

ISOE
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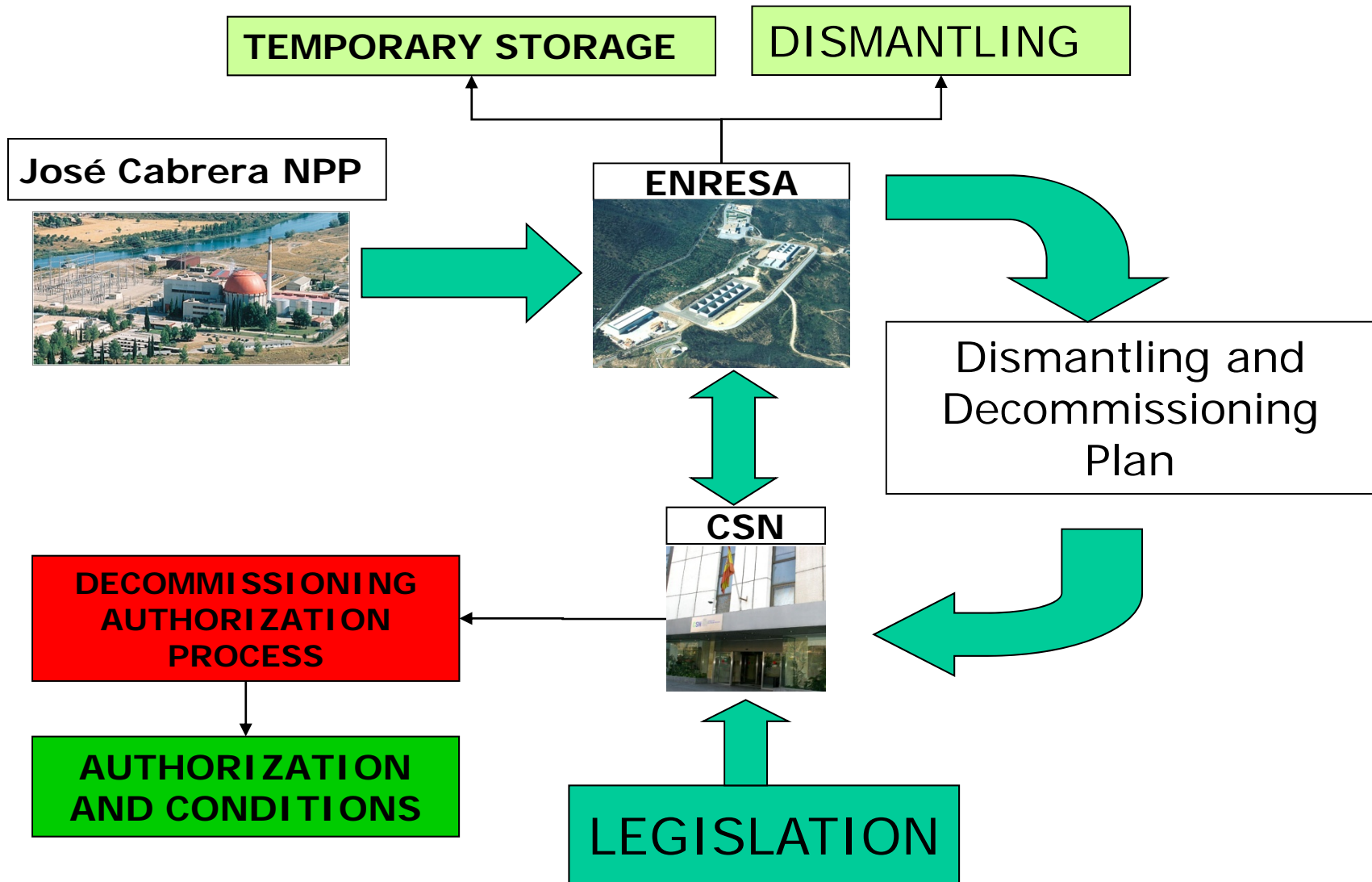
**ACTIVITIES OF THE SPANISH
REGULATORY BODY (OPERATIONAL
RADIATION PROTECTION) RELATED
TO DISMANTLING OF JOSE CABRERA
NUCLEAR POWER PLANT**

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1. Objectives

- Show an overview of the dismantling process
- Describe the main activities carried out by the CSN related to radiation protection for the dismantling of José Cabrera nuclear power plant (2006-2010).

2. Global Process



3. José Cabrera NPP Features

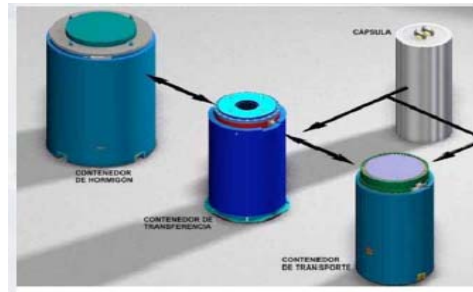
- Property: GAS NATURAL UNION FENOSA (UF)
- PWR Westinghouse
- One loop
- 510 Mwt/160 Mwe
- ISOE Group: 000 (1st Generation)
- Start up 1969
- Final Shutdown 2006

4. ENRESA

- ENRESA (Empresa Nacional de Residuos)
- Public company that is in charge of treat, prepare and store the radioactive waste generated in Spain.
- Responsible of planning and executing the dismantling (2006-2016)
- Responsible of José Cabrera NPP for decommissioning (2010-2016)
- Transfer to UF (2016)



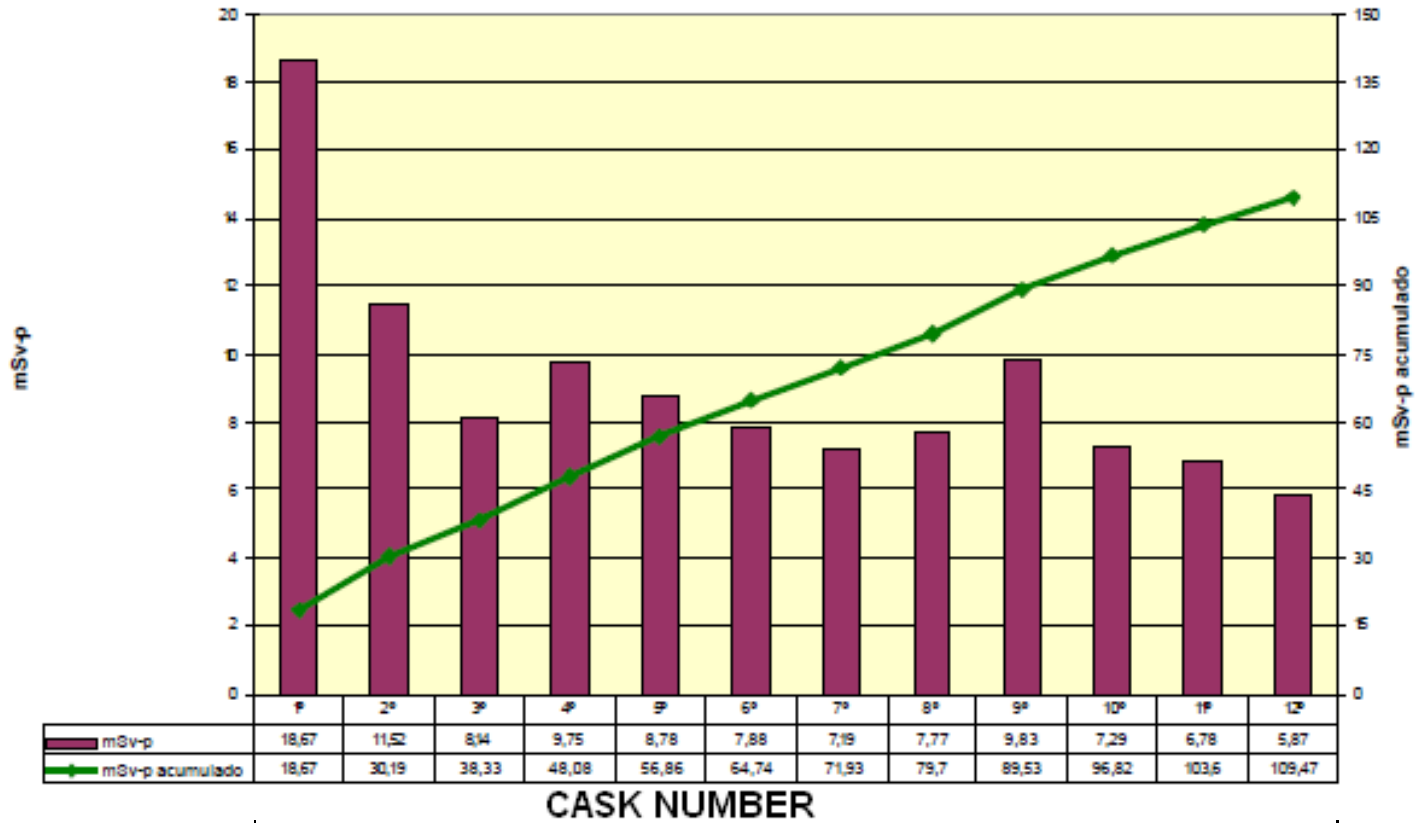
5. FTS: Fuel Temporary Storage Characteristics



- Cask manufacturer: HOLTEC
- Cask type: HI-STORM 100
- Number of casks: 12 for spent fuel + 4 for high activity waste will be stored in 2011-2016
- Capacity: 32 fuel element by cask

5. FTS: Collective Dose for Cask Fulfilment

COLLECTIVE DOSE BY CASK



Febr. 2009

Sept. 2009



5. FTS: Documentation Evaluated by CSN

Evaluated Documentation related to storage casks and FTS

Safety study
HI-STORM
and HI-TRAC
system

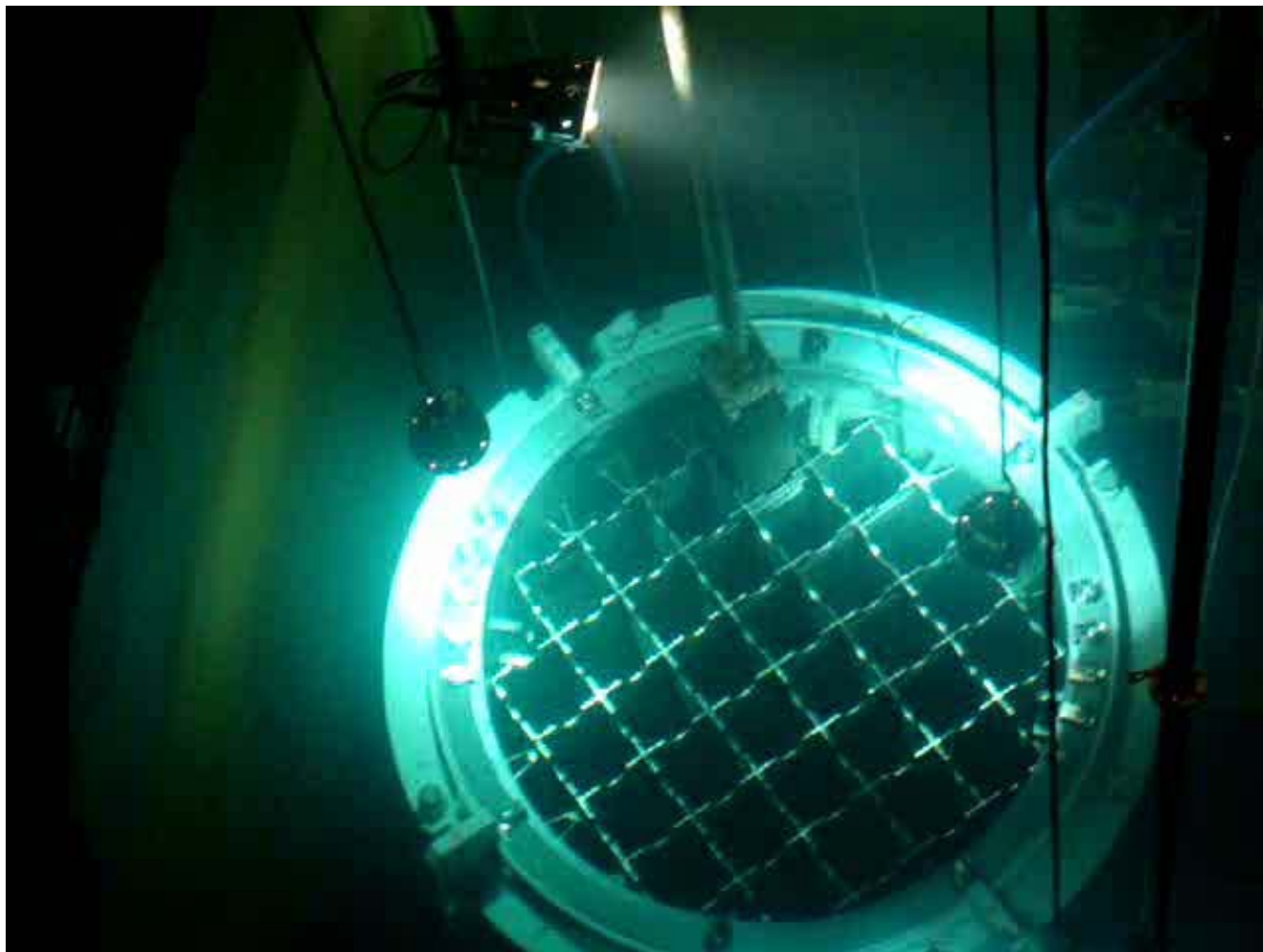


Manuals and
associated
procedures

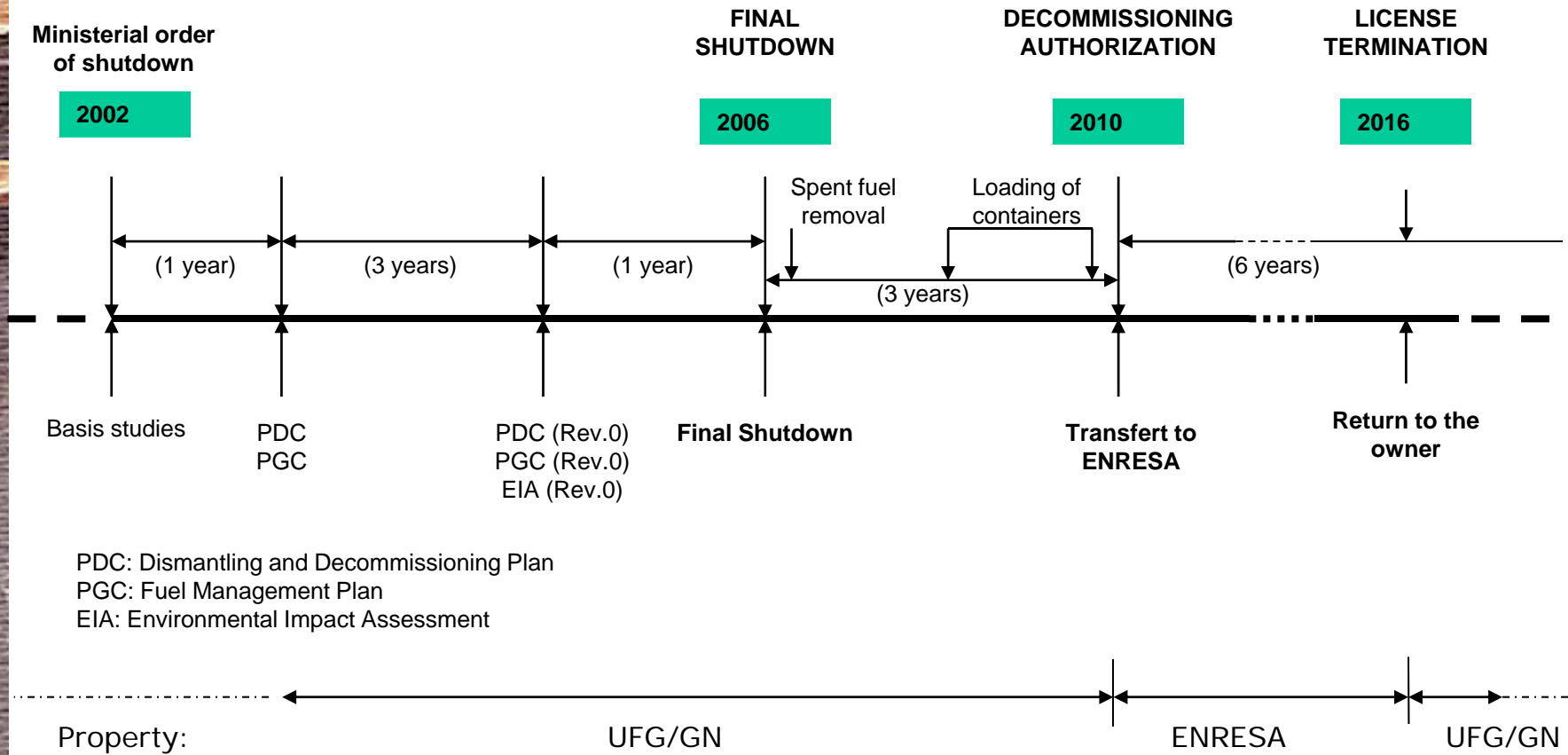
Safety study HI-
STAR system

FTS Safety study

5. FTS: Live Process



6. Schedule



7. Dismantling: Objectives

- Total and immediate dismantling
- Restoration of site: 6 years (2010-2016).
- Collective doses estimation: 6416 mSv-p

<i>Dismantling activities</i>	<i>Collective Dose (mSv-p)</i>
<i>Design modification and Tagout</i>	437
<i>Surveillance and maintenace</i>	443
<i>Dismantling of Large size components</i>	1982
<i>Decontamination</i>	72
<i>Dismantling of radioactive components (no large size)</i>	2125
<i>Prepare radioactive waste</i>	12
<i>Biological Shield demolition</i>	1011
<i>Other concrete demolition</i>	19
<i>Surface decontamination</i>	55
<i>Hot plant activities (cut and decontamination)</i>	34
<i>Radioactive waste management</i>	226
TOTAL	6416

7. Dismantling: Approval Criteria (1)

El Ministro de la Presidencia,
JUAN JOSÉ LUCAS GIMÉNEZ

REGLAMENTO SOBRE PROTECCIÓN SANITARIA CONTRA LAS RADIACIONES IONIZANTES

TÍTULO I

Disposiciones generales

CAPÍTULO I

Objeto y ámbito de aplicación

Artículo 1. *Objeto.*

1. Este Reglamento tiene por objeto establecer las normas relativas a la protección de los trabajadores y de los miembros del público contra los riesgos que resultan de las radiaciones ionizantes, de acuerdo con la Ley 25/1964, de 29 de abril, sobre Energía Nuclear.

2. A los efectos de este Reglamento, se utilizarán las definiciones contenidas en el anexo I.

Artículo 2. *Ámbito de aplicación.*

1. El presente Reglamento se aplicará a todas las prácticas que impliquen un riesgo derivado de las radiaciones ionizantes que procedan de una fuente artificial, o bien, de una fuente natural de radiación cuando los radionucleidos naturales son o han sido procesados por

- National normative

- Regulation on nuclear and radioactive facilities (RINR).
- Regulation on Sanitary Protection against Ionizing Radiations (RPSRI).
- Operational Protection of Outside exposed Workers to the risk of ionising radiation during their activities in controlled areas.

7. Dismantling: Approval Criteria (2)

- CSN normative
 - Safety instructions (e.g. IS-03 Qualifications required to obtain recognition as an expert in protection against ionizing radiations)
 - Safety Guide (e.g. GSG-01.12 Practical application on the optimization of the radiological safety in the operation of the nuclear power stations)

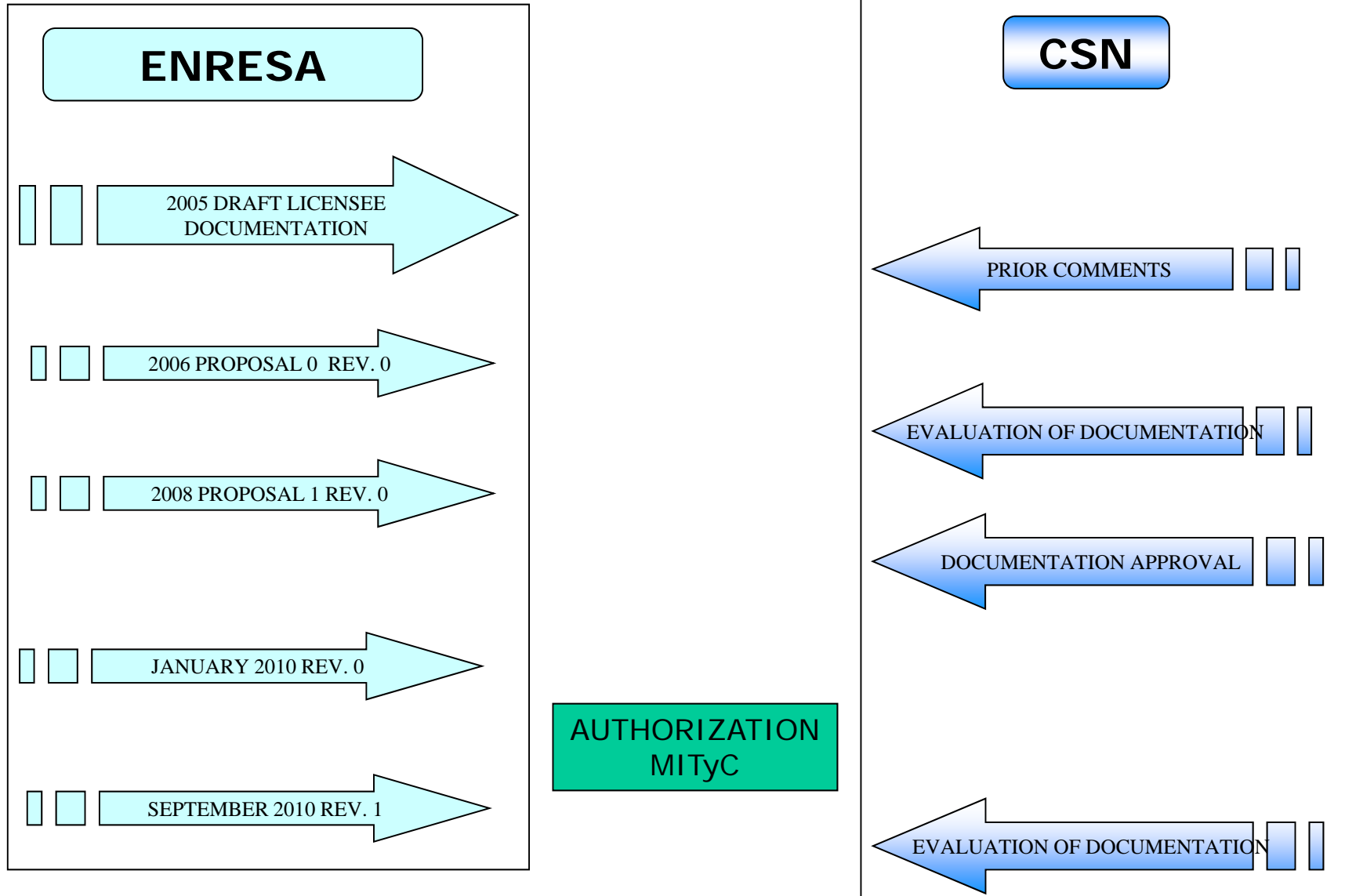
Instrucción de 6 de noviembre de 2002, del Consejo de Seguridad Nuclear, número IS-03, sobre cualificaciones para obtener el reconocimiento de experto en protección contra las radiaciones ionizantes

Publicada en el BOE nº 297 de 12 de diciembre de 2002

7. Dismantling: Approval Criteria (3)

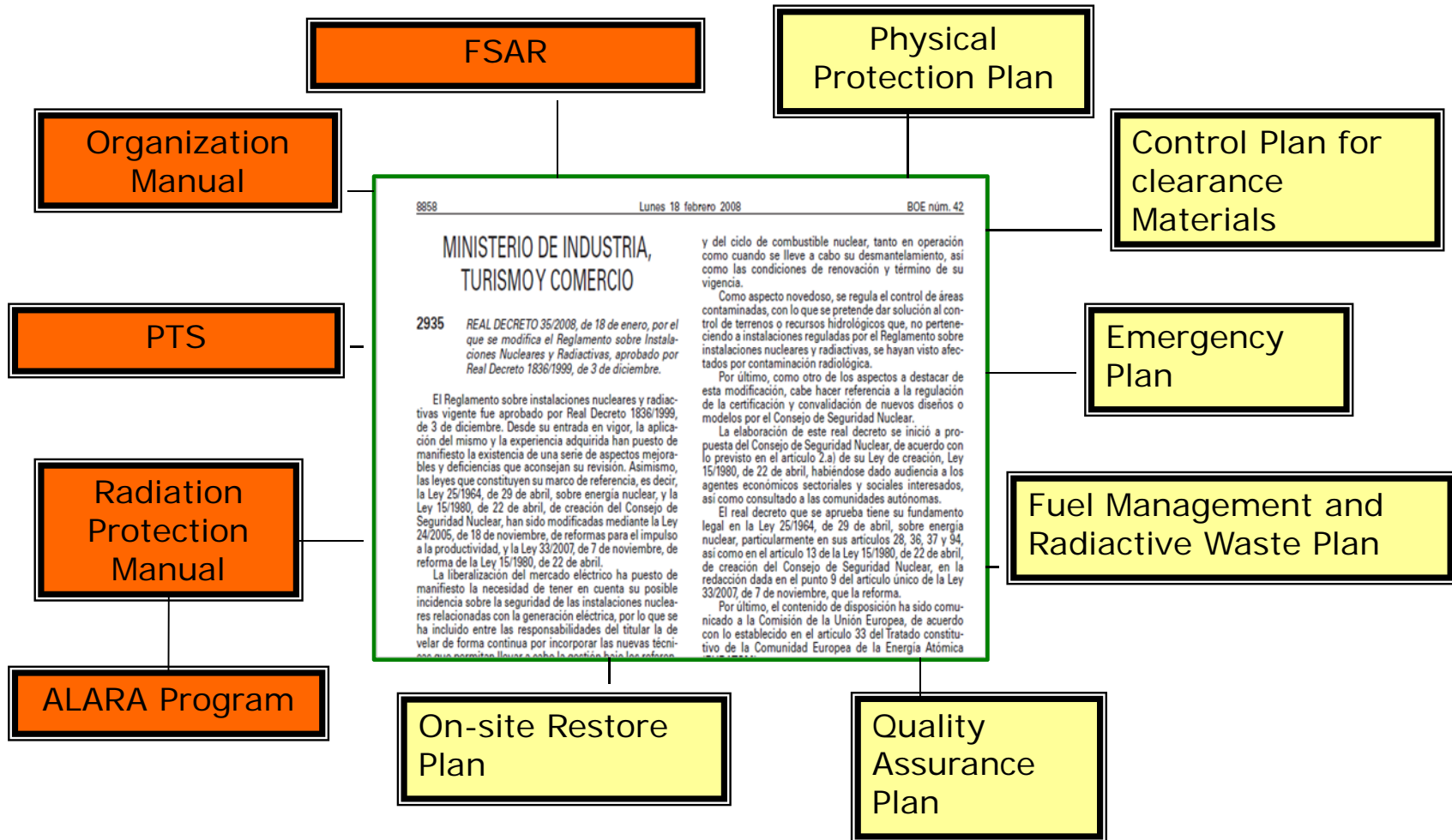
- U.S. normative
 - R.G. 8.8 “Information relevant to ensuring that occupational radiation exposures at nuclear power stations will be as low as is reasonably achievable”.
 - R.G. 8.10. “Operating philosophy for maintaining occupational radiation exposures as low as is reasonably achievable”.

7. Dismantling: Evaluation Process



7. Dismantling: Documentation Evaluated by CSN

Royal Decree 35/2008, Regulation on nuclear and radioactive facilities.



(*) Revised Documentation by Radiation Protection Department

7. Dismantling: RP Manual Evaluated by CSN

Radiation Protection Manual content:

- Personnel classification
- Workplace classification
- Radiological surveillance (workers and areas)
- Access control
- Radiological protection organization
- Surveillance and control of sources and radioactive materials
- Radiation Protection Training
- ALARA Program
- Audits, inspections and revision

7. Dismantling: Authorizations & Conditions

- Enresa Radiation Protection Service conditioning:
 - Functions & responsibilities
 - Service organizations (technical and human resources)
 - RP Responsible authorized by CSN
 - Record and archive data
 - Verification and calibration equipment
 - Radiological Protection Manual
 - Personnel Training
 - ALARA Principles
 - Dosimetric control criteria
 - Tasks that require ALARA study will not be allowed to be carried out without the presence of the RP Responsible

7. Dismantling: Other Relevant Facts

- The CSN has given a great importance to the **TRANSMISSION OF INFORMATION BETWEEN the PREVIOUS HOLDER and ENRESA**
- This transmission is gradual, existing a reasonable time for synchronization or overlaps between the two organizations



7. Dismantling: Other Relevant Facts

- Very important: Dismantling activities must be supervised by two people with RP License



THANK YOU FOR YOUR
ATTENTION!!