Regulatory Framework for Decommissioning Planning and Regulatory Review Process in the Czech Republic

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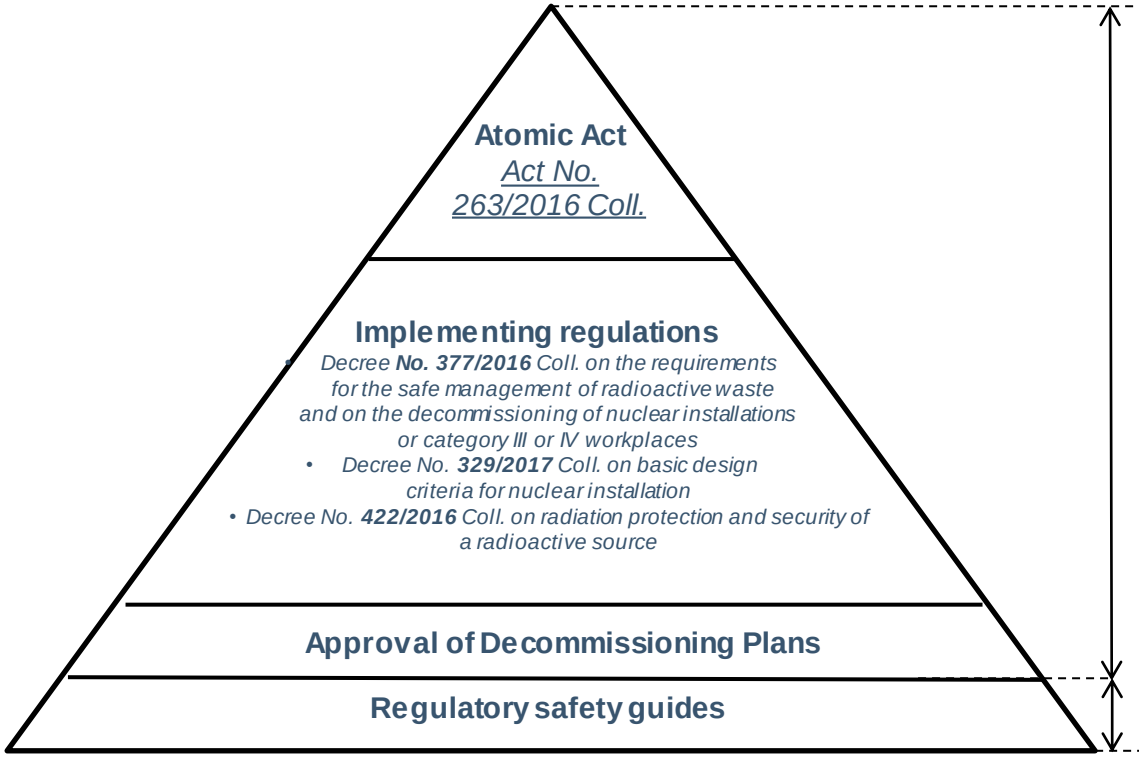
Regional Workshop for Central Governments and Regulatory Bodies on the Development of Strategies and Regulatory Requirements for Decommissioning

4 – 7 April 2022

Virtual event

Regulatory Framework (1/2)



Legally binding (requirements)
*Act No. 263/2016 Coll. („Atomic Act") **in force from 1th of January 2017)***
Transposition of the Euratom Directives 2010/71, 2011/70, …, incorporation of IAEA Safety Fundamentals

Implementing Regulation
Incorporation of WENRA Safety Reference Levels on Decommissioning (Criteria) and IAEA General Safety Requirements, partially IAEA Safety Guides

Non-legally binding (recommendations)
Implementation of the IAEA Safety Guides, world practice (some to be revised due to the new legislative framework)

Regulatory Framework (2/2)

Siting	Construction	Commissioning	Operation	Decommissioning	
Siting safety case Initial decommissioning plan		Safety cases (construction, commissioning, operational) Updates of initial decommissioning plan		Decommissioning safety case Final decommissioning plan	WENRA
Siting/ /Design	Construction	Commissioning	Operation	Decommissioning	END
Siting safety case Initial decommissioning plan		Safety cases (construction, commissioning, operational) Updates of initial decommissioning plan		Final decommissioning plan	IAEA
Siting safety case Draft of the decommissioning concept	Construction safety case Decommissioning concept	Safety cases (commissioning, operational) Decommissioning plan and its updates		Decommissioning safety case	Complete decom. safety case

Decommissioning Planning (1/9)

- The majority of small installations of cat. I. and II. are decommissioned by the removal of radiation sources and their return to the country of origin or safe storage and disposal in CZ. If needed as a result of activity monitoring decontamination of the workplace is performed. No detailed DP is required.
- Decommissioning plan is a part of operational licence of cat. III. and IV. workplaces, has to be approved by the regulator and is periodically updated (every 5 y)
- Decommissioning of of cat. III. and IV. workplaces is a licensed activity.
- Once cat. III. or IV. workplace is decommissioned the site can be released from regulatory control (so called complete decommissioning). Separate license is needed.

Decommissioning Planning (2/9)

- Details of (initial) decommissioning plan for cat. III. or cat IV. workplace are specified in the Decree No. 377/2016 Coll.:
  - initial and final condition of the installation or workplace;
    - site,
    - facility description,
    - upgrades and modifications of facility
  - operating history (incl. licensing history);
  - description of available or expected technologies capable of ensuring the safe performance of decommissioning;
    - type of dismantling (immediate vs. deferred)
    - decontamination technologies
    - dismantling technologies
  - decommissioning safety analyses;
    - inventory and source terms (also see item „expected radionuclide composition …“)

Decommissioning Planning (3/9)

  - assessment of normal and accidental conditions, workers vs. public
  - comparison with legal limits
- description of the NI or workplace;
  - detailed description of facility (used SSCs, civil construction of facility)
- expected decommissioning start date, justification of the decommissioning strategy and scope, and schedule (decommissioning plan itself with time sequence of decommissioning activities);
- expected radionuclide composition of substances at the moment before operation ceases, and an assessment of their physical and chemical form, activity, toxicity, …;

Decommissioning Planning (4/9)

- draft plan for organisational preparations and staffing;
- draft plan for ensuring physical protection;
- draft monitoring programme;
- scheme for changes to the emergency planning zone, if one was stipulated, and a scheme for preparedness to respond to a radiation emergency;
- description of safe management of RAW and SF + funding;
- description of the use of the site and SSCs, or if complete decommissioning is impossible, a programme for their maintenance, tests, inspections …;
- initial documentation for estimating decommissioning costs;
- draft plan for ensuring radiation protection during the decommissioning period (optimisation of RP).

Decommissioning Planning (5/9)

- Decommissioning safety case (FDP) for cat. III. and cat IV. workplace (NI or disposal facility, which is not a NI) and its content is specified in the Atomic Act (No. 263/2016 Coll.):
  - proof of availability of funds for the decommissioning,
  - technological decommissioning procedures,
  - decommissioning timetable,
  - method of dismantling, decontamination, treatment, transportation, storage and disposal of parts of contaminated equipment,
  - the expected radionuclide composition and activity of radioactive substances discharged from the workplace and RAW generated,

Decommissioning Planning (6/9)

- RAW management, including disposal,
- safety assessment report,
- monitoring programme,
- radiation extraordinary event analysis,
- on-site emergency plan,
- modification of the emergency planning zone,
- management system programme,
- proof of safe RAW management and its funding,
- conditions for further use of the area and SSCs, if complete decommissioning is not possible

Decommissioning Planning (7/9)

- The content of complete decommissioning safety case is specified in the Atomic Act (No. 263/2016 Coll.):
  - description of the area where the decommissioned … cat. III workplace … is sited and description of a description of the work implemented in the context of decommissioning,
  - inventory of RAW, including the method of disposal/storage and inventory of remaining radioactive substances released into the environment,
  - list of data to be retained after the completion of decommissioning, including the period of storage,
  - procedures used and the results of radiation situation monitoring in the site and their comparison with the results of the on-site baseline survey

Decommissioning Planning (8/9)

- Funding of decommissioning and RAW management is specified in Atomic Act
- Graded approach is a vital prinicple for development decommissioning plans for small installations (covered in Atomic Act)

Decommissioning Planning (9/9)

- Wide variety of non-Nuclear installations have already been decommissioned in research centers, U-mining facilities and other facilities (hospitals).
- Initial decommissioning plans refer to generic management system of the operator, detailed decommissioning management system is expected to be developed within the final decommissioning plan

Regulatory Review – Basics

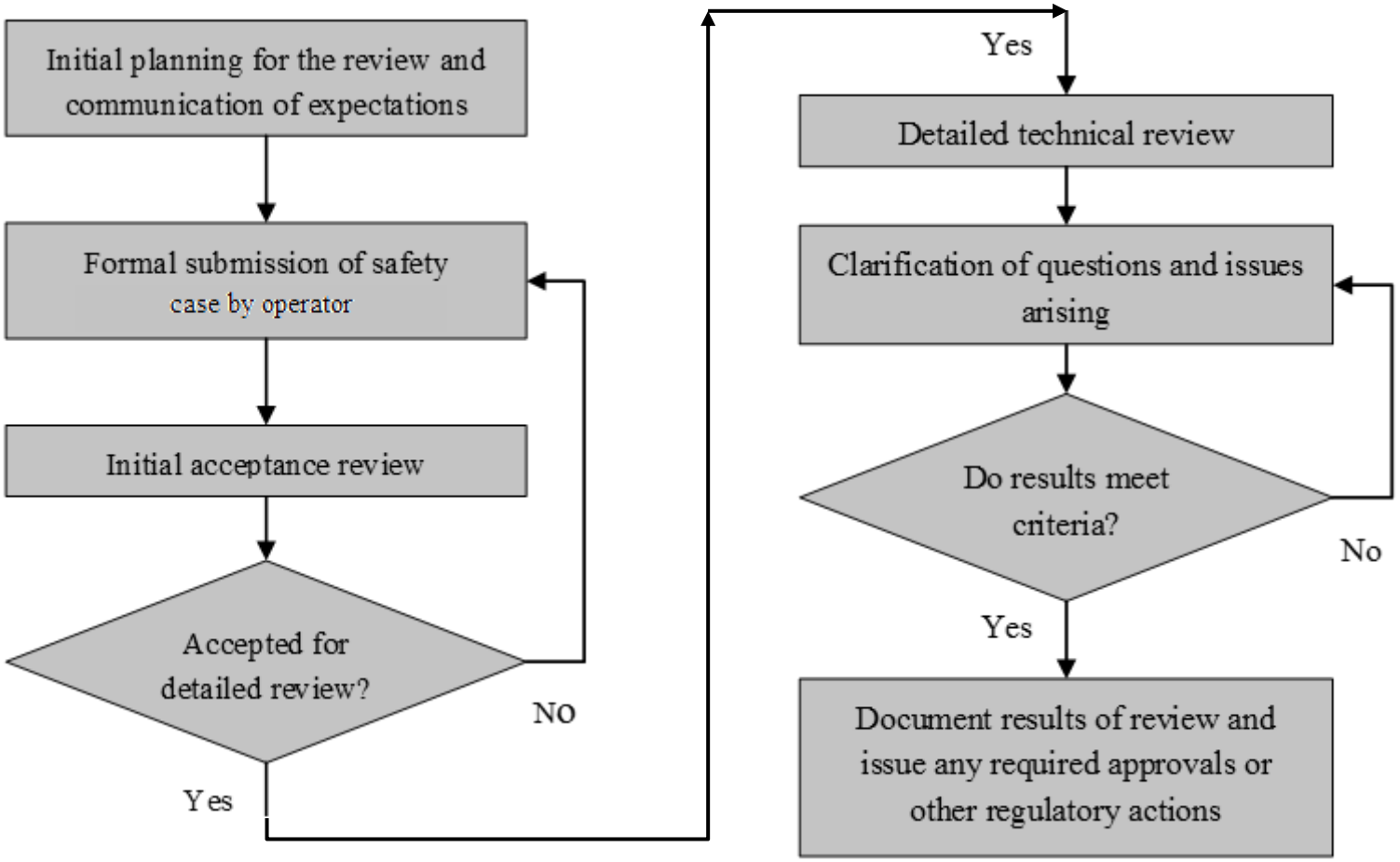
- According to the IAEA GSR Part 6 regulatory body has to establish the review proces for decommissioning plans, their reviews and supporting documents
- Regulatory review to be conducted
  - in accordance with national regulations and international recommendations
  - using a graded approach (“focus of application of regulatory review on issues of greatest safety significance”)
- The regulatory body should
  - set out the approach for the regulatory review
  - communicate with the operator and other interested parties to state its expectations and to promote confidence.

Regulatory Review - Objectives

- To consider whether the safety assessment provides an appropriate basis to support the proposed decommissioning strategy, plan and activity
- To support the authorization process for the decommissioning strategy, plan and activities
- To identify any regulatory limits and conditions to be applied during decommissioning or before commencement of special decommissioning activities
- To provide input to the process of releasing a site from regulatory control (the only unique objective for decommissioning activities).

Regulatory Review - Process

- Example for a Regulatory Review Process



Regulatory Review – Management (1/4)

- To ensure a structured, systematic and transparent review all review activities need to be subject to the regulatory body's management system
- Main aspects for the management of the review process:
  - Defining the objectives and scope of the review;
  - Developing a review plan;
  - Assembling a competent review team;
  - Defining the project schedule and allocating resources for the conduct of project tasks;
  - Identifying the review team members responsibilities;
  - Co-ordinating the conduct of the review tasks;

Regulatory Review – Management (2/4)

- Identifying early on during the review any areas of regulatory guidance;
- Co-ordinating dialogue with the operator and with other stakeholders;
- Reviewing and integrating documents;
- Synthesis, documentation and communication of review findings.

Regulatory Review – Management (3/4)

STÁTNÍ ÚŘAD
PRO JADERNOU BEZPEČNOST

Pokyn NJB č. 5/2006
ze dne 29. května 2006

stanovující odpovědnosti pracovníků SÚJB v procesu hodnocení
Předprovozní bezpečnostní zprávy Skladu vyhořelého paliva (dokumentace EGP – 5090-F-050/3z.) v lokalitě Jaderné elektrárny Dukovany
a
Programu zabezpečování jakosti pro jednotlivé etapy uvádění SVP v OJ EDU do provozu (dokumentace ČEZ Ev. č. J63, pol. 203)

Review plan

1. Koordinace celého hodnotícího procesu (dále jen proces) Předprovozní bezpečnostní zprávy Skladu vyhořelého paliva (dále jen PpBZ) a Programu zabezpečování jakosti pro jednotlivé etapy uvádění SVP do provozu je prováděna úsekem jaderné bezpečnosti.
2. V návaznosti na WPS 054 **stanovuji oprávněnou úřední osobou a koordinátorem** hodnocení obou výše uvedených dokumentů **xxxxxxxxxxxx** - **ONRV**. V průběhu procesu budou koordinátorem vykonávány především tyto činnosti:
   - zajištění připomínkování PpBZ v rámci SÚJB,
   - shromáždění připomínek od hodnotitelů jednotlivých částí PpBZ ve stanovených termínech,
   - zabezpečení technických úkonů při projednávání PpBZ, pokud taková nutnost nastane,
   - na základě písemných připomínek hodnotitelů přerušení správního řízení,
   - opakování procesu v případě, že byly po přerušení předloženy opravené PpBZ, popř. vyjádření k připomínkám SUJB,
   - zaznamenávání průběhu procesu,
   - archivaci veškeré doprovodné dokumentace ve spise k procesu vedeném.

Coordination

3. V rámci procesu je koordinátor oprávněn vyžadovat písemné posouzení jednotlivých částí dokumentu na posuzovatelích stanovených v příloze (str. 1 - 4) tohoto pokynu.
4. Posuzovatelé jsou povinni svá posouzení předat ve stanovených termínech a stanovenou formou (příloha str. 5 - 6 tohoto pokynu) písemně a elektronickou poštou koordinátorovi.
5. Termín předložení první verze posouzení stanovuji na 20. června 2006 s následným kontrolním dnem 26. června 2006. Posouzení by mělo být ukončeno do 31. července 2006.

Schedule

6. Za posouzení hodnocení jednotlivých kapitol PpBZ odpovídají ředitelé odborů nadřízení hodnotitelům uvedeným v příloze tohoto pokynu.

Responsibilities

xxxxxxxxxxxx
náměstek pro jadernou bezpečnost

Hodnotitelé jednotlivých částí dokumentů
Předprovozní bezpečnostní zprávy Skladu vyhořelého paliva
a
Programu zabezpečování jakosti pro jednotlivé etapy uvádění SVP v OJ EDU do provozu (dokumentace ČEZ Ev. č. J63, pol. 203)

Seznam hodnotitelů:

Ducháček, Faltejsek, Hartl, Jindřich, Knob, Krpálek, Lietava, Matzner, Miasnikov, Pajerek, Starostová.

Review team

(jména odpovědných hodnotitelů jsou uvedena před jednotlivými kapitolami a podkapitolami)

(ONRV - RNDr. P. Lietava, Ing. V. Ducháček, CSc.)
1. ÚVOD
1.1 ÚČEL A DŮVOD VÝSTAVBY SVP, IDENTIFIKAČNÍ ÚDAJE
1.2 ZAKLADNI UDAJE O STAVBE SVP A LOKALITE
1.3 POPIS ZAŘÍZENÍ
1.4 PŘEDPOKLÁDANÁ ŽIVOTNOST A DOBA PROVOZU
1.5 POUZITE PREDPISY Z HLEDISKA JADERNE BEZPECNOSTI A RADIACNI OCHRANY
1.6 SOULAD S POŽADAVKY PŘEDPISŮ
1.7 TYP POZADAVANEHO POVOLENI
1.8 PODKLADY

(ONRV - Ing. V. Ducháček, CSc.)
2. ZMĚNY PROJEKTU OPROTI PŘEDBĚŽNÉ BEZPEČNOSTNÍ ZPRÁVĚ
2.1 PREHLED DOSUD REALIZOVANYCH SPRAVNICH RIZENI
2.2 VYHODNOCENÍ VÝSLEDKŮ PŘEDCHOZÍCH ETAP PŘÍPRAVY A VÝSTAVBY
2.3 ZMENY PROJEKTU [illegible] KE SNIZENI UROVNE JADERNÉ BEZPEČNOSTI A RADIAČNÍ OCHRANY

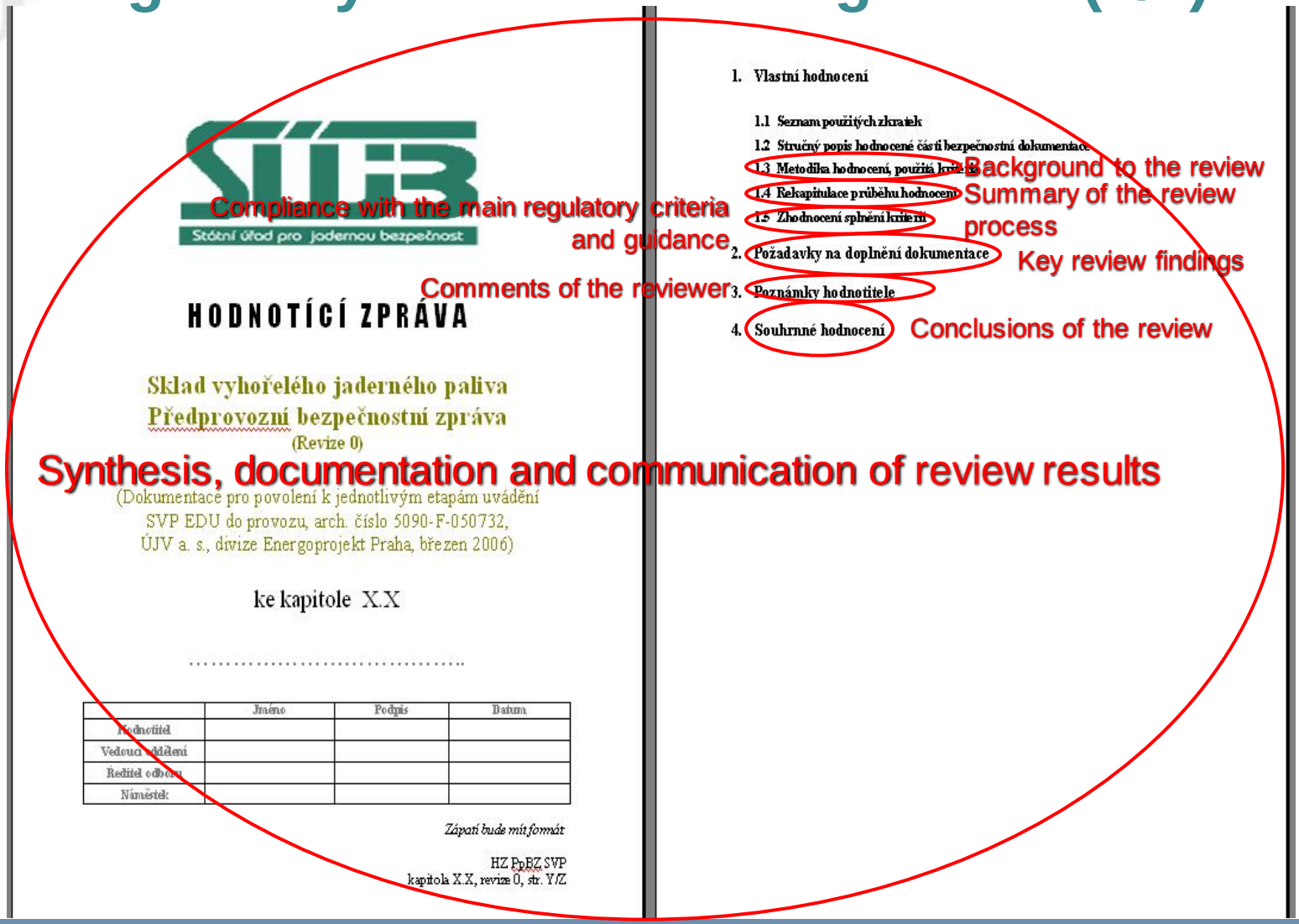
3. TECHNOLOGICKA A STAVEBNI CAST

(ONRV - RNDr. P. Lietava)
3.1 MANIPULACE S VYHORELYM JADERNYM PALIVEM A OBALOVYMI SOUBORY
3.1.1 MANIPULACE S VJP A OS V HVB
3.1.2 PŘEPRAVA OBALOVÉHO SOUBORU MEZI HVB A SVP
3.1.3 PŘÍJEM A MANIPULACE S OS V SVP
3.1.4 SKLADOVANI OS V SVP
3.1.5 VAZBY SVP NA JADERNOU ELEKTRÁRNU

(OKJZ - Ing. J. Krpálek)
3.2 SYSTÉMY KONTROLY A ŘÍZENÍ
3.2.1 MONITOROVACÍ SYSTÉM OBALOVÉHO SOUBORU
3.2.2 SYSTEM KONTROLY A RIZENI SKLADU
3.2.3 ÚSTŘEDNÍ ELEKTRICKÁ DOZORNA
3.2.4 INFORMAČNÍ SYSTÉMY JE

Responsibilities

Regulatory Review – Management (4/4)



Státní úřad pro jadernou bezpečnost

HODNOTÍCÍ ZPRÁVA

Sklad vyhořelého jaderného paliva
Předprovozní bezpečnostní zpráva
(Revize 0)

(Dokumentace pro povolení k jednotlivým etapám uvádění
SVP EDU do provozu, arch. číslo 5090-F-050732,
ÚJV a. s., divize Energoprojekt Praha, březen 2006)

ke kapitole X.X

	Jméno	Podpis	Datum
Hodnotitel			
Vedoucí oddělení			
Ředitel odboru			
Náměstek			

Zápatí bude mít formát

HZ PpBZ SVP
kapitola X.X, revize 0, str. Y/Z

1. Vlastní hodnocení

1.1 Seznam použitých zkratek
1.2 Stručný popis hodnocené části bezpečnostní dokumentace
1.3 Metodika hodnocení, použitá kritéria
1.4 Rekapitulace průběhu hodnocení
1.5 Zhodnocení splnění kritérií
2. Požadavky na doplnění dokumentace
3. Poznámky hodnotitele
4. Souhrnné hodnocení

Compliance with the main regulatory criteria and guidance

Comments of the reviewer

Background to the review

Summary of the review process

Key review findings

Conclusions of the review

Synthesis, documentation and communication of review results

Regulatory Review – Details (1/4)

- Reg. review of decommissioning plan/safety case:
  - What is the planned end state of facility/site: unrestricted or restricted use?

    For restricted use what will be the residual radioactivity, distinguishable from background? Demonstrate that residual radioactivity would cause no environmental harm and its further reduction is technically or economically not feasible. Any restricted use criteria (institutional control, site maintenance, …)?
  - What are the authorised activities performed in the facility (description, radionuclides and their maximum activities chemical forms, location(s) of use and storage)? What is the license history, decommissioning activities already performed, incidents/accidents and their consequences (uncontrolled releases, burial places on site, …)?

Regulatory Review – Details (2/4)

- Are the decommissioning techniques, that will be employed, properly described and assessed?

  Which techniques are already authorized under the existing license and which new ones are considered in the DP?
- Does the safety assessment consider both exposure of workers and public/environment (if applicable)? What are the critical groups? What are the source term(s), PIEs, exposure scenario(s), mathematical model(s), and input parameters used to evaluate compliance with the dose criteria?
- Is the facility and its site site properly described?
- Is a detailed chart detailing the proposed remediation tasks in the order in which they will occur provided in DP?

Regulatory Review – Details (3/4)

- What is the radiological status of the facility (contaminated SSCs, locations, radiological composition and activities of contamination in each room or work area, mode of contamination [surface, induced, penetrated in the material], …)?
- Does the DP contain a description of the decommissioning organization, responsibilities of workers, reporting hierarchy, …)?
- Is a summary of all classess/categories of RAW that are expected to be generated during decommissioning operations, provided in DP? What is the estimated volume/mass, radiological composition and activities of RAW? How will be RAW processed, stored and/or disposed (compliance with WAC)?

Regulatory Review – Details (4/4)

- Regulatory review of complete decom. safety case:
  - What is the achieved final state for licensee termination?
  - What are the laboratory and field instruments and methods that were used for measuring concentrations and their sensitivities? How areas and surfaces that are inaccessible or not readily accessible were surveyed?

    What are the survey results (tables or charts of the concentrations of residual radioactivity measured, maps or drawings of the site, area, or building, showing areas classified as non-impacted or impacted, …)?

    Comparison of final survey results with baseline survey
  - Any descriptions of the restrictions on present and future land or facility owners/users, institutional controls (authorisations, durability, …) and additional plans for corrective actions needed?

Thank you for your attention!