PRACTICAL EXPERIENCE WITH MANAGEMENT OF DECOMMISSIONING PROJECTS

Charlene BOUCHARD – Project Manager
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INTRODUCTION

Point of view of a commercial company involved in decommissioning project work

- Project success
  - Having the right workforce to perform the project work
    - Suitably qualified staff
    - Enough resources
Performing these nuclear decommissioning activities:

**Engineering**
- To develop the methodology
- To select the techniques
- To design the tools

**Management**
- To manage the budget
- To manage project progress
- To supervise the labour, staff safety, radioprotection

**Labour**
- To carry out operations as defined in the specifications and programme

ILLUSTRATION THROUGH A DECOMMISSIONING PROJECT EXAMPLE
SKILLS AND KNOWLEDGE

PROJECT : HOT CELL DEMOLITION

OBJECTIVE: Equipments removal / Cell decontamination / Hot cell demolition
### SKILLS AND KNOWLEDGE

**PROJECT: HOT CELL DEMOLITION**

<table>
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<tr>
<th>Skill/Activity</th>
<th>Description</th>
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<td>Scenario development</td>
<td>Based on dismantling principles and experience</td>
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<td>Nuclear safety report</td>
<td>Nuclear and non-nuclear risk management (contamination &amp; radiation, criticality, fire, earthquake, handling...)</td>
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<td>Tool design: remote or contact activities</td>
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<td>Waste management</td>
<td>Understanding of waste management rules &amp; experience</td>
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<td>Demolition techniques</td>
<td>Civil engineering</td>
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**NUVIA PROCESS**
All these skills are required at different levels:

- **Operators** (dismantling, decontamination, waste packaging...)
- **Teleoperators**
- **Technicians on site** (maintenance, radioprotection, waste characterization, nuclear measurement...)
- **Technicians** (designers, operational procedures development...)
- **Engineers** (tool design, technique development, nuclear safety...)
- **Operations managers** (works supervisors, works managers)
- **Senior project managers**: site managers, project directors
Introduction
Skills & knowledge
Staff resources
Finding suitable resources
Motivation and evolution
Career example
ACADEMIC TRAINING WITH NUCLEAR SCIENCES PROGRAMMES IN FRANCE:

- **PROJECT MANAGEMENT**
  - ENGINEERING COLLEGE: project management, sciences (mechanical, chemistry, electronic...)
  - MASTER’S DEGREE
    - ITDD (technical degree) – Grenoble University
    - NUCLEAR ENERGY (international engineering degree) – ENSPC Paris

- **ENGINEERING AND TECHNICAL STUDIES**
  - MASTER’S DEGREE
  - LICENCE Dismantling-Decontamination-Abestos & Waste – Nîmes: technical degree (3rd year)
  - 2 years technical degree for design training

- **NUCLEAR SAFETY ENGINEERING**
  - ECOLE DES MINES Nantes (engineering degree): Nuclear safety & environment
  - MASTER’S DEGREE:
    - ENSAM (6th year university degree) - Aix en Provence
    - ITDD (technical degree) – Grenoble University
ACADEMIC TRAINING WITH NUCLEAR SCIENCE PROGRAMMES IN FRANCE:

- RADIOPROTECTION
  - Radioprotection European Master Degree (technical degree)
  - 1 or 2 year Technical degree – INSTN (Institut National des Sciences et Techniques Nucléaires)

All these training programmes are directly linked to industrial companies who provide feedback on the content.

Sponsored by the French nuclear companies:

Decommissioning issues are not an exact science but:

Compilation of feedback identifies successes, difficulties, failures to explain...
OPERATOR TRAINING:

- **DECONTAMINATION OPERATORS**
  
  - High school technical degree with nuclear environment programme

- **DISMANTLING OPERATORS/ TELEOPERATORS**: no specific academic training but mechanical, electrical, electronic, building capabilities

**ACADEMIC TRAINING IS NOT SUFFICIENT**

**PRACTICE TRAINING, TIPS, FEEDBACK, RULES ARE NECESSARY**

Executing operations in a nuclear environment needs specific skills which cannot be learnt without any practical experience:

- **Staff safety**
- **Correct work execution**
Our answer to this lack of competences:

- **Internal training and tutoring**

- **NUVIA dismantling & decontamination techniques school**
The decommissioning activities are new activities

- Real career evolution opportunities
  - Vertically: from operator to manager
  - Transversally: from one speciality to another

In the world, more and more facilities will have to be dismantled in the future (power plants, research reactors, fuel production facilities...)

The projects are becoming bigger and bigger

Huge career opportunities
Technical challenges
Knowledge transfer challenge
Olivier MELET, NUVIA PROCESS Cadarache Agency Director

Academic training: LICENCE Dismantling-Decontamination-Abestos & Waste – Nîmes : technical degree

2004-2007: NUVIA Engineering department

2007-2014 : NUVIA Project Manager

2009 Academic training: MASTER DEGREE DECOMMISSIONING MANAGEMENT ITDD (technical degree)– Grenoble University

Sponsored by NUVIA

2014-2015: NUVIA PROCESS Cadarache Agency Director
Decommissioning activities offer the biggest prospects in the nuclear field.

To guarantee enough resources to perform the activities

Promote decommissioning prospects to attract future employees to suitable training programmes

Nuclear decommissioning companies must be linked to the academic programmes guaranteeing efficient and effective training.

FEEDBACK MUST BE SHARED
THANKS FOR YOUR ATTENTION
SKILLS AND KNOWLEDGE

Scenario development

What is the environment?
Working conditions?
Sequence of tasks?
How to remove the equipment?
Where is the collection point?

1. Loose items with very high radiation
2. Loose items
3. Cables
4. Equipments which can be dismantled
5. Equipment which need to be sized reduced using cutting tools
Waste characterization, nuclear measurement

What kind of waste? Liquid, steel, lead, disposal?

What category?

- waste characterization
  - suitable package

Waste characterization system design & use
SKILLS AND KNOWLEDGE

Radioprotection

What are the working conditions for tool introduction? Waste removal?

Can the operators be exposed to the radiation or contamination with or without specific personal protection?

How will work be supervised?

- Radiation/contamination supervision
- Active suit
- Ventalited suit (complete isolation)
SKILLS AND KNOWLEDGE

Tool design: Remote or contact activities

- Remote liquid collection and treatment system
- Cells remote transfer system
- Pits remote decontamination system
SKILLS AND KNOWLEDGE

Decontamination techniques

What radioelement?
What support?
Chemical techniques?
Mechanical technique?
What form is the final package?
SKILLS AND KNOWLEDGE

Demolition techniques

Basic brokk

Basic brokk adaptation