HR needs in Nuclear Decommissioning

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Dismantling & Decommissioning activities are part of AREVA’s Back-end Business Group

Exploration
Mining
Ore processing
Site rehabilitation

Conversion
Enrichment
Fuel

Plants
Equipment
Nuclear Services
Nuclear Measurements
Naval Propulsion & Research Reactors

Recycling
Nuclear Logistics
International Projects
Dismantling & Services

Wind
Biomass
Hydrogen
Solar

Education and Training in Nuclear Decommissioning - Birmingham, 16th-17th April 2015
AREVA footprint in D&D

- Nuclear site reutilization projects worldwide
  France, US (DOE), UK (Sellafield), Japan (Fukushima), Germany

- 1,400 employees, at 10 locations,

- AREVA - as owner-operator of its own nuclear facilities – is responsible for their Decommissioning and Dismantling
  - More than three decades of experience in Management of D&D Programs
Example: La Hague site in 1966
Example: La Hague

large D&D program while on a site still in operation
Example: Reactors D&D
Significant reduction of the radiologic risk as compared to operation

Reduction of the hazardous potential by factor 100 Billion by 3 main measures

- Plant shut down: ~ 1 E21
- Fuel unloaded: ~ 1 E17
- Full System Decontamination performed: ~ 1 E13
- Activated inventory dismantled: ~ 1 E10

Nuclear specific challenges rapidly go away

Activity inventory of a NPP [Becquerel]
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The accessible market is uncertain and limited

Provisions for decommissioning are significant

- 1/3 of the 135 nuclear power reactors operating within the EU will have stopped operation by 2025
- Up to 2 Billion€ set aside for D&D per reactor in Europe within the next 20 years

But only a fraction is accessible to the industry

- One half covers final waste disposal
- Then post-operations and NPP self performance
- About 10% remains accessible for Dismantling

When the funds are actually available....

And if the decision to dismantle is not postponed...
Summary

- Beyond prospects for new build in the EU and long-term operation of existing NPPs, decommissioning has become an industrial reality
  - Strong players in the European nuclear industry are ready to go
- Nevertheless the decommissioning market may hardly provide significant growth nor become a significant employment driver for the nuclear industry
  - During the decommissioning phase, the potential turnover for the nuclear industry is approximately 10 times less than that of the operational phase
  - A decommissioning project requires only 1/3rd to 1/4th of the operation’s time workforce, including subcontractors
  - Decommissioning requires different skills mix and limited number of highly qualified personnel
- Decommissioning requires, above all, proven methodologies and the capacity to manage “moving target” projects with a lean and cost effective approach
- The challenge is rather expressed in terms of Change Management, Performance Improvement and Human Resources transition/adaptation
D&D Key Challenges

Decommissioning and Dismantling projects are challenging

- From a human, management and organizational points of view
  - New and changing references with respect to operations
  - Continuous modification of the arrangement of the plant
  - Nuclear Safety is not used to deal with a plant configuration that keeps changing every day
- It’s all about cost (no expected revenue from D&D)

Facing a number of uncertainties and new situations as compared to the operation phase

- As-built (and as-operated) basis not always documented
- “Surprises” do occur during execution of the works
  - Flexibility required in the plans, to adapt
- The Initial State of the facility could be insufficiently characterized
  - Discovery of unexpected quantities of nuclear material in a concealed area,
  - Actual contamination extending beyond the initially assumed basis.
- Insufficient definition of the desired End State
  - “How clean is clean” is a traditional issue
  - Potentially serious impact on the project cost and schedule

Flexible and Lean Management with a limited set of key people are essential to the cost effective success of a D&D project
D&D from a human and organizational point of view

From an OPERATION / PRODUCTION CULTURE
- Stable references
- Minimum uncertainties
- Stable work force
- Top-down management culture
- Generating cash

To a DISMANTLING / PROJECT CULTURE
- New and continuously changing references
- Dealing with the unexpected
- New skills required while adjusting workforce
- Consuming cash

SOCIAL TRANSFORMATION
- Change of customer
- Change of value-added
- Change of Business Model

Change Management should be recognized, embedded and visible
HR Challenges

- Reduce workforce progressively (avoiding any cliff effect) while maintaining competencies and motivation

- Adapt Organization
  - Shift from Operations to D&D

- Manage the Change
  - Specific change management process
  - The organization must be flexible, keeps evolving with the project
  - Line and field management alignment are key

- Adapt the Skills set
  - Skills required for safe and efficient Operations are quite different from skills required for safe and efficient D&D
    - D&D is more a project oriented than an operation oriented activity
  - Re-skilling process
    - Skills mapping ; Skills need vs. resources analysis ; Training
  - Knowledge transfer process
    - History ; Competence

Maintaining motivation and focusing on performance improvement while adjusting workforce
Adapt and strengthen people’s skills

Reinforce operational and local management to drive the change

Continuously adapting the organization to the needs

Maintain people’s spirit and commitment to the end goal

The AREVA Way
Driving Change for Success
### Our approach to HR management

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td><strong>Skills review and inventory</strong>&lt;br&gt;Review of skills required for the D&amp;D&lt;br&gt;Definition of corresponding competences&lt;br&gt;Inventory of the existing skills</td>
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<td>2</td>
<td><strong>Long-term analysis of Needs vs. Resources</strong>&lt;br&gt;Conducted per competences, with different project scenarios (sensitivity analyses)&lt;br&gt;Updated continuously</td>
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<tr>
<td>3</td>
<td><strong>Adapt the organization to the project needs</strong>&lt;br&gt;“D&amp;D” versus “Production” organizations&lt;br&gt;No unique D&amp;D solution. Depends on the project, the history, the facility...&lt;br&gt;Common drivers to set the best organization&lt;br&gt;The organization must be flexible to adapt to frequent changes</td>
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<td>4</td>
<td><strong>Invest in people skills, training &amp; career + key people</strong>&lt;br&gt;Key people to be retained, motivated and developed as required&lt;br&gt;Individual careers to be built / rebuilt&lt;br&gt;Specific strategies to be developed for staff reduction</td>
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<tr>
<td>5</td>
<td><strong>Communicate on the positive prospects of D&amp;D</strong>&lt;br&gt;Whatever the media, the key is to provide the right message</td>
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**Professional Bridges Mapping: a tool to support career transition**

This matrix evaluates the difficulty to move from initial operations job to the target D&D job. It also helps identifying the competencies to be developed.
The poster campaign is a way of communicating on career mobility. It provides personnel with food for thoughts and prompts discussion between employees, their managers and the HR function.

- It is all about preparing the future of our current resources and making sure we have the skills we need in the years ahead.

- Integral component of career management and can be brought up at:
  - The annual appraisal
  - An HR career interview

- Proposed by the employer:
  - To satisfy employees wishing to develop professionally
  - To provide personnel with the opportunity to acquire new skills

- Promoted and advertised:
  - The jobs reference base is accessible to everybody on the intranet
  - Poster campaigns …
Reinforce operational and local management to drive change

- Operational and local management is the key driver to successfully implement performance improvement and change
  - Challenging the teams and developing performance culture in day to day operations
  - Explaining to the teams the meaning of objectives and the business global picture
  - Coaching and supporting the teams

- 4 progress paths
  - Empower the field managers and field workers
  - Fully associate them to the business
  - Clarify roles and expectations
    - Organization; Decision making; Expected behaviors
  - Better know them and improve recognition
A positive « marketing »
- D&D is as challenging as other nuclear activities
- D&D requires specific experiences and key personnel
- Communication

A business with a future
- Market on its own
- Sustainable (though limited)

A knowledge capital
- Diversified scope of skills
  - site operations, safety, project management, works supervision, waste management, clean up and dismantling techniques, management of risks and uncertainties, with constantly moving targets…

Maintain people’s spirit and commitment
Conclusion

► Nuclear Decommissioning is a reality and requires specific skills

► However available market is uncertain and it may not be a significant growth catalyst or employment driver for the industry

► Key for HR is to maintain a limited set of key personnel / specialists on this segment for the future

► With a focus on flexible project management, change management, performance improvement and optimized (low) cost operations