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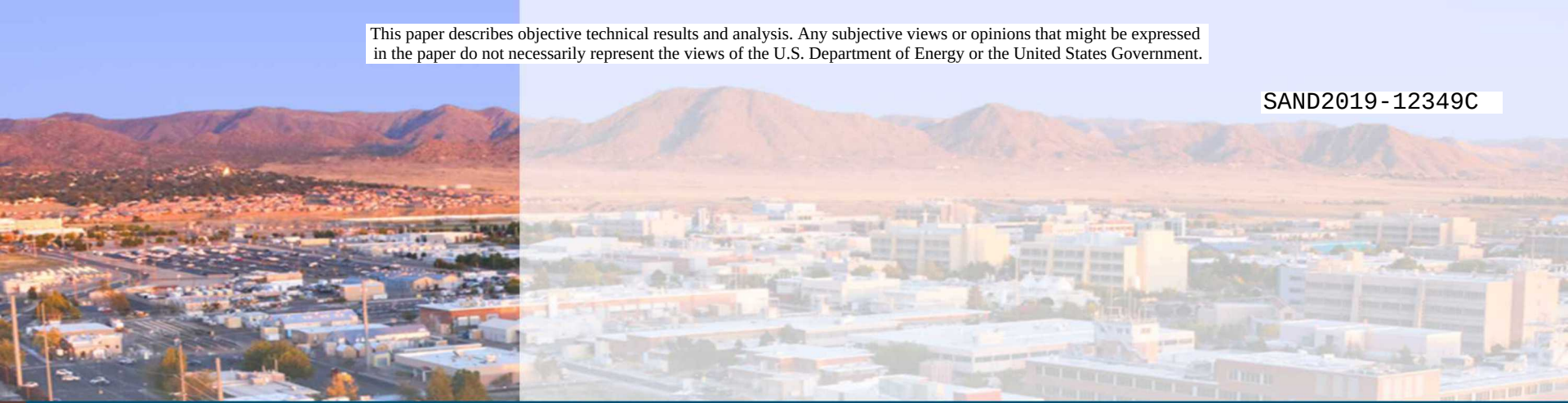

Knowledge Management Efforts at Sandia National Laboratories

Presented at the Pacific Rim Spent Fuel Management Partnership Workshop
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Chris Camphouse, Janette Meacham
Sandia National Laboratories

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The Nuclear Energy Fuel Cycle Subprogram

NEFC leverages over 45 years of experience to inform policy decisions and lead in developing solutions to nuclear energy challenges.

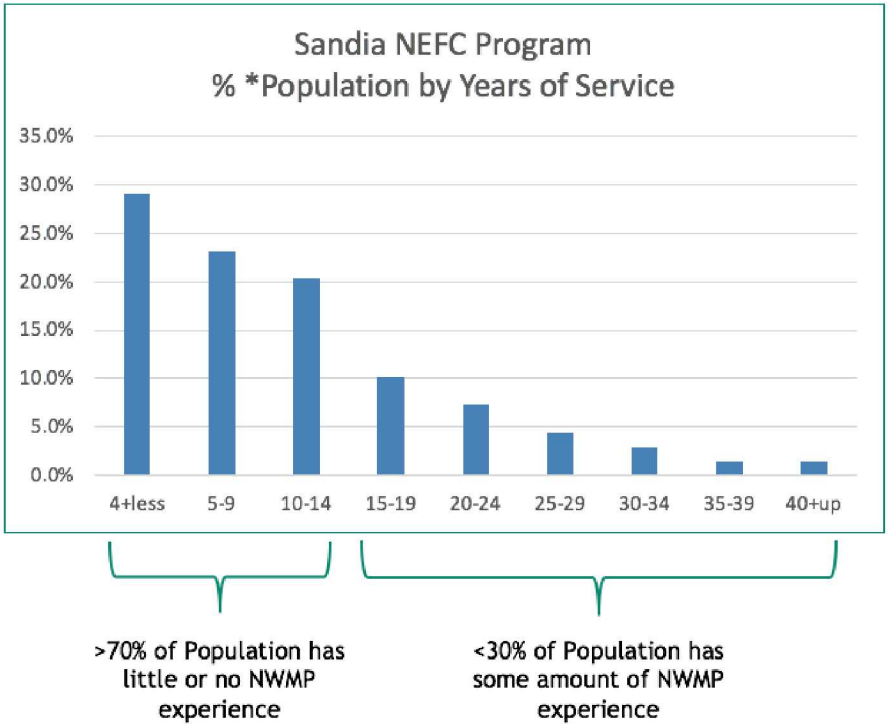
- Power Generation to management of SNF and HLW

NEFC Capability Areas:

- Geologic Disposal: Post-closure science, performance assessment, licensing
- Research & Development related to storage, transportation and disposal of spent nuclear fuel
- Microsystems reactors; DOD Installations
- Advanced Energy Conversion using supercritical fluids, Waterless Power

The NEFC program is experiencing significant flux due to changing national priorities in the U.S. as well as staff departures and hiring.

NEFC Demographics



Sandia is experiencing a demographic shift.

Late-career staff and mentors are retiring and taking their tacit knowledge with them.

Influx of early-career NEFC staff without prior experience in a nuclear waste management program.

Suspended project does not provide a means for continuous knowledge transfer.

Data and systems in cold standby on an isolated local area network.

Preservation of tacit and institutional RWM knowledge is a key NEFC concern.

NEFC Knowledge Management Pilot Program

KNOWLEDGE MANAGEMENT STRATEGY

ABSTRACT

A strategy for the development of a Knowledge Management Program for the Nuclear Energy Fuel Cycle Program at Sandia National Laboratories.

September, 2019

Sandia National Laboratories

Evaristo J. Bonano, Ph.D.
Senior Manager, Nuclear Energy Fuel Cycle 8840

NEFC Senior Management recognizes the need for a Knowledge Management Program.

Consulting with subject matter experts during program definition and development.

Goal of Pilot Program is to capture tacit knowledge from NEFC senior staff while they are still available.

Capture and cataloging of information so that it is secure and easily accessible to employees.

Once the initial pilot is complete, NEFC will explore management support to begin work on a sustainable Knowledge Management Program.

Pilot Program Components

The Knowledge Capture Pilot Project consists of 5 com

1. Strategy Development (complete)
2. Focus Groups (complete)
3. Workshops
4. Deep Dives
5. Initial Database Creation

Creating a culture in which the management of knowledge is incentivized and valued is fundamental.

KM Pilot Program Strategy

Develop and establish a knowledge management program for the NEFC Program to leverage decades of nuclear energy experience.

Strategy Highlights:

- Document and map the current state of critical knowledge at risk of loss
- Share and record key topics during workshops and deep dives allowing for capture and transfer of organizational knowledge from seasoned or late-career staff to new or early-career staff
- Archive current state of knowledge using dynamic knowledge maps
- Develop processes for ongoing knowledge capture to create a living archive

Focus Groups

Focus Group Approach:

- Collect staff opinions and preferences about mechanisms for accessing preserved knowledge
- Collect staff views about the existing strengths and weaknesses of the knowledge scope within the program
- Identify channels, means of communication, and collaboration that are difficult to capture using formal peer-to-peer or subordinate-manager channels
- Identify knowledge types that are more prone to have uncodifiable characteristics
- Identify, elicit, and capture knowledge that has so far remained unacquired, uncodified, and inaccessible.
- Develop knowledge maps to help visualize the current state

Workshops

Workshops will be used to acquire over-arching program and institutional knowledge.

- Multi-day workshops led by Subject Matter Experts designed to capture and document critical tacit knowledge within the program.
- Critical knowledge at risk of loss will be shared and recorded (both video and audio) during the workshop sessions.
- SME Presentations with additional time for questions and group discussions.
- Examples of topics include: Sandia's History in Disposal and The Past Repository Siting Process.

Deep Dives

Deep dive discussions will be used to capture in-depth discussion of complex topics.

- Multi-day deep dives into complex topics requiring additional in-depth discussion
- Thematic presentations shared and recorded by Subject Matter Experts – both internal and external to Sandia
- Designed to inform early and mid-career staff
- Will serve as part of the initial contributions to the database of knowledge and reference material for the NEFC Knowledge Management Program

Knowledge Management Database

Several components will contribute to the creation of a Knowledge Management Repository database.

- Dynamic database will be created to map and track important knowledge and knowledge at risk.
- Information collected during focus groups, workshops, and deep dives will be the initial data set.
  - Information generated by focus groups is being analyzed.
- Processes will institutionalize steps to identify, collect, and archive program knowledge
- Result: Sustainable knowledge management system to improve knowledge retention to support the organization's knowledge-intensive operations.

Lessons Learned

- Knowledge management needs to be a deliberate effort with adequate resources
- Requires both technical experts that develop and used the information and understand the interconnectivity between different types of information, as well as IT experts working as an integrated team
- It is a challenge to keep hardware and software updated during a hiatus in a nuclear waste management project; It can be very costly
- Making changes to IDKM systems in a highly regulated environment can be difficult
- Knowledge management requires a culture in which it is viewed as valuable, not as an obstacle to getting work done.

Thank you!