Advisory Committee on Nuclear and Radiation Safety
Minutes of Meeting

12 – 14 May 2025

Gabelshus Hotel, Oslo

1. Welcome & introductory remarks

The Committee Chair welcomed the members to the meeting. He noted minor changes in the terms of reference (ToR), which clarified that members of the Committee may interact with individual members of DSA staff to provide advice on specific matters, as and when appropriate. However, it was emphasised that the Secretariat and the Committee should be informed about such interactions and resulting advice.

The Chair also informed the Committee that he would be stepping down as Chairman following the finalisation of documentation from this meeting. Alternative arrangements for a new term of the Committee would be discussed and communicated in due course.

The Director DSA, Per Strand, also welcomed the members and noted that much had happened since the previous meeting, held in November 2024. The licence under the Nuclear Energy Act to Norsk Nukleær Dekommisjonering (NND) to own and operate the nuclear facilities at Halden took effect on 1 April 2025. The Director thanked the Committee for the constructive dialogue during the licensing process including the advice on licence duration. The Director also noted that the potential for nuclear power in Norway is receiving considerable attention and an application to build 4 SMRs has been submitted for regulatory review. Information was provided on the recent event at Halden regarding corroded bolts in a spent fuel wet storage facility. Mitigation actions have been implemented and of a forum for dialogue with NND has been established for continued handling of the matter.[1]

2. NND overview of the PSR plan for KLDRA Himdalen, options for spent fuel management and related matters

NND (jointly with Institute for Energy Technology; IFE) presented information about KLDRA Himdalen, including the history of the facility and its design. NND informed the Committee about the different assessments made and decisions taken throughout the lifetime of the facility. NND also presented the plans for a periodic safety review (PSR), which had recently been submitted to DSA for review, and which takes account of DSA's earlier instructions and feedback. It was also highlighted by NND/IFE that the extant safety case for the

[1] Tilsynsrapport FSP 2025.PDF

Himdalen facility had not been subject to any meaningful review or updating for a long period of time.

The Committee discussed the relationship between the PSR and the planned transfer of the licence under the Nuclear Energy Act from IFE to NND, noting that it was important that the planning for the PSR did not unnecessarily delay the review and assessment of NND's licence application and, hence, the transfer of the licence from IFE to NND. DSA confirmed that the transfer of licence and the PSR were considered two separate processes by DSA, and that it would be possible to transfer the licence before completion of the PSR subject to a favourable outcome of DSA's review and assessment. However, it was noted that the plan for the PSR provides evidence of NND's understanding of the challenges at the facility and plans for improvement.

The Committee discussed the basis of the PSR, given that the safety case is dated and that the facility is not entirely built according to the original plans. The Committee noted that, although the PSR plan was satisfactory from a high level point of view, it was important that the review reflected the current status of the facility and the immediate need to revise and align the dated safety case with the short to medium term operating intent for the facility. Issues raised included the design, the concrete structure and drainage. It was noted that the decision to halt disposal in 2020 stemmed from a concern about the application of the waste acceptance criteria and specific requirements related to the disposal of some materials, including smoke detectors.

NND presented general information about plans for waste storage and disposal. They noted the difficulties in applying the different criteria for nuclear substances and for radioactive waste, specified in the Nuclear Energy Act and the Pollution Control Act, respectively. They informed about their plans for long term storage, waste minimisation, and application for clearance.

NND also provided an overview of current priorities, now that the licence transfer for the Halden facility has been successfully completed. Priorities are given to, in general terms, safe operations at Halden and the establishment of new storage facilities, specifically for storage of spent fuel. NND also provided information about the options for fuel storage currently under evaluation.

The Committee agreed with the priorities presented by NND and stressed the importance of avoiding a situation where lack of appropriate storage space prevents actions to improve spent fuel safety long-term. The Committee expressed concern over the fact that issues associated with movement of fuel from the Halden reactor had not been resolved (the reactor still contains fuel and moderator/coolant (D_2O) and continues to be maintained at approximately 70°C through auxiliary heating). It was noted that a new store for the spent fuel at the Halden facility would ideally be placed in the Halden area, although NND mentioned concerns over limited availability of suitable space.

In relation to waste management, the Committee also encouraged DSA to work with relevant stakeholders to implement the national waste strategy, including exploring contingencies where appropriate. Ideally, a time schedule with milestones should be

developed and adhered to, which will provide confidence that necessary actions are taken in a timely manner.

The Committee suggested that general guidance on clearance would be more appropriate than case-by-case decisions for individual applications or facilities.

3. Committee's advice to DSA in relation to the PSR Plan

DSA had provided the Committee with specific questions regarding the PSR Plan in advance of the meeting, requesting the Committee's information/advice on:

- Committee members' experience or knowledge about PSRs for disposal facilities that could apply to the KLDRA Himdalen case
- whether Committee members see any potential shortfalls or challenges/issues with the PSR plan
- how to manage the challenges of carrying out a PSR (and the following SAR) without knowing the future operation, decommissioning and/or closure of the facility
- issues related to NND's (potential) plan of modifying Hall 1 to be a dedicated authorised store that would accept more waste for storage while decisions were taken separately about the disposal part of KLDRA
- any specific licence conditions for the facility that DSA should recommend.

The Committee discussed these matters *in camera* and developed advice in response to the questions out-of-session. The finalised advice was provided to DSA on 8 July 2025 and can be found at Attachment B.

4. Status of DSAs review and assessment of the NND application for a licence to own and operate KLDRA Himdalen

DSA presented information about progress with assessing NND's application for a licence under the Nuclear Energy Act for KLDRA Himdalen. The process was informed by experience from the recent assessment of the licence application for the Halden facility. It was noted that the general licence conditions, which apply to the licences for Kjeller and Halden, will be made applicable to Himdalen as part of the licensing process. At present, IFE holds a licence to operate the facility, while Statsbygg owns the facility. NND has applied for a licence to both own and operate Himdalen.

The Committee reiterated the importance of transferring the licence to NND with minimum delay, allowing NND to fully focus on maintenance and future planning for the facility. The utilisation of KLDRA Himdalen as a storage facility and basing safety assessments on requirements for storage and postponing consideration of the case for disposal until a later date was discussed. The Committee also discussed the current dose criterion for the public (one µSv per year) for expected evolution of the site and facility, which dates back to the first licence. The Committee noted that this level was significantly lower than international recommendations. A scientifically justifiable and risk-based constraint aligned with international standards would be defensible and assist communication with stakeholders including the general public. The ongoing review and assessment provided an

opportunity to apply a graded approach in line with contemporary standards. DSA could specify a general dose criterion applicable to all, or most, types of facilities. The Committee also discussed how communication and trust between DSA and the municipality could be improved. The Committee's considerations are further detailed in Attachment B.

5. Update on status of development of a TSO function in Norway

DSA presented the status of the development of a technical support organisation (TSO), or TSO function in Norway. A hybrid approach is proposed, that includes in-house expertise and external elements, building on the previous experience with Centre for Environmental Radioactivity (CERAD) at NMBU. The proposed mode was based on IAEA TECDOC 1835[2].

DSA is in the process of recruiting a TSO coordinator. Some potential challenges regarding maintaining independence of the TSO /TSO function and preventing possible conflicts of interest were identified. DSA also expressed the need for mapping of competences in the organisation, as well as mapping of training needs for staff.

Committee members provided updates on 'TSO arrangements' in Sweden and Finland, as input to further discussion on possible arrangements in Norway.

5.1. Sweden

The Swedish Government initiated an investigation, carried out by the Swedish Agency for Public Management, into whether the current organisational structure and division of responsibilities for providing technical expertise and support in nuclear safety was appropriate and effective, given the current plans for increasing electricity generation by nuclear power (corresponding to in the order of 5 - 10 GW over the next few decades). The report was published in January 2025, recommending the establishment of a TSO as an independent function but *within* the Swedish Radiation Safety Authority (SSM). To strengthen the independence of the TSO, the government should appoint the head of the TSO and decide its budget.

SSM issued a response to the inquiry in May 2025, indicating that the proposed arrangements may strain resources and disrupt the authority's current way of working, especially when handling possible new nuclear power applications and building capacity for civil defence.

5.2. Finland

In Finland, licensees have in-house consultants, sub-contractors as well as supporting research and development related to their own needs. Finland also has a national research programme (SAFER2028), with the objective to develop and continuously improve nuclear

[2] *Technical and Scientific Support Organizations Providing Support to Regulatory Functions*. International Atomic Energy Agency, 2018.

safety and nuclear waste management safety expertise for solving safety issues relevant to the Finnish use of nuclear energy.

STUK has a broad range of internal competences in their organisation but utilises TSOs in areas where they do not have the appropriate resources, for instance for independent accident analyses, experimental verification of safety system solutions, assessment of specific areas (extreme weather, earthquakes) or in new technologies. Examples of how external support from both Finnish (such as the VTT Technical Research Centre of Finland) and international organisations was used for assessment of the Olkiluoto 3 construction licence were also presented.

5.3. Exchange of experience and advice to DSA

The Committee pointed out that the IAEA TECDOC 1835 provides examples of how a TSO can be organised, but these examples are drawn from countries with large nuclear programmes and may not be directly applicable in the current context for Norway. The Committee suggested it would be valuable for DSA to focus on developing internal expert groups to be subject-specific intelligent customers for the provision of technical support, to be applied in regulatory decisions.

An internal TSO function should not become overly rigid, and the Committee expressed the view that the currently proposed structure might be too complex for a small organisation such as DSA. A structurally separate internal TSO would require additional capacity, and the scale of work is unlikely to be sufficient to warrant it (this may change should Norway decide to embark on a nuclear power programme). The ambition should be to strengthen capabilities in a flexible and sustainable way, rather than to implement a fixed and potentially constraining model where available resources cannot be exploited to their full potential. Strengthening of Nordic collaboration in providing a TSO function benefiting all Nordic countries (which has already commenced) is considered by both DSA and the Committee as a very flexible and resource-effective mechanism for provision of technical advice.

The Committee recognises that professional integrity is an essential feature of the advice provided by the TSO function. In the Committee's view, this does not necessitate a separate organisational structure within DSA; integrity can be safeguarded by a robust management system that ensures transparency, personal accountability, ability to formally record and escalate dissenting views, and a procedure to resolve differences of regulatory/professional opinion.

6. Regulatory framework for nuclear power

The Chair provided a brief overview of the Norwegian Nuclear Power Commission, which had been officially appointed by Royal Decree on June 21, 2024[3].

[3] Kgl.res - 21.06.2024 - Kjernekraftutvalget

Amidst an ongoing national debate about how to meet future energy needs, the Commission's task is not to recommend a specific path forward to the government or to recommend/advise against introduction of nuclear power. Instead, it will present a comprehensive overview of the facts, including available technologies, regulatory requirements, and financing options. The final report is expected to be delivered in April 2026 (no interim reports have been published).

Changes are being made to the regulatory framework in both Finland and Sweden, at least partly driven by national plans to expand nuclear power and also by new power reactor technologies. Members provided updates on these developments.

6.1. Finland

The legislation and regulatory framework in Finland are being updated to ensure that it is fit for emerging technologies and new reactor types. As part of this process, the regulatory complexity has been reduced and the number of requirements in the regulations of the Finnish Radiation and Nuclear Safety Authority (STUK) is being reduced.

The internal expertise on next-generation nuclear reactors is also being strengthened in STUK. With this, engagement with a wide range of stakeholders is important, including utilities, technology vendors, start-ups, and local communities with an interest in nuclear energy. The work is also supported through collaboration with fellow regulators and international organizations, ensuring that it is aligned with global best practices and developments in the field.

Examples of the process/steps for licencing were presented. Under Section 55 of the Finnish Nuclear Energy Act, STUK can offer preliminary advice as part of a fee-based, pre-licensing framework. This early-stage dialogue is viewed as essential for risk reduction. Generic design evaluations can be performed for vendors, including international ones, to assess design feasibility at a concept level.

STUK's stakeholder involvement was also presented. Among other things, STUK offers support to municipalities that may host new nuclear facilities upon request, by participating in public meetings and assisting local leaders with information and guidance. In the formal licensing process, STUK also takes part in public hearings. Furthermore, STUK maintains ongoing interaction with current licensees and potential applicants at all organisational levels.

6.2. Sweden

The nuclear policy of Sweden has changed and there have been recent government assignments related to different parts of nuclear licensing and modernisation of the Nuclear Activities Act.

The regulatory framework with the existing regulations are largely technology neutral, applying an integrated three "S" approach (Safety, Security and Safeguards).

A new licensing process has been proposed by a nuclear licensing inquiry, introducing a decision-in-principle by the government as the initial step. The proposal further suggests

that the Swedish Radiation Safety Authority (SSM), rather than the government should grant licences against the Act on nuclear activities, as well as introducing an option to apply for binding pre-licensing feedback.

Examples of SSM's early involvement in assessment of new technologies were presented. SSM involvement in joint early review of Nuward SMR is an opportunity to increase the knowledge of new technology in the regulator as well as a way to assess the suitability of the national framework on these technologies. SSM is also participating as an observer in the generic design assessment of the Rolls Royce SMR, in the UK as well as Fortum's pre-licensing in Finland. SSM has also engaged in bilateral cooperation with several other nuclear safety authorities and particularly with STUK.

6.3. Potential considerations for DSA

Against the backdrop of the overview of current activities in Nordic nuclear power countries, the Committee offered the following suggestions, for DSA's consideration:

- to review its program and plans for international engagement through a whole-of-agency initiative to shift priorities to allow taking part in international discussions on new technology, while maintaining focus on other important regulatory issues
- as part of the above, engage with Nordic colleagues in established fora or related new activities (see also item 5 on TSO function)
- deepen the early engagement in pre-licensing activities
- critically review the legal and regulatory structure and develop a proposal for revision (this is an activity that needs time but is also important when building capacity across the organisation, long-term).

DSA could also consider encouraging establishment of whole-of-government initiatives to empower municipalities by making resources available for them to develop in-house expertise that can critically challenge the plans and aspirations of nuclear power proponents, and to empower and resource DSA to act as 'people's experts' in municipal settings and act as a 'voice of reason'.

7. Strategy to enhance Nordic cooperation in nuclear and radiation safety

DSA presented the recent work and following report for the strategy to enhance Nordic cooperation in nuclear and radiation safety.

Following the annual meeting in Reykjavik in August 2023, the Directors of the Nordic authorities established an ad-hoc group, representing all Nordic authorities, to explore common strategic priorities and how these could be integrated into existing cooperation. A report with 13 recommendations to further develop Nordic radiation and nuclear safety cooperation has been developed. This was published and presented to various audiences in

May and June 2025[4]. Work is continuing to develop an action plan to implement the recommendations for discussion at the next meeting of the Nordic Directors in August 2025.

8. Committee feedback on the meeting

The Committee discussed their experience as members of the Committee and possible improvements for the next term. It was agreed that the Committee has worked well and has a variety of expertise and experience that promotes constructive discussions. It was noted that it was helpful to have a Chair that was independent of DSA. The Committee discussed an initial and preliminary list of topics to be considered at future meetings; this list will be further developed out-of-session. Members of the Committee would also appreciate feedback on if and how their advice had been implemented. The Committee agreed that seeing the facilities had been a huge benefit and suggested the possibility of having a common meeting with NND's advisory committee in the future.

9. Adjournment

The Chair thanked members for their efforts and engagement in the discussions, not only during this meeting but during the five meetings he had chaired since the Committee's 'reconstitution' in 2023. The Committee is in a good place to provide quality advice to DSA, much aided by the opportunity members have had to interact with the nuclear industry in Norway as well as with other external organisations, and with DSA staff at all levels. He wished members best of luck in future endeavours, as members of the Committee or otherwise. Likewise, the Director DSA and Committee members thanked the outgoing chairman for his service over the last two years.

Participating DSA staff were thanked for their contributions. Last but not least, the Secretariat was thanked for their tireless efforts before and during the meeting – and in anticipation for the work remaining to be done after the meeting.

The meeting was adjourned.

Attachments:

A. List of participants
B. Advice on PSR for KLDRA Himdalen

[4] Enhancing Nordic cooperation in nuclear and radiation safety - DSA

ATTACHMENT A
Meeting participants

Committee Members:

Name	Organisation
Carl-Magnus Larsson	Consultant, Sweden (Chairperson)
Jussi Heinonen	STUK, Finland
Karin Liljequist	SSM, Sweden
Øystein Nordgulen	Norwegian Geological Survey, Norway
David Senior	Consultant, UK
David Winfield	Consultant, Canada
Simon Wisbey	Consultant, UK
Allison Macfarlane (partly Day 2 online)	University of British Columbia, Canada
Anna Clark	IAEA

DSA Staff:

Name	Office/Department
Per Strand (Day 1, 2 partly Day 3)	Director General
Kristin Elise Frogg (Day 1, 2)	Deputy Director General
Tone Bergan (Day 1, 2, partly Day 3)	Director of the Department of Nuclear Safety and Control of Sources
Ingeborg Mork-Knutsen (Day 1, 2, partly Day 3)	Director of the Department of Radiation and Environmental Protection
Sara Skodbo (Day 2 online, partly Day 3)	Director of the Department of International Nuclear Safety and Security, and R&D Department
Yngvild Sauge (Day 1, 2, partly Day 3)	Head of Section of Nuclear Waste and Decommissioning
Ian Barraclough (Day 1)	Section of Nuclear Waste and Decommissioning

Secretariat:

Name	Office/Department

	Carol Robinson	Office of the Director General
	Hege Sofie Haugan	Department of Radiation and Environmental Safety
	Hedda Øye	Department of Radiation and Environmental Safety

External participants present 09:30-12:00 1st day:

	Name	Organisation
	Geir Mjønes	NND, Sector Director for Nuclear Division Halden
	Erlend Larsen	NND
	Heidar Hüttmann	NND
	Katrine Christensen	NND
	Elisabeth Strålberg	IFE, Sector Director for Nuclear Division Kjeller