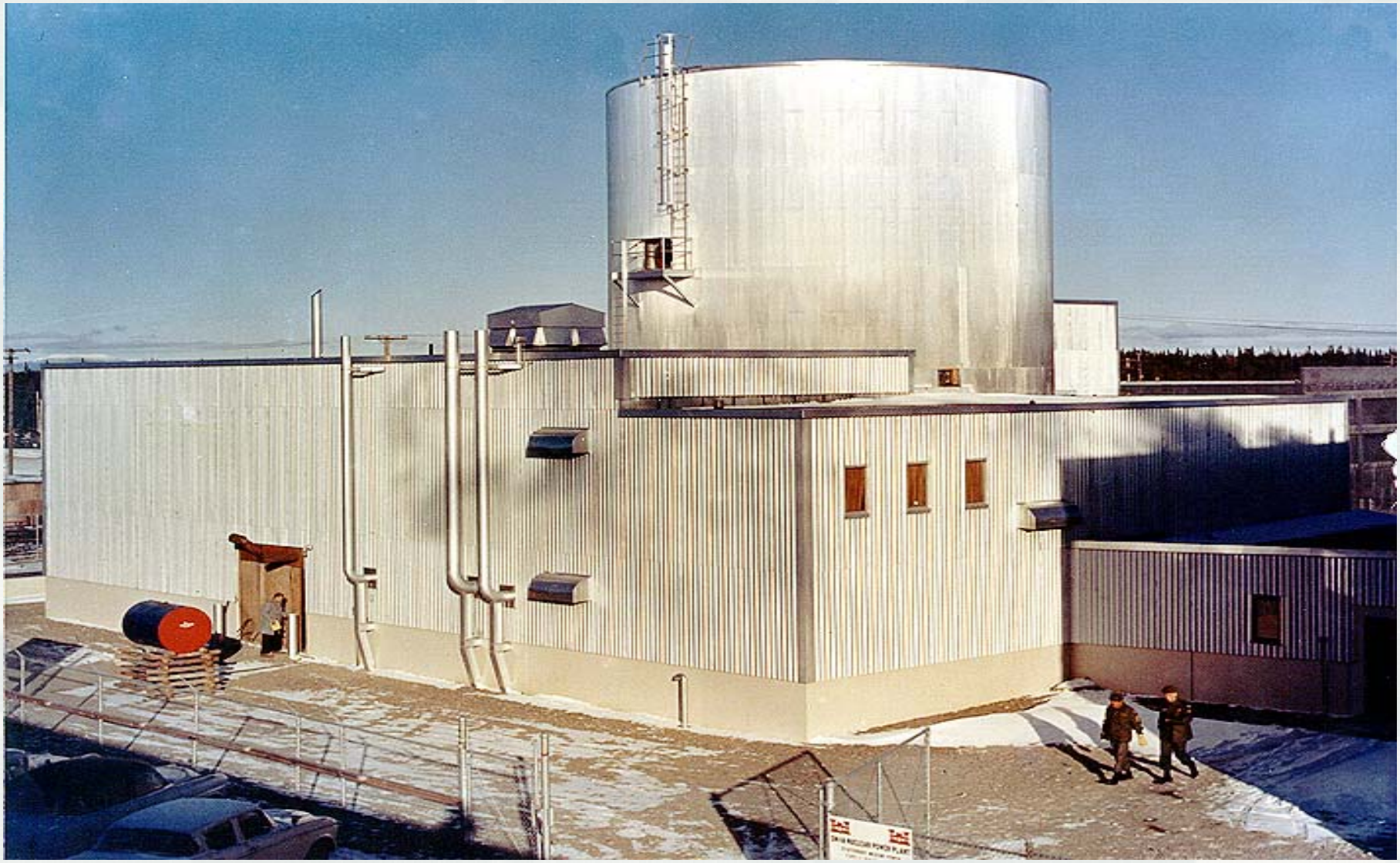


PM-3A During Operation at McMurdo Station, Antarctica

After PM-3A Decommissioning at McMurdo Station, Antarctica

Photo from southpolestation.com

SM-1A During Operation at Fort Greely, AK



MH-1A During Testing at Fort Belvoir, VA

Army Power Reactor Deactivation and Safe Storage

- Reactor fuel and control rods removed and returned to AEC/DOE
- Facility areas decontaminated or restricted from access
- Primary systems grouted or sealed, access doors welded shut
- Planned 50 years storage prior to “free release” and dismantlement

Army Reactor Program

- The USACE currently holds permits issued by the Army Reactor Office (ARO) for three deactivated nuclear reactors.
  - SM-1, Fort Belvoir, Virginia (1957 to 1973)
  - SM-1A, Fort Greely, Alaska (1962 to 1973)
  - MH-1A, *Sturgis* Barge, James River Reserve Fleet, Fort Eustis, Virginia (1966 to 1978)
- The ARO also has permits issued for two deactivated research reactors.
  - APRF, APG, MD (1967 to 2004)
  - DORF, Forest Glen Annex, MD (1961 to 1977)

All Hazards Assessment

- Phase I – Historical Site Assessment to prepare data quality objectives and site conceptual model
- Phase II – conduct radiological and non-radiological sampling and analysis, disposal alternatives evaluation, and cost estimates for the decommissioning
- Phase III – design and execution of the decommissioning plan
- Phase IV – final status surveys and permit termination

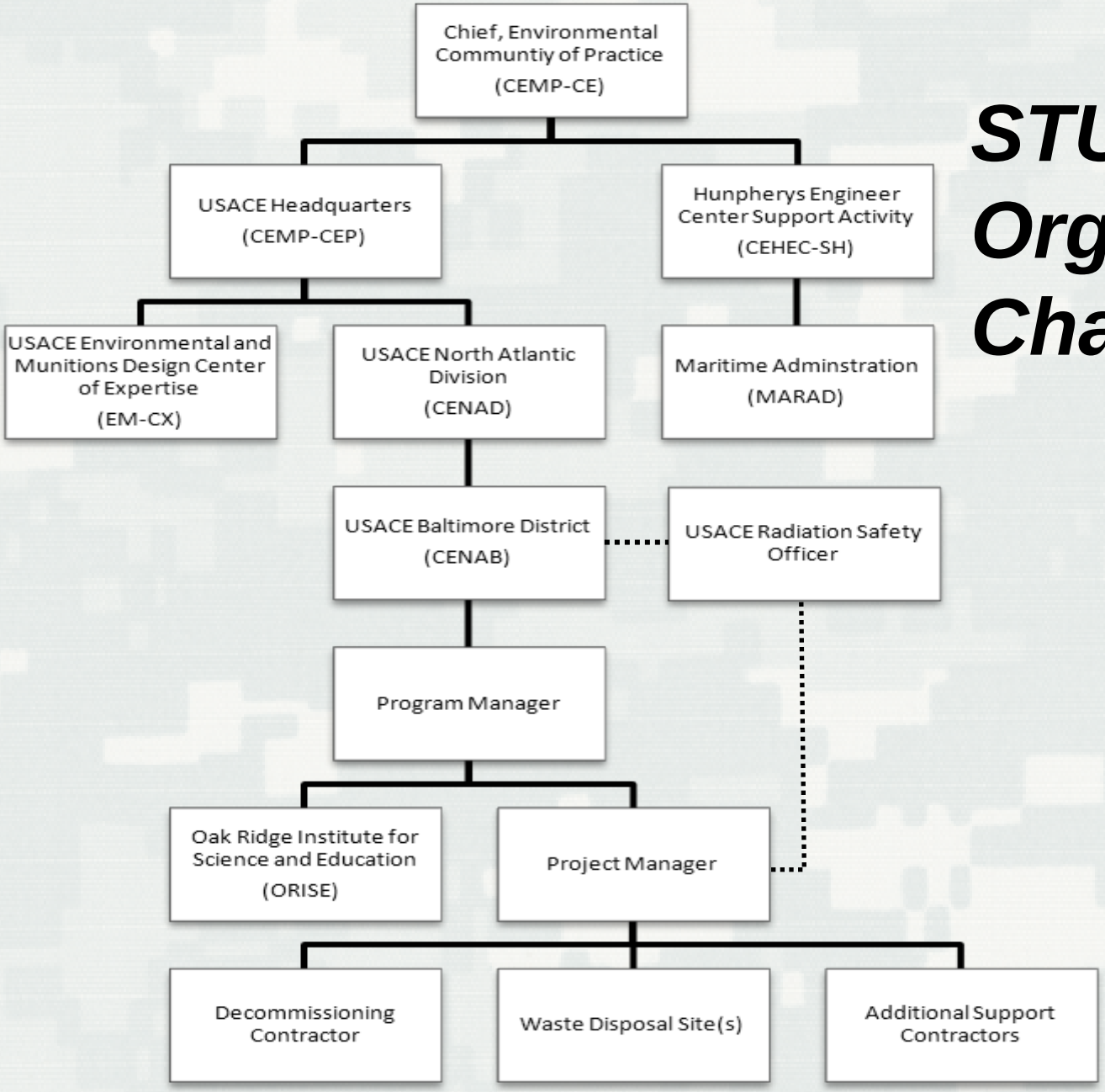
Baltimore District
All Hazards Assessment Status

- STURGIS AHA Phase III initiated
  - Decommissioning Permit Issued
  - Contract for D&D Awarded
  - FY14-FY17
- SM-1 AHA Phase II completed
  - Updating Reports
- SM-1A AHA Phase II completed
  - Updating Reports
- APRF AHA Phase IV in-progress
- DORF AHA Phase IV in-progress

Army Regulation 50-7

- AR 50-7 Requirements for Decommissioning Permit
  - Approved NEPA Decision Document
  - Completed Historical Site Assessment
  - MOA with SHPO in accordance with the NHPA
  - Coordination with other stakeholders and regulators
  - Classification of areas to be decommissioned
  - Health and Safety framework
  - Final Decommissioning Plan, Waste Management Plan, and Disposal Plan

STURGIS Organization Chart



USACE Contractor Team

- Contract Awarded for $34.6M in March 2014
- Period of Performance 48 months

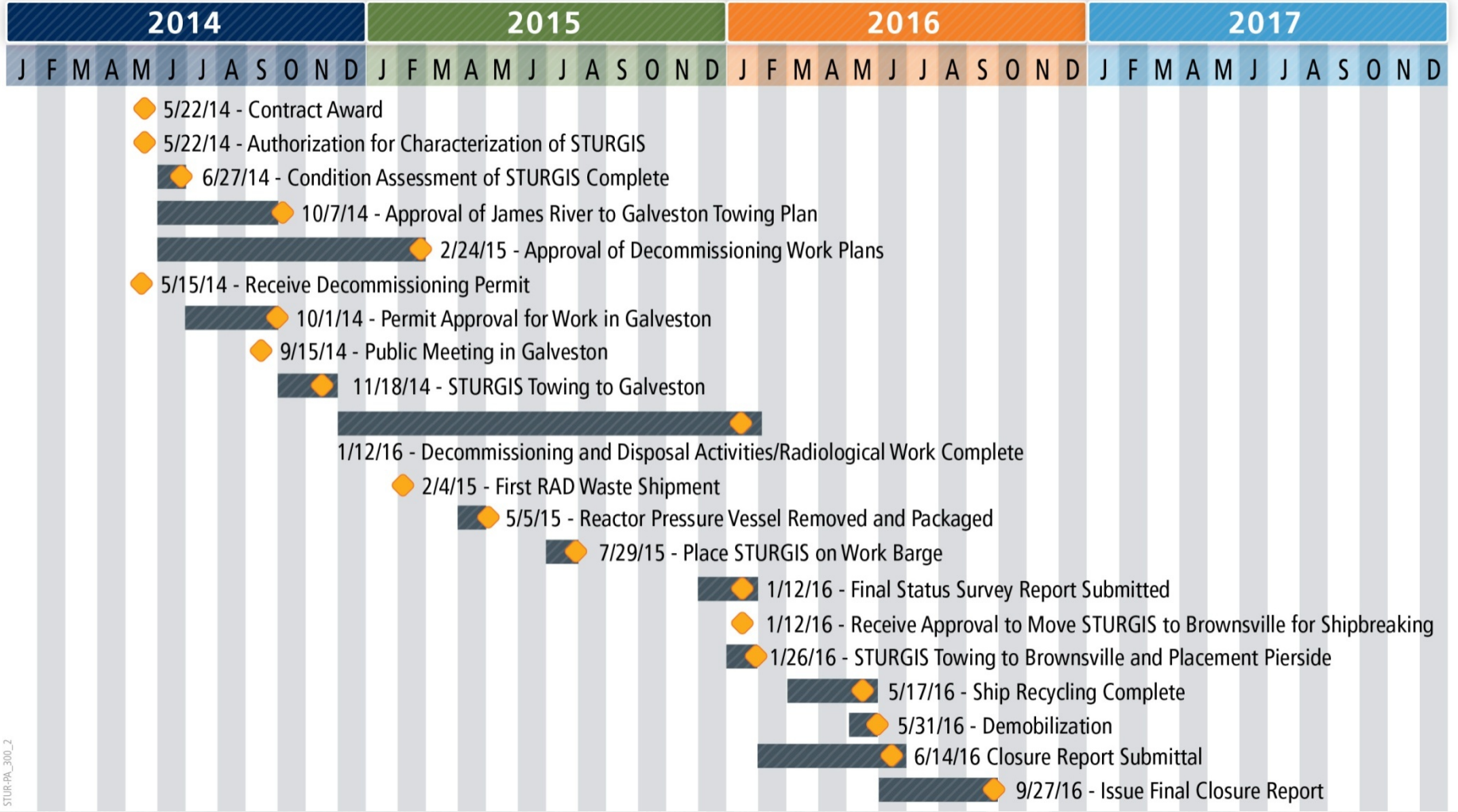
Primary Objectives

- Relocate the STURGIS to the selected decommissioning site;
- The contractor will prepare plans that will support the decommissioning of the STURGIS in accordance with the contract, the ARO Decommissioning Permit, and other applicable requirements;

Primary Objectives

- Decommission/dispose of materials in accordance with final plans, decommissioning permits, and relevant Federal and State requirements; and
- Adherence to NRC and Army, as well as other Federal standards and guidance where relevant as required by the Army Reactor Office and USACE.

STURGIS MH-1A



STURGIS D&D Plans

- Towing/Mooring/Stability Plan
- Decommissioning Work Plan
- Quality Assurance Project Plan
- Hazardous Material Work and Abatement Plan
- Pre-Demolition Survey Plan
- Material Categorization, Survey, and Release Plan
- Final Status Survey Plan
- Waste Management Plan (site-specific)
- Waste Transportation and Disposal Plan

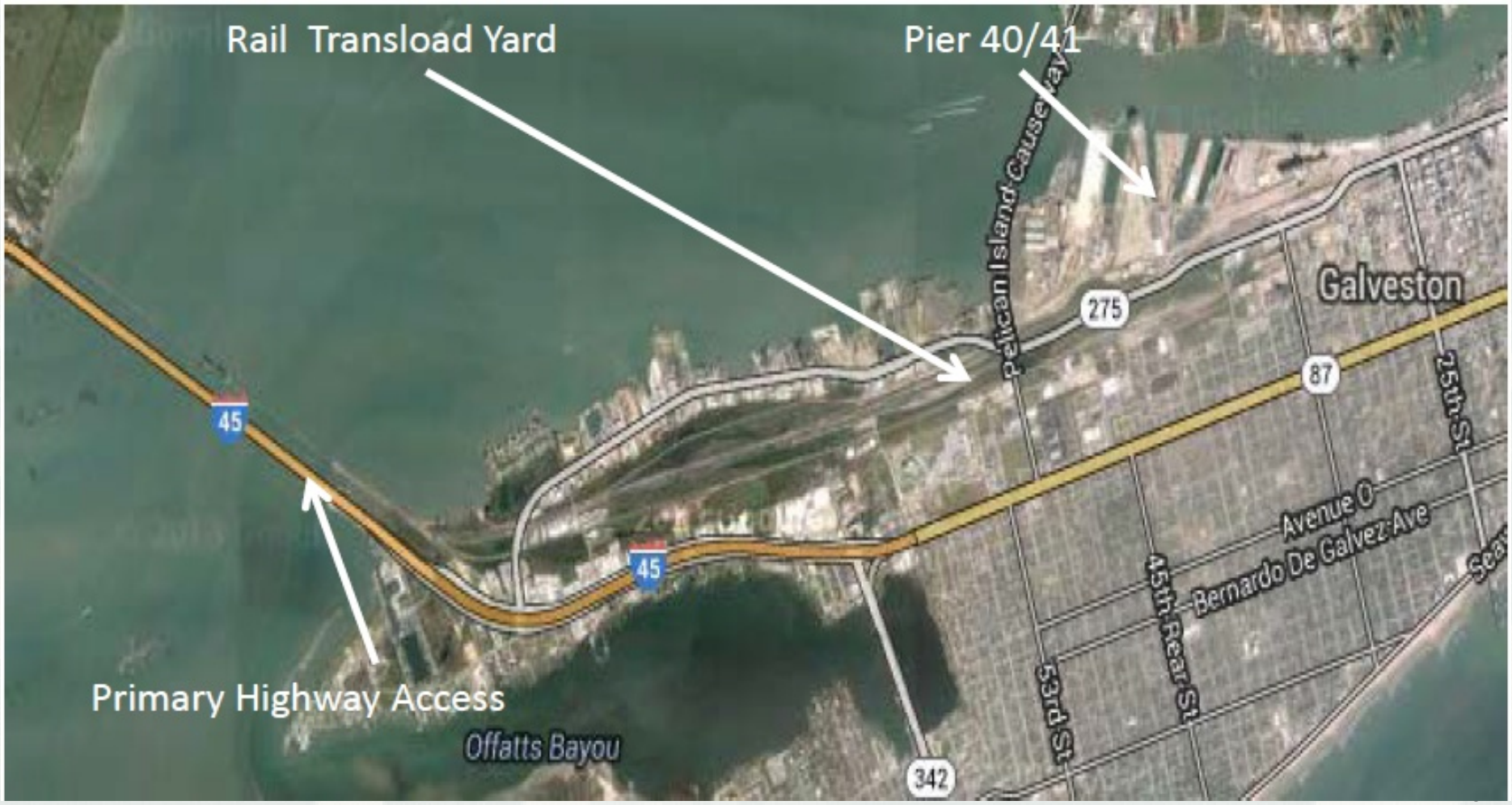
STURGIS D&D Plans

- Accident Prevention Plan
  - Site Health and Safety Plan
  - Air Monitoring Plan
  - Radiation Protection Plan
  - Lead Compliance Plan
  - Asbestos Hazard Control Plan
  - Critical Lift Plan
  - Emergency Response Plan

Technical Approach

- Inspection and Relocation of STURGIS to Galveston for decommissioning
- Baseline Survey at Shipyard
- Preparation of STURGIS for D&D
- Decommissioning STURGIS' radiological and hazardous materials including packaging, certification, transport and disposal

Galveston Site Overview
Malin International Shipyard



Technical Approach

- Survey and release of the balance of the vessel hull and work area
- Transport of the semi-submersible barge holding STURGIS to EMR in Brownsville, Texas for breaking and recycling
- Project closeout and reporting