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Management of Activities Subcontracted in Reactors in Operation

Contents

- General context
- Operational context
- Frame of the study
- IRSN's point of view
- Conclusions

General Context

- Foreword

- Operational experience from **industrial accidents** shows that
 - the relationship between project owner and subcontractor may have potentially destabilising effects for their respective organisations ...
 - ... with potential significant consequences for risk control
- Subcontracting in the nuclear industry is a frequent subject of discussion and controversy in France with regard to the safety of workers and reactors

Operational Context

- Subcontracting maintenance operations
 - The French licensee subcontracts approximately 80% of the maintenance operations at its nuclear power plants
 - If not performed correctly, these operations **may cause the failure of equipment necessary for reactor safety**
 - The volume of subcontracted operations will increase in coming years due to the licensee's efforts to improve reactor safety and lifetime
 - Given operation constraints, most maintenance activities are realized during the outages
 - **IRSN examined organisational measures taken by the licensee during the outages, to control risks associated with subcontracted maintenance operations on reactors**

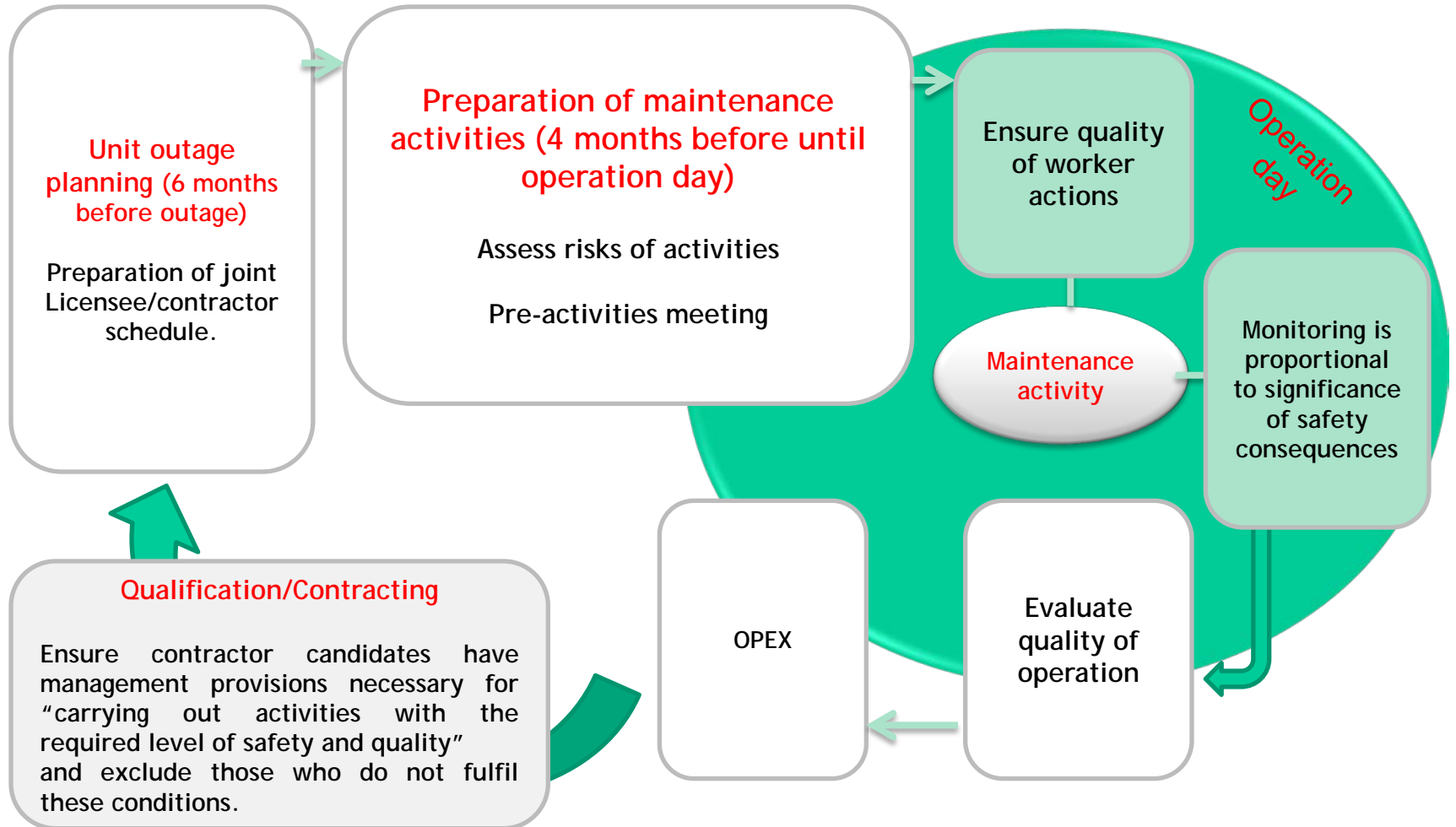
Frame of the Study

- IRSN assessment objectives
 - Assessing **the relationship** between the licensee and its subcontractors
 - How this relationship may affect compliance with operational safety requirements
 - By focusing in particular on the **actual effects on the operators (workers) activity**
 - Assessing the process for **assembling and using operational experience (OPEX)** from the subcontracted operation
 - Assessing the **licensee progress** using some “recurring” topics (risk assessments, monitoring of services, ...)
 - IRSN field methodology
 - IRSN visited three nuclear power plants during outages to
 - conduct more than 160 interviews;
 - observe directly how some 40 maintenance activities were performed
 - For each measure that it analysed, IRSN interviewed **both employees of the licensee and its subcontractors.**
- => **A mirror approach** of the assessment process

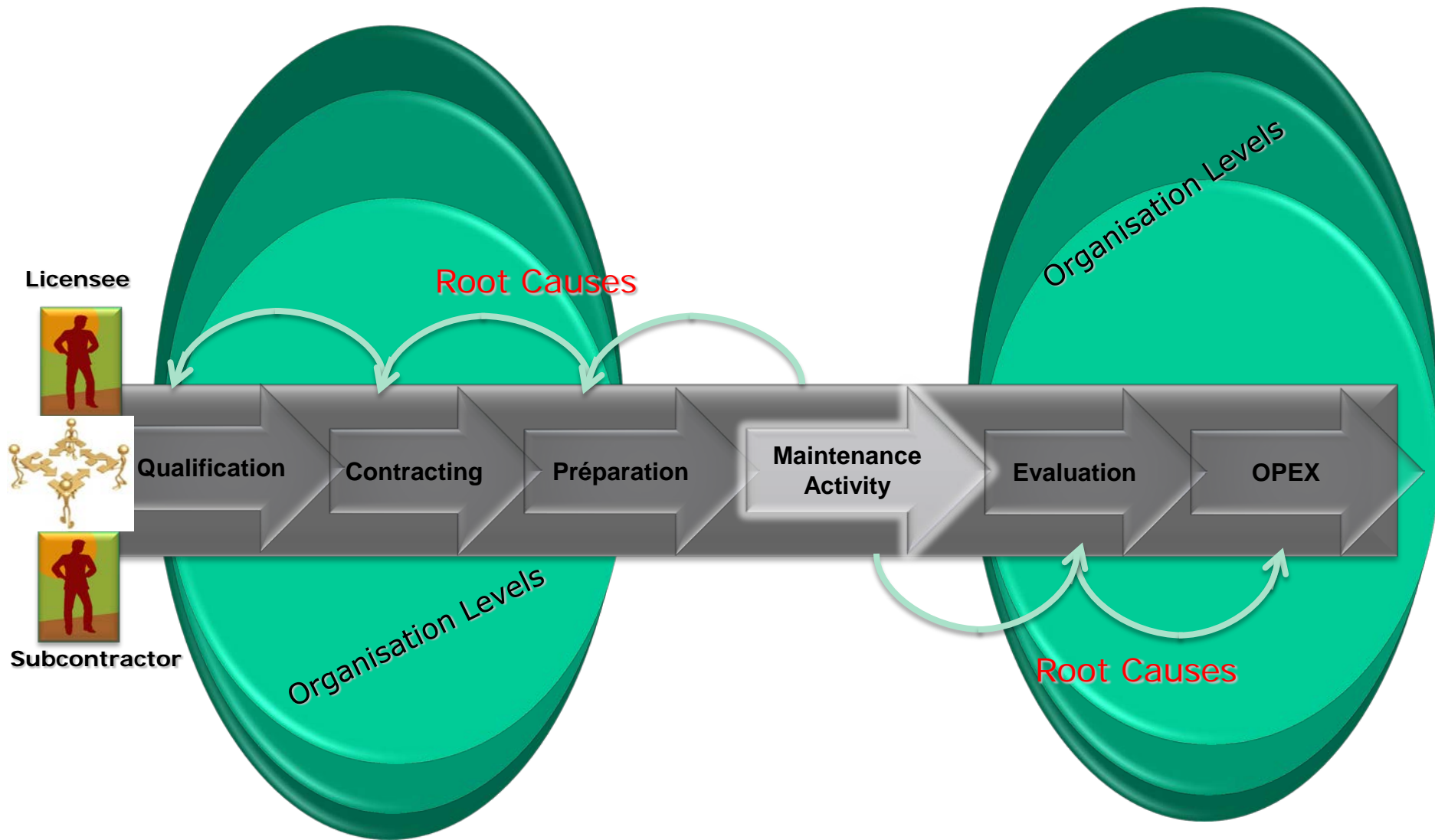
Frame of the Study

- Provisions established by the French licensee
 - Given production requirements, the licensee seeks to make these outages **as short as possible with a maximum level of safety**
 - The licensee instituted general measures at the national level which are applied at each of the 19 nuclear power plants
 - In the context of these measures IRSN examined in particular the ability of the project owner (the licensee) to make the subcontractor aware of safety issues and assess the subcontractor's response

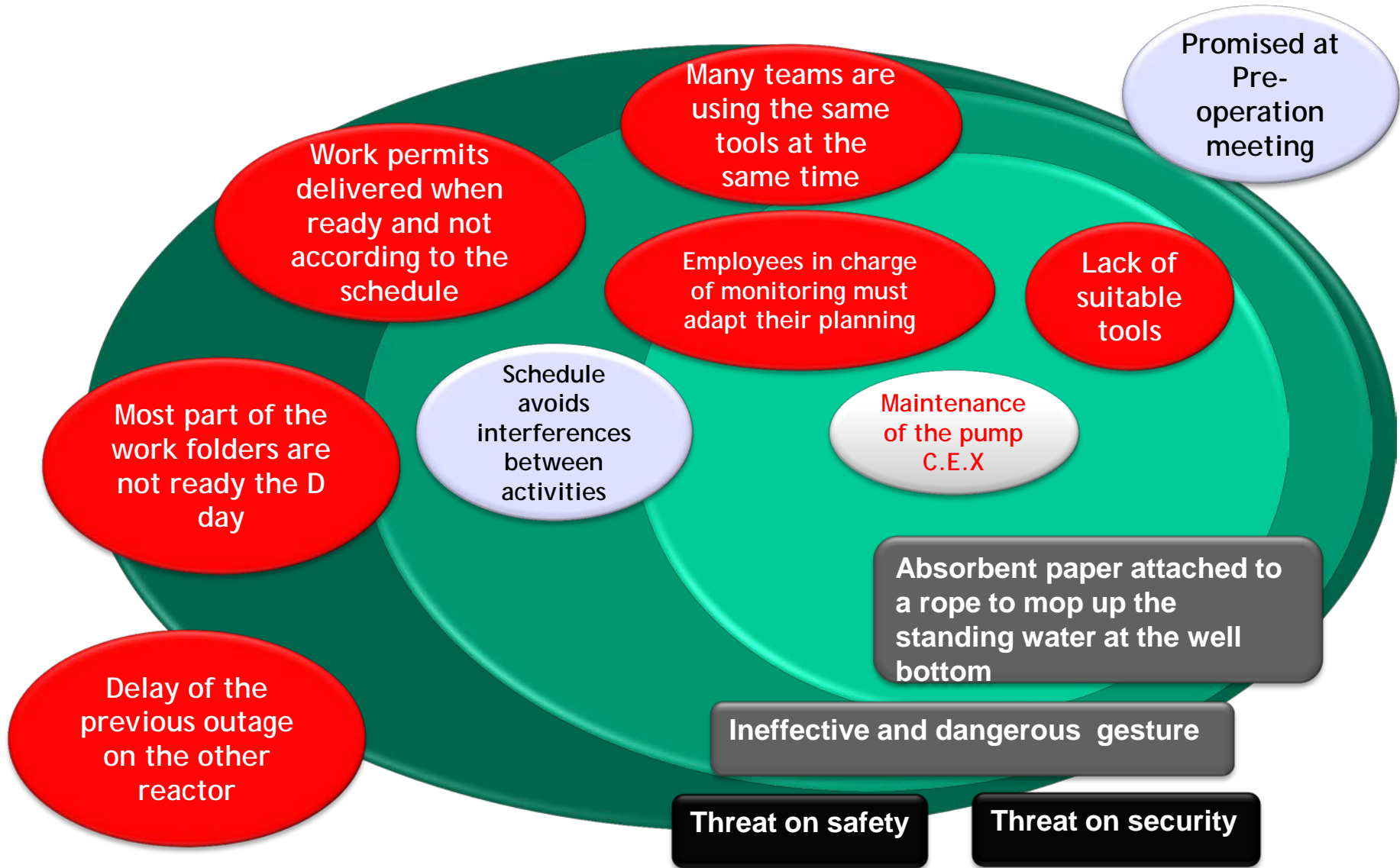
Licensee's organisational provisions for sub-contracting



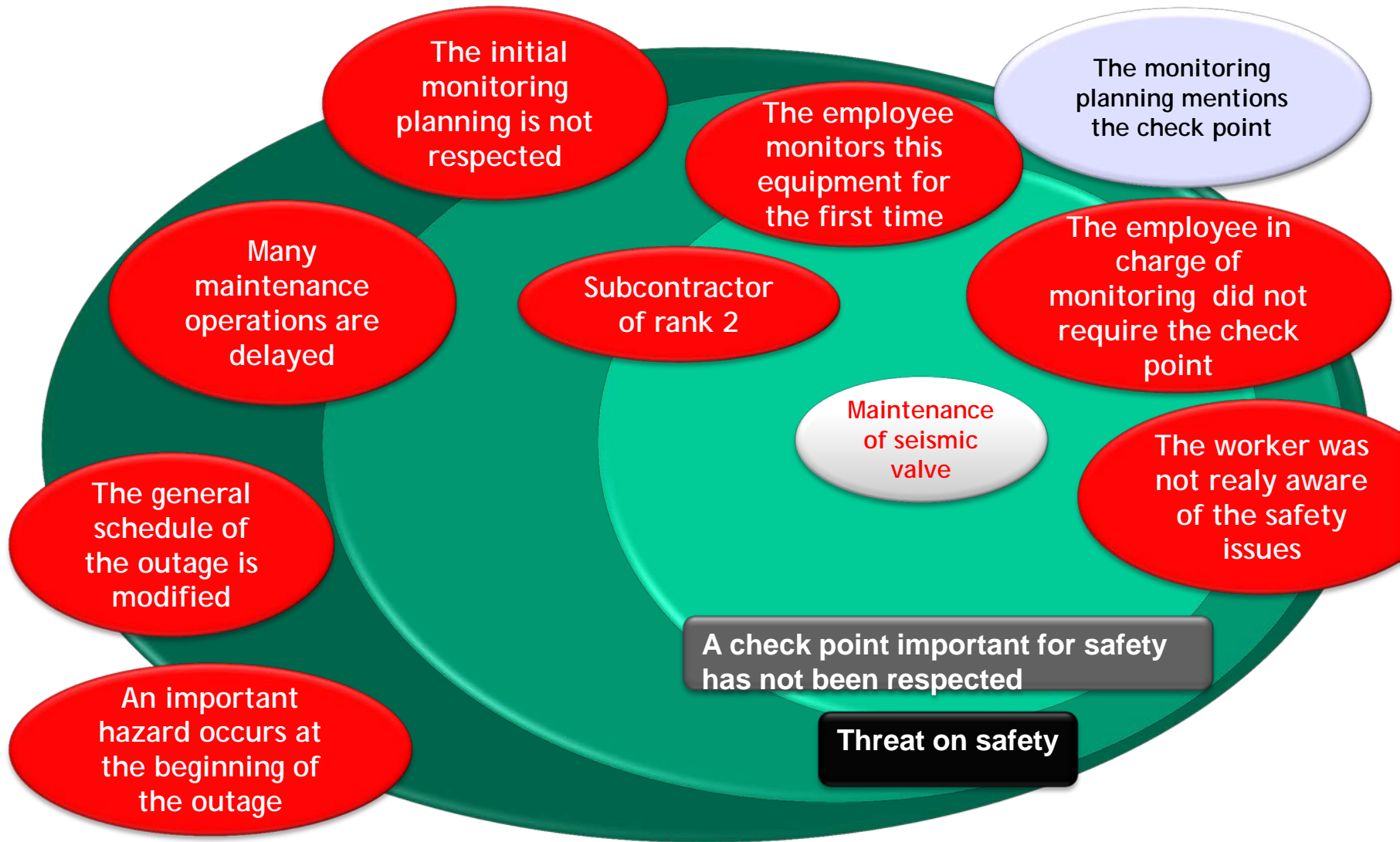
Root causes



Example of typical problems encountered in some of observed activities



Example of typical problems encountered in some of observed activities



IRSN's Point of View

- General outcome
 - The licensee implemented a set of technical and organisational measures that make an efficient contribution to the safety of subcontracted operations
 - Nevertheless, IRSN has found several areas for improvement, which it considers essential for ensuring the safety of these operations
- Ability of subcontractors to perform operations that impact safety
 - Relevant but insufficient approach for the licensee to ensure the actual ability of subcontractors
 - to implement appropriate management
 - to have sufficiently competent resources to carry out the maintenance operations assigned to them.
 - => Need for a conditional qualification

IRSN's Point of View

- Risk assessment approach
 - Before the operation, workers are expected to learn well this analysis and the methods provided for controlling risk
 - IRSN's assessment process confirmed the difficulties that the licensee has encountered for a number of years in producing analyses that take into account **the risks actually encountered** during maintenance operations

=> A need for stepping up current measures for applying the risk assessment approach

 - to improve the quality of risk assessments
 - to accurately measure their effectiveness in the field
- EDF's monitoring of subcontracted operations
 - Facing recurring difficulties related to monitoring of provided services, the licensee implemented a new monitoring management policy in 2011.

=> Need for clarifying the conditions for monitoring services,

 - to accurately measure their effectiveness in the field
 - particularly for the specific situations with 2 or 3 levels of subcontracting complying

IRSN's Point of View

- Balance between workload and available resources
 - The licensee has implemented **contractual compensatory measures** (specific room and payment for waiting times, last minute requests for contracting service, etc.) to deal with contingencies (involving equipment or scheduling)
 - These measures can weaken both subcontractor and licensee organisations
 - ⇒ A need for identifying the potentially harmful effects of these measures on subcontractor working conditions in order to better anticipate
- Collect and use operational experience from subcontracted work
 - The licensee has multiple channels
 - for collecting and reporting information about subcontractors and services provided
 - and for using the operational experience (OPEX) of subcontracted operations
 - IRSN found weaknesses, both in the collection and handling of this information
 - Difficulty for subcontractors to become involved in preparing OPEX
 - Lack of overall analysis by the licensee of all available data
 - ⇒ Need to improving the process for assembling and using OPEX

Conclusions

- The licensee implemented a set of technical and organisational measures that make an efficient contribution to the safety of subcontracted operations.
- The licensee implemented a given number of measures so that subcontractors are more involved in planning operations for unit outages. That is a very positive measure to be strengthened.
- IRSN notes that certain weaknesses in licensee's measures have been known for several years and believes that they continue in part due to an insufficiently thorough analysis of the root causes.
- More generally, IRSN considers that the licensee's analysis of problems related to subcontracting is still too often limited to the direct causes and does not adequately consider the deeper causes, particularly those related to the licensee's own organisation.
- IRSN finds that the licensee must adopt a vision that takes into account the overall quality of a service **as the joint contribution of the project owner and the subcontractor.**

Thank you for your attention

Annexes

Frame of the Study

- What IRSN expects according to human factors point of view
 - An efficient management of the “human” interfaces for the integration of the safety issues
 - Sharing of objectives by all participants and stakeholders
 - Perception and awareness of the contribution of each one in terms of safety issues
 - Continuity of relays
 - Mobilization of skills tailored
 - ...
 - A comprehensive approach reflexive
 - The French licensee must be able to reconsider its own organisation to improve the conditions for performing subcontracted operations
 - => These conditions are important for ensuring the safety of operations**