

Enlarged Halden HTO Programme Review Group (EHPRG) meeting 2025

Technical program. For more info: <https://ife.no/en/event/enlarged-halden-programme-review-group-meeting-ehprg-2025/>

Monday 5th May			
08:30 – 11:30	Paper No.:	Opening session Future needs of the nuclear industry	Chair: Kenichi Hayase, CRIEPI Secretary: Andreas Bye
08:30-08:40	Mo-00	Welcome and Introduction	Andreas Bye , IFE. Programme Manager, Halden HTO Project
08:40-08:50	Mo-01	Welcome and CRIEPI activities	Kenichi Hayase CRIEPI
08:50-09:10	Mo-02	NEA initiatives and perspectives on the future of the nuclear industry	Nina Cromnier , Head of Division, Radiological Protection and Human Aspects of Nuclear Safety, OECD Nuclear Energy Agency
09:10-09:30	Mo-03	Future needs of the U.S. nuclear industry, DOE programs and efforts	TBC: Sujata Goetz , U.S. Department of Energy.
09:30-09:50	Mo-04	UK nuclear industry – opportunities and challenges	Jonathan Hyde , UK National Nuclear Laboratory
09:50-10:05	Mo-05	The energy and nuclear situation in Norway	Bjørn Axel Gran , Research Director, IFE
10:05-10:30		Coffee break	
10:30-10:50	Mo-06	Regulatory perspective on the future of nuclear in the U.S.	Brian Smith , Office of Nuclear Regulatory Research. U.S. Nuclear Regulatory Commission
10:50-11:10	Mo-07	Nuclear developments in Japan, regulatory activities	Mitsuhiro Takanashi , Nuclear Regulation Authority of Japan, NRA
11:10-11:30	Mo-08	Swedish nuclear developments and regulatory views	Johan Enkvist , Swedish Radiation Safety Authority
11:30-13:00		Lunch	

13:00-15:40		Topic 3: Control Room Design & Evaluation	Chair: Fei Song, SNERDI Secretaries: TBD	Ref.:
13:00-13:30	Mo-3-1	Keynote address: LWRS Plant Modernization Research and Accomplishments	Bruce Hallbert, INL	
13:30-13:50	Mo-3-2	“What is going on in the plant” - An initial investigation of situation awareness in nuclear process control	Per Øivind Braarud , Gyrd Skraaning, E Nystad, IFE	HTOR-093
13:50-14:10	Mo-3-3	DPC - Digital Plant Companion - Challenges to a Nuclear Specific Operating Support System	Nico Schuster , Eric Corrieri, Wolfgang Krause, Framatome	Paper
14:10-14:30	Mo-3-4	Insights into Overview Display Usage with Biometric Head-Tracking in Control Rooms	Jens Patrick Langstrand , Hoa T. Nguyen, IFE	HTOR-099
14:30-15:00		Coffee Break		
15:00-15:20	Mo-3-5	Displays for multi-unit supervision on the HSMR simulator	Lars Hurlen , IFE	HTOR-087
15:20-15:40	Mo-3-6	Virtual Reality for NPP Control Room Operator Training and Early System Validation – Qualitative Assessment of Virtual Control Room Simulator	Michael N. Louka , IFE	HTOR-092
15:40-16:20		Topic 4: Human-Automation Collaboration and Multi-Unit Operation	Chair: Kelly Dickerson, NRC Secretaries: TBD	Ref.:
15:40-16:00	Mo-4-1	Control room operators’ task load in current operations	Asgeir Drøivoldsmo , IFE	HTOR-090
16:00-16:20	Mo-4-2	Application of Adaptive Automation in Control room Procedure Work – Insights from Empirical Studies with a Prototype System	Rossella Bisio , IFE	HTOR-051
16:30 – 18:30		Exhibitions and Demonstrations		
19:00-19:30		Refreshments		
19:30		Seated Dinner		

Tuesday 6th May				
08:30-11:30		Topic 4: Human-Automation Collaboration and Multi-Unit Operation, continued	Chair: Kelly Dickerson, NRC Secretaries: TBD	Ref.:
08:30-09:00	Tu-4-3	Keynote address: Human Performance Data Collection Activities for Small Modular Reactors: Human Factors and Reliability Considerations.	Jinkyun Park , KAERI; Maren H. Rø Eitrheim, Awwal Arigi, IFE; Kelly Dickerson, Niav Hughes Green, NRC; Ronald Laurids Boring, INL	
09:00-09:20	Tu-4-4	A Simulator-based Experiment for Human Reliability in Multi-unit and Digitalized Control Environments	Yochan Kim , KAERI; Tae Ryou Kim, KAIST; Wooseok Jo, UNIST; Jonghyun Kim, KAIST; Seung Jun Lee, UNIST; Jinkyun Park, KAERI	Paper
09:20-09:40	Tu-4-5	Multi-unit operation of Small Modular Reactors: Impacts of two staffing configurations on human performance	Maren H. Rø Eitrheim , IFE	HTOR-096
09:40-10:00	Tu-4-6	Investigating HRA needs for new advanced reactors: a literature survey and expert perspectives	Awwal M. Arigi , IFE	HTOR-086
10:00-10:30		Coffee break		
10:30-10:50	Tu-4-7	Reviewing and Rethinking Automation Transparency	Greg A. Jamieson , UoT	HTOR-085
10:50-11:10	Tu-4-8	Operator Responses to Systemic Automation Failure: 2nd HAMMSAT Experiment	Gyrd Skraaning Jr. , IFE	HTOR-088
11:10-11:30	Tu-4-9	Enabling flexibility for PWR thanks to the OAPS system, Real time predictive system for flexible operation, HFE aspects	Eric Corrieri , Rami Abel, Victor Baisnée, Alain Grossetête, Guillaume Dupre. Framatome	Paper
11:30-13:00		Lunch		

13:00-14:30		Topic 5: Digital Systems for Operations and Maintenance	Chair: Spencer Brown, FANR Secretaries: TBD	Ref.:
13:00-13:30	Tu-5-1	Keynote address: AI to Improve Efficiency and Safety in Nuclear Power Plants	Ahmad Y. Al Rashdan, INL	
13:30-13:50	Tu-5-2	Digital Twins in Nuclear Industry: Insights from Industry Survey and Standards Review	S. K. Renganayagalu, IFE	HTOR-095
13:50-14:10	Tu-5-3	Maintenance Optimization for NPPs: Methods for identifying the validity and scope of AI/ML models	Mario Hoffmann, IFE	HTOR-097
14:10-14:30	Tu-5-4	Harmonizing nuclear industry and outage safety culture: A model and illustration of systemic influences	Prosper A. Kwei-Narh, IFE	HTOR-081
14:30-15:00		Coffee Break		
15:00-16:55		Topic 1: Human Performance	Chair: Jinkyun Park, KAERI Secretaries: TBD	Ref.:
15:00-15:45	Tu-1-1	Keynote address: So what? A talk on how we can focus on what matters for people on a nuclear site.	Richard Screeton, ONR	
15:45-16:15	Tu-1-2	Experiences and Findings of Human Performance in a Digital Control Room.	Fei Song, SNERDI	HTOR-083
	Tu-1-3	Operating Experiences of the Computerized Operating Procedure System.		HTOR-084
16:15-16:35	Tu-1-4	Impact of crew brief on crew dynamics and performance - Findings from a HAMMLAB study	Magnhild Kaarstad, IFE	HTOR-094
16:35-16:55	Tu-1-5	Workshop on crew dynamics and cognitive dependency	Kelly Dickerson, NRC Magnhild Kaarstad, IFE;	HTOR-101 in press
17:00-19:00		Exhibitions and Demonstrations		
19:00-21:00		Buffet Dinner		

Wednesday 7th May				
08:30-09:10		Topic 1: Human Performance, continued	Chair: Jinkyun Park, KAERI Secretaries: TBD	Ref.:
08:30-08:50	We-1-6	Adaptive decision-making in control room emergencies: Results of a HAMMLAB study with the GPWR simulator	Salvatore Massaiu, IFE	HTOR-039
08:50-09:10	We-1-7	Learning from event failures: Identifying success to resolve two pertinent issues	Prosper A. Kwei-Narh, IFE	HTOR-082
09:10-10:20		Topic 2: Digital I&C – Safety Assurance	Chair: Jacoline Hanekom, NRG Secretaries: TBD	Ref.:
09:10-09:40	We-2-1	Keynote address: From abstract performance-based regulatory requirements to verifiable engineering requirements: Some approaches to address the challenges	Sushil Birla, U.S. NRC	
09:40-10:00	We-2-2	Workshop Series on Safety of Digital Systems - Proceedings 2024	Coralie Esnoul, IFE	HTOR-075
10:00-10:20	We-2-3	Update on the state-of-the-art for safety of Digital Systems	Coralie Esnoul, IFE	HTOR-074
10:20-10:50		Coffee break		
10:50-13:00		Special session: Integrated Operations for Nuclear and Petroleum	Chair: Bruce Hallbert, INL Secretaries: Asgeir Drøivoldsmo	Ref.:
10:50-11:45	We-IO	Short introduction by panelists, 5-7 minutes presentations sharing key insights and experiences. <ul style="list-style-type: none"> • Cost Reduction Trough Integrated Operations – Lessons from oil&gas on cutting operational and maintenance costs through IO-driven efficiencies. Key takeaways for nuclear • Core Success Criteria for implementation of Integrated Operations: Bridging Man, Technologies and Organisations. • Experience with Integrated Operations in Energy production in Equinor, lessons from O&G and offshore wind; past, ongoing and future 	Invited panelists: Sherman Jason Remer, INL Trond Lilleng, Former Senior Advisor IO in Equinor Vidar Hepsø, Equinor	

		<ul style="list-style-type: none"> TBD Modernization Initiatives in the U.S. Nuclear Industry The Financial Case: Savings from IO. 	Luke Martin , Scottmadden TBD	
11:45-13:00	We-IO	Panel discussion on success factors for implementing Integrated Operations		
13:00-17:00		Lunch on the Mountain and Social activity		
17:00-19:00		HPRG meeting, HPRG members		
19:00-21:00		Buffet Dinner		
Thursday 8th May				
08:30-09:30		Topic 2: Digital I&C – Safety Assurance, continued	Chair: Jacoline Hanekom, NRG Secretaries: TBD	
08:30-08:50	Th-2-4	Structured safety argumentation for a nuclear reactor protection system – an assessor’s view	Peter Karpati , IFE	HTOR-027
08:50-09:10	Th-2-5	Performance-based analysis of an SMR application using a structured safety argumentation representation	Xueli Gao , IFE	HTOR-078
09:10-09:30	Th-2-6	Advancements in Hazard Analysis for Safety Assurance and Evaluation: A State-of-the-Art Survey	Ankur Shukla , IFE	HTOR-080
09:30-10:00		Coffee Break		
10:00-11:30		Topic 6: Sustainable Decommissioning	Chair: Michael Passens, GRS Secretaries: TBD	Ref.:
10:00-10:30	Th-6-1	Keynote address	TBD	
10:30-10:50	Th-6-2	AI, Data, and Robotics in Nuclear Lifecycle Management	Réka Szöke , IFE	HTOR-091
10:50-11:10	Th-6-3	Integrating AI and Mobile Sensing Technologies for Enhanced Safety Management in Nuclear Legacy and Decommissioning Sites	Omar Zahra , IFE	HTOR-098
11:10-11:30	Th-6-4	Reflections on Survey		

11:30-13:00		Lunch		
13:00-14:50		Topic 7: Cyber Security for Main Control Rooms	Chair: Sarah Lawrie, UKNNL Secretaries: TBD	Ref.:
13:00-13:30	Th-7-1	Keynote address: Experience in Integrating and Organizing Cybersecurity for Diverse Information Systems within Nuclear Power Plant	Oleksandr Puzyrnikov, Head of the I&C Department Affiliate "SS "Rivne NPP" of the JSC "NNEGC "Energoatom"	
13:30-13:50	Th-7-2	Cybersecurity of grey- and black-box technology and solutions in critical infrastructure	Stine A. Mikkelsplass, IFE	HTOR-077
13:50-14:10	Th-7-3	Decision Support Systems (DSSs) for Distinguishing Attacks and Faults: A State-of-the-Art Review	Saba Chockalingam, IFE	HTOR-076
14:10-14:30	Th-7-4	Cyber Situational Awareness in Nuclear: Problem exploration, definitions and measurements challenges.	Espen Nystad, John Eidar Simensen, IFE	HTOR-079
14:30-14:50	Th-7-5	Control room operators' understanding of and response to a cybersecurity incident: Results from an exploratory simulator study and a scenario talk-through.	Espen Nystad, John Eidar Simensen, IFE	HTOR-089
14:50-15:20		Coffee break		
15:20-16:50		Panel session with Main take-aways from EHPRG	Chair: Kenichi Hayase, CRIEPI Secretary: Andreas Bye Panel: Topic chairs	
19:00		Aperitif		
19:30		Banquet dinner		