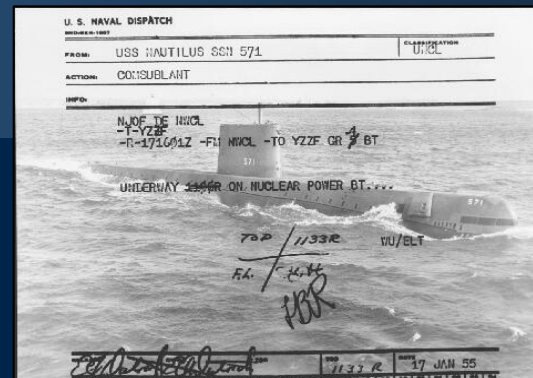




# Naval Reactors

## United States Naval Nuclear Propulsion Program





# Naval Reactors Overview

The Naval Nuclear Propulsion Program is an integrated program carried out by two organizational units, one in the Department of Energy and the other in the Department of the Navy<sup>1</sup>.

**FOCUSED MISSION:** Provide militarily effective and affordable nuclear propulsion plants and ensure their safe, reliable, and long-lived operation

## **CLEAR & TOTAL RESPONSIBILITY & ACCOUNTABILITY FOR ALL ASPECTS:**

- Research, development, design, construction
- Maintenance, repair, overhaul, disposal
- Radiological controls, environment, safety, health matters
- Officer operator selection, operator training
- Administration (security, nuclear safeguards, transportation, public information, procurement and fiscal management)
- Centralized control of Program's Industrial Base/Vendors
- Spent fuel custody

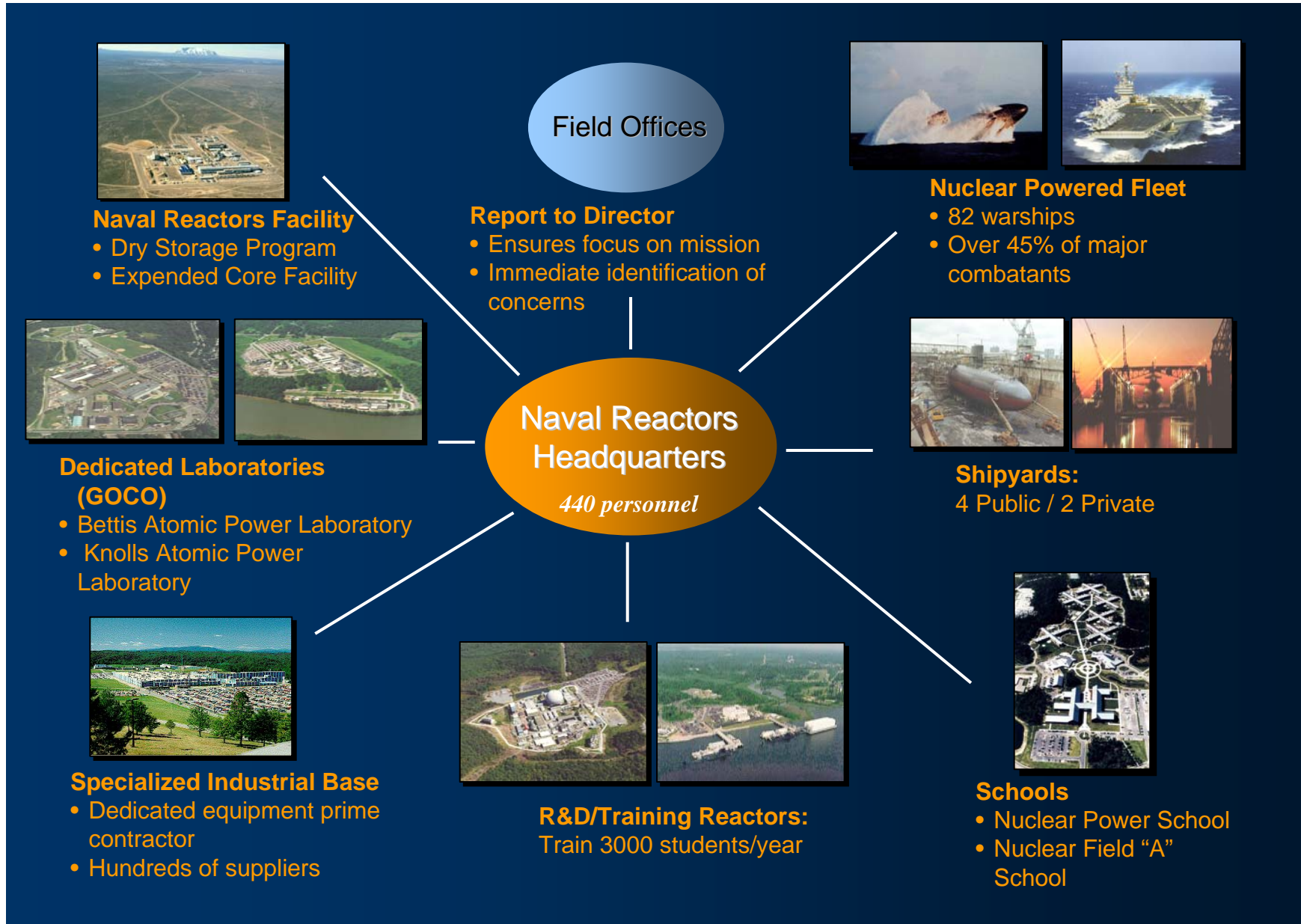
## **SIMPLE, ENDURING, & LEAN STRUCTURE:**

- Director tenure 8 years, 4-Star Admiral/Deputy Administrator in NNSA
- Dual agency structure with direct access to Secretaries of Energy and Navy
- Small headquarters, field activities

<sup>1</sup>Executive Order 12344 set forth in 50 USC 2011; 50 USC 2406



# Naval Reactors Organization





# Naval Nuclear Propulsion Design Space

Need for continued safe and reliable operation in the wartime environment results in a very rugged nuclear fuel designs

## DEFENSE IN DEPTH:

- Design: simple, rugged, redundant, fail-safe, conservative
- Rigorous quality control: on-site reps, detailed specs, separate logistics/supply, documentation (quality evidence)
- Comprehensive procedures and procedural compliance
- Oversight
- People: carefully selected, rigorous and continuous training





# Naval Spent Nuclear Fuel Management

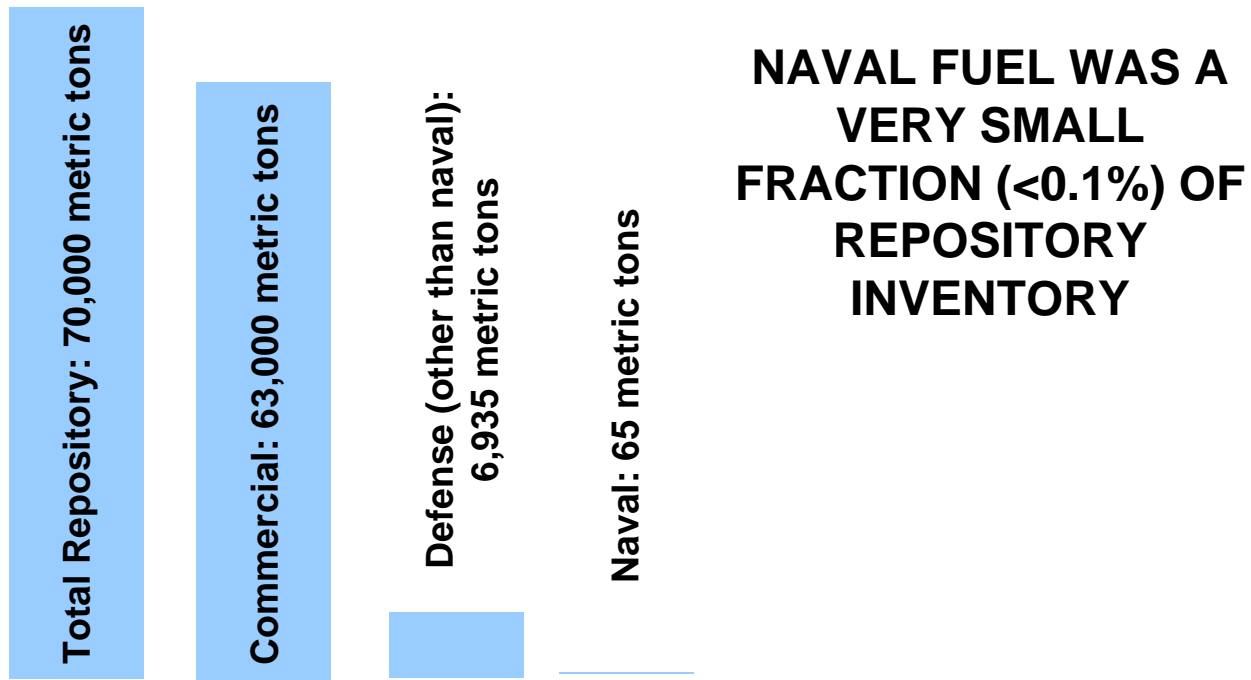
50 years of experience in the safe handling, transportation, inspection, and storage of spent nuclear fuel.





# Naval Spent Nuclear Fuel Inventory

Compact reactors, long life fuel results in a small inventory compared to other sources of spent fuel and high level waste





# Naval Spent Nuclear Fuel Inventory

Compact reactors, long life fuel results in a small inventory compared to other sources of spent fuel and high level waste

~11,000 canisters total

~400 naval  
canisters

**NAVAL FUEL  
WAS A SMALL  
FRACTION (<4%)  
OF OVERALL  
REPOSITORY  
INVENTORY**



# 1995 Idaho Agreement and Consent Order

The 1995 Agreement and Consent Order governs management of spent nuclear fuel and transuranic waste at the Idaho National Laboratory.

## BACKGROUND:

- The agreement resolved litigation related to concern of Idaho officials that the INL was becoming a de facto permanent repository for spent fuel and transuranic waste.
- Litigation also led to preparation of a Programmatic EIS for management of spent nuclear fuel across the DOE.

## ONGOING NAVY OBLIGATIONS:

- Limit the number of shipments of naval spent nuclear fuel to Idaho to a running average of 20 containers per year.
- Provide to Idaho annual reports on actual shipments made in the prior calendar year and expected shipments during the next calendar year.
- Include naval spent nuclear fuel among the early shipments to a permanent geologic repository or interim storage site.
- Place all spent nuclear fuel in dry storage by 1 January 2023.
- Remove all spent nuclear fuel from Idaho by 1 January 2035.

## 2008 ADDENDUM TO AGREEMENT:

- Continued use of water pool at the Naval Reactors Facility beyond 2023.
- Continued management of a limited in-process inventory of naval spent nuclear fuel at the Naval Reactors Facility in Idaho beyond 2035.
- Continued archival storage of some naval spent nuclear fuel to support designs under development or in service.