

A Century of Spent Fuel Management “A View from the Halfway Mark”

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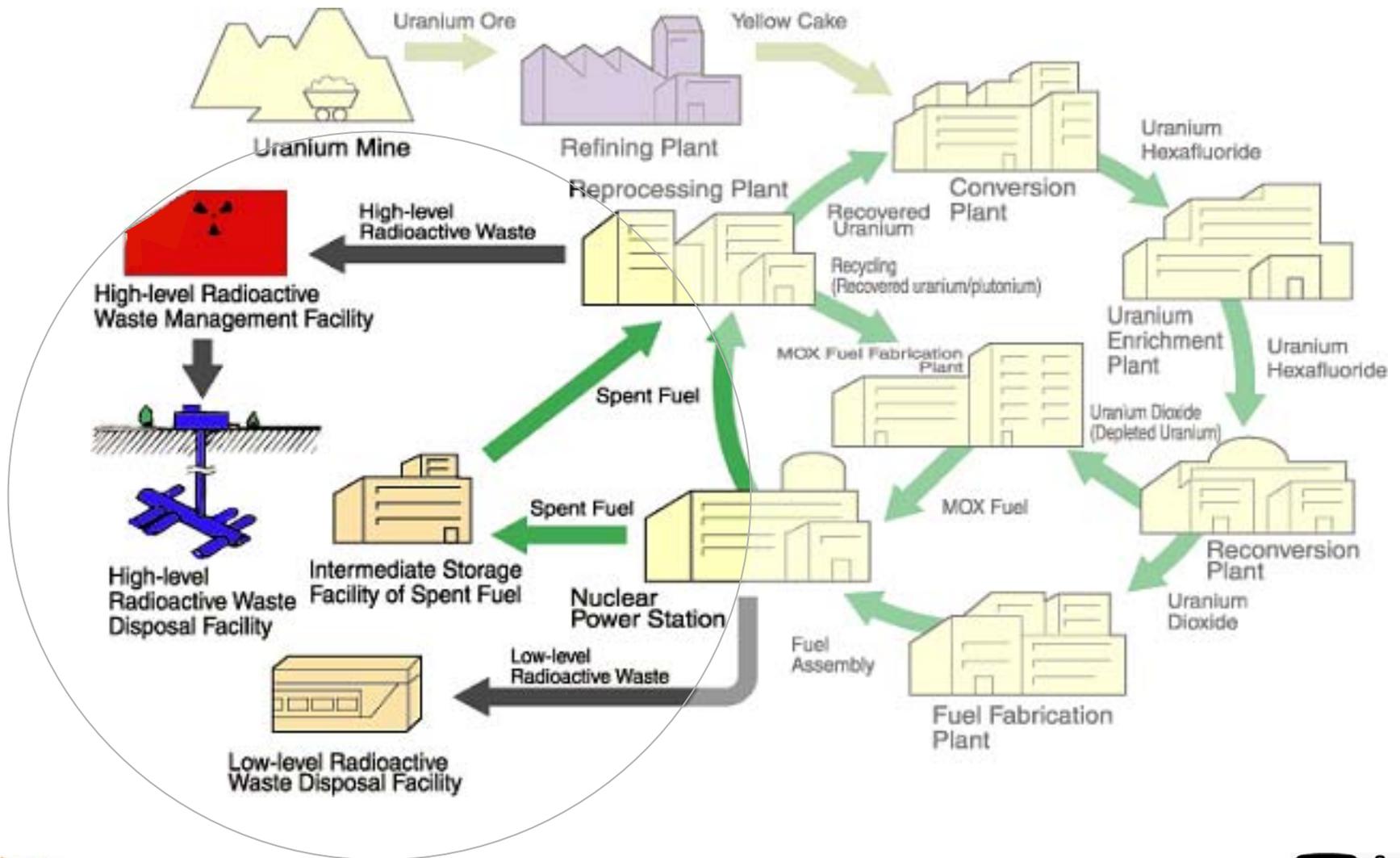
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Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under contract DE-AC04-94AL85000.



Nuclear Fuel Cycle – Growing Complexity Associated with Spent Fuel Management



Spent Nuclear Fuel Management System

“Managing the Complex Interdependencies”



Safeguards

Transportation

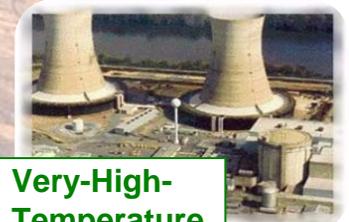


Nonproliferation

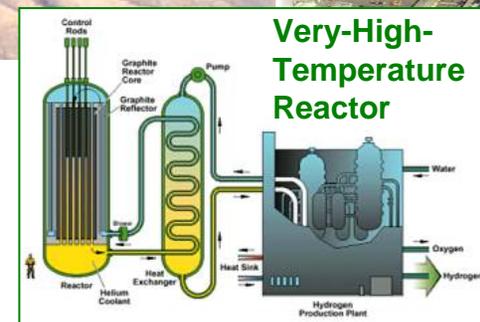
Stakeholders



Nuclear Power Plants



Reprocessing

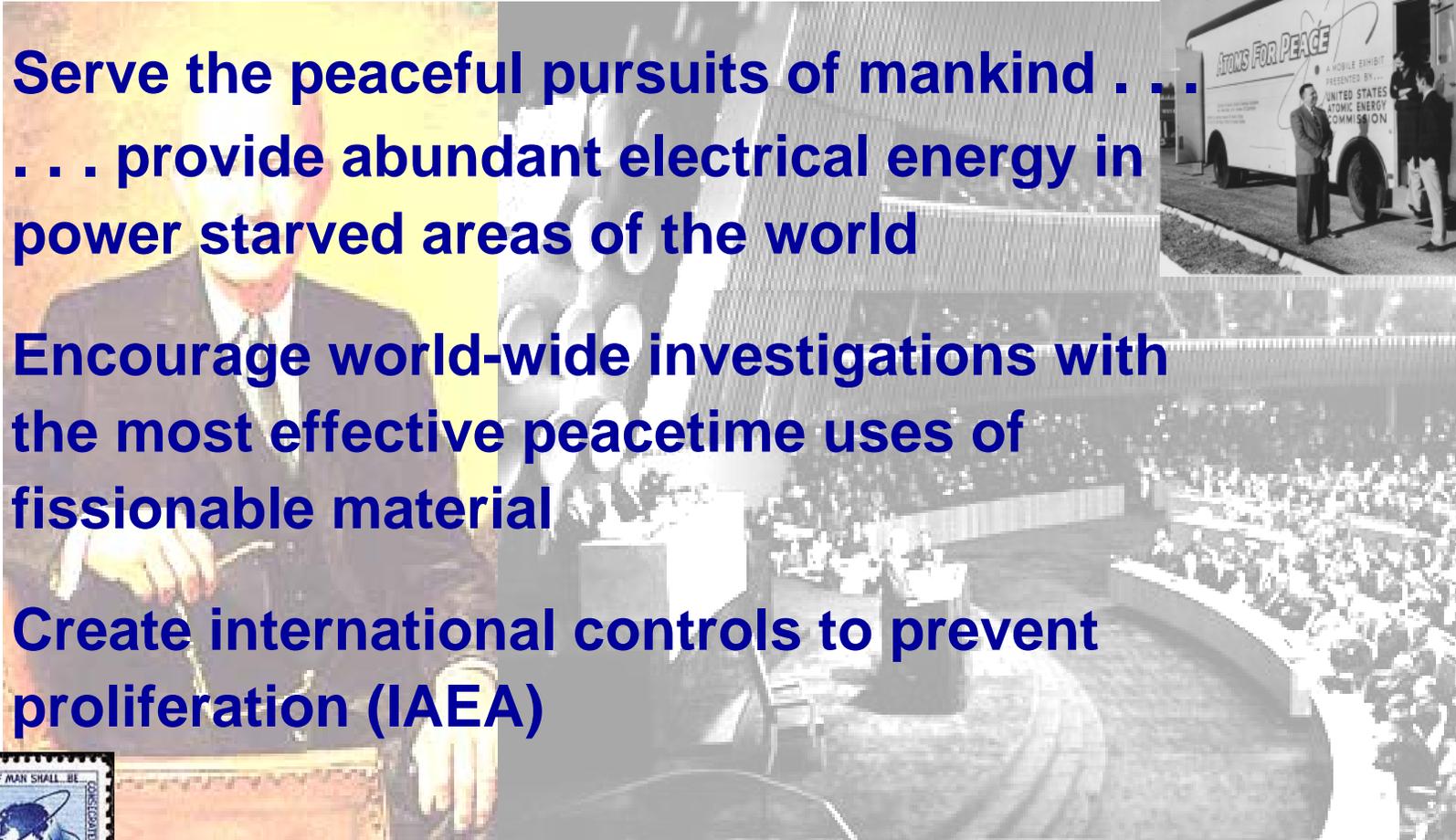


Atoms for Peace - 1953

Serve the peaceful pursuits of mankind . . .
. . . provide abundant electrical energy in
power starved areas of the world

Encourage world-wide investigations with
the most effective peacetime uses of
fissionable material

Create international controls to prevent
proliferation (IAEA)



National Academy of Sciences Committee - 1955



THE DISPOSAL OF RADIOACTIVE WASTE ON LAND



Report of the
Committee on Waste Disposal
of the
Division of Earth Sciences

Committee Members

Harry H. Hess, Chairman
John N. Adkins William B. Heroy
William E. Benson M. King Hubbert
John C. Frye Richard J. Russell
Charles V. Theis

Publication 519
Price \$1.00

National Academy of Sciences – National Research Council
Washington, D.C.
September 1957

“Obviously, if the [nuclear] industry is to grow in a healthy way, it must be a “good neighbor” . . . having harmonious relations with the rest of the community”

. . . “Should we think primarily in terms of problems in the the United States or should we take a wider [global] view”

“The problem was extremely complex . . . extending to many years waste will constitute a serious problem”

“It is an encouraging possibility that in the future people can produce wastes that can be gotten rid of more easily . . . it takes teamwork over a wide spectrum in order to put the problem in the proper light to evaluate all aspects”



International Spent Fuel Management Programs

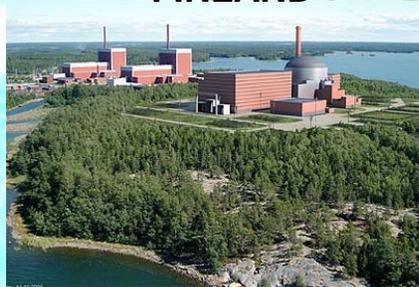
Gentilly Dry Storage
CANADA



Spent Fuel Container
RUSSIA



Olkiluoto
FINLAND



Yucca Mountain
Project
USA



La Hague
FRANCE



Potential Host Rock Studies
TAIWAN



Grimsel Underground Rock Laboratory
SWITZERLAND

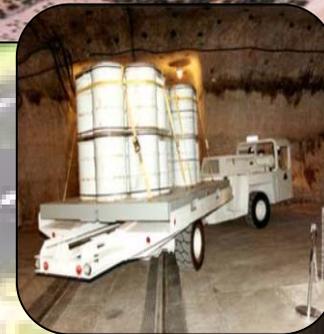


Waste Isolation Pilot Plant (WIPP)

“Insights and Perspective”

Deep Geological Repository for Transuranic Waste

- Transformation of “**Science to Compliance**” to Support Significant Regulatory Interactions
- Compliance Basis Founded in Safety Analyses and Performance Assessments
- Significant Stakeholder Initiatives
Local–State–National Engagement
- National and International Reviews of Technical and Regulatory Outcomes



Yucca Mountain Project



- **Site Recommendation Report - February, 2002**
- **Yucca Mountain Site Approved - “Site Characterization Phase is Complete” - July, 2002**
- **License Application for Construction Authorization - Submittal Expected - December, 2004**

Environmental Protection Agency - 10,000-Year Compliance Standard Court Ruling - July, 2004



Spent Fuel Management System

“Suggestions for the Next 50 Years”

- Pursue a multi-national nuclear fuel system that fully integrates standardized reactor designs and fuel forms, approaches to reprocessing and ultimately disposal.
- Pursue a multi-national repository that provides significant safety, security, economic and non-proliferation advantages.
- IAEA lead efforts to develop standards and approaches for confidence building through public involvement and enhanced transparency measures consistent with approaches developed for reactor safety, proliferation prevention, and nuclear materials management.

