

Enlarged Halden HTO Programme Review Group (EHPRG) meeting 2023

Technical program. For more information: <https://ife.no/en/event/ehprg-2023/>

Monday 25th September			
08:30 – 12:10	Paper No.:	Opening session Perspectives on the nuclear future	Chair: Bruce P. Hallbert, INL Secretary: Andreas Bye
08:30-08:45	Mo-00	Welcome and Introduction	Andreas Bye , IFE. Programme Manager, Halden HTO Project
08:45-09:15	Mo-01	Opening keynote	William D. Magwood, IV , Director General, OECD Nuclear Energy Agency
09:15-09:35	Mo-02	Perspectives on the nuclear future in the U.S.	Bruce P. Hallbert , INL. Director, Technical Integration Office, DOE Light Water Reactor Sustainability (LWRS) Program
09:35-09:50	Mo-03	The energy and nuclear situation in Norway	Nils Morten Huseby , CEO, IFE
09:50-10:10	Mo-04	Regulatory perspective on the future of nuclear in Canada	Peter Elder , Vice-President and Chief Science Officer. Technical Support Branch, Canadian Nuclear Safety Commission (CNSC)
10:10-10:40		Coffee break	
10:40-11:00	Mo-05	Regulatory perspective on the future of nuclear in the U.S.	John Tappert , Deputy Director, Office of Nuclear Regulatory Research. U.S. Nuclear Regulatory Commission
11:00-11:20	Mo-06	The nuclear developments in China	Xujia Wang , Deputy Director General of SNERDI. Director of Chief Engineers Office and Director of General Technology Department of SNERDI
11:20-11:40	Mo-07	Renewing the nuclear efforts in The Netherlands	Geert-Jan de Haas , Programme manager Research, NRG Consultancy & Services
11:40-12:00	Mo-08	EDF's developments on SMRs, NUWARD	Stanislas Couix , Research Scientist, EDF
12:00-12:10	Mo-09	The increased nuclear research focus in Norway and the importance of HTO research for Norway	Tomas Nordlander , Vice President, IFE

12:10-13:30		Lunch		
13:30-16:30		Topic 1: Human Performance	Chair: Suzanne Dolecki, CNSC Secretaries: Prosper A. Kwei-Narh, Awwal Arigi	Ref.:
13:30-14:00	Mo-1-1	Keynote address: Human Performance Research in Nuclear Power Plants: Great Expectation	Jing Xing, U.S. NRC	
14:00-14:20	Mo-1-2	Operator performance in digital control rooms: Insights from on-site observation of simulator training	Michael Hildebrandt, Robert McDonald, Daniel Odéen, IFE	HTOR-068
14:20-14:40	Mo-1-3	Experiences and Findings of human performance in digital control rooms	Fei Song, SNERDI	HTOR-025
14:40-15:00	Mo-1-4	Groupthink – A literature review	Magnhild Kaarstad, IFE	HTOR-049
15:00-15:30		Coffee Break		
15:30-15:50	Mo-1-5	Use Simulator Data to Assess Uncertainty of Time-Required for Human Reliability Analysis	James Chang, NRC	Paper Video pres.
15:50-16:10	Mo-1-6	Adaptive decision-making in control room emergencies: Results of a HAMMLAB study with the GPWR simulator	Salvatore Massaiu, IFE	HTOR-039
16:10-16:30	Mo-1-7	Learning from successful performance in failure events – a case-based study	Elizabeth Solberg, Rossella Bisio, Prosper Kwei-Narh, IFE	HTOR-031
16:30 – 18:30		Exhibitions and Demonstrations		
19:00-19:30		Refreshments		
19:30		Seated Dinner		

Tuesday 26th September				
		Topic 1: Human performance, continued		
08:30-08:50	Tu-1-8	Including successful performance in the scope of the event analysis	Elizabeth Solberg , Rossella Bisio, Prosper Kwei-Narh, IFE	HTOR-046
08:50-09:10	Tu-1-9	Human Performance Repository: Lessons Learned and Experience in Publishing the site for Halden Reports search.	Rossella Bisio , IFE	HTOR-057
09:10-12:10		Topic 2: Digital I&C – Safety Assurance	Chair: Spencer Brown, FANR Secretaries: John E. Simensen, Xueli Gao	Ref.:
09:10-09:40	Tu-2-1	Keynote address: Addressing hazards from common causes in engineering DI&C systems without diverse designs – State-of-the-Art	Sushil Birla , U.S. NRC	Video pres.
09:40-10:00	Tu-2-2	Safety argumentation for a nuclear reactor protection system – an assessor’s view	Peter Karpati, Xueli Gao , IFE	HTOR-027
10:00-10:25		Coffee break		
10:25-10:45	Tu-2-3	Development of an Experimental Test Bed for analyzing Nuclear Systems Data, Data Manipulation and Data Protection	Karthik Sankaranarayanan , Ontario Tech University	Paper
10:45-11:05	Tu-2-4	STPA application on Halden Safety Fan	Ankur Shukla , Xueli Gao, IFE	HTOR-032
11:05-11:10	Tu-2-5	Proceedings of HTO Workshop series – Safety Assurance through Correct-by-Construction Techniques	Sizarta Sarshar et al., IFE	HTOR-033
11:10-11:33	Tu-2-6	HARDENS case explained	Peter Karpati et al., IFE	HTOR-064, HTOR-034
11:30-11:50	Tu-2-7	Structured argument for the HARDENS case	Xueli Gao, Peter Karpati , IFE	HTOR-064
11:50-12:10	Tu-2-8	Evidence for the HARDENS case	Bjørn Axel Gran et al., IFE	HTOR-034
12:10-13:30		Lunch		

13:30-16:10		Topic 3: Control Room Design & Evaluation	Chair: Eva Simonsen, Vattenfall Secretaries: Linda Lunde-Hanssen, Michael Louka	Ref.:
13:30-14:00	Tu-3-1	Keynote address: What's Next for the Future of Control Rooms? Do Microreactors Change Everything?	Ron Boring, INL	
14:00-14:20	Tu-3-2	Review of Situation Awareness Measures applied in the Halden Human Machine Laboratory	Per Øivind Braarud, Giovanni Pignoni, IFE	HTOR-035
14:20-14:40	Tu-3-3	Perceived Digital Control Room Usability and the Role of Individual Affinity for Technology	Kelly Dickerson, NRC	Paper
14:40-15:00	Tu-3-4	Perceived usefulness and usability of overview displays in nuclear control rooms	Alexandra Fernandes, Marten Bloch, Alf Ove Braseth, and Robert McDonald, IFE	HTOR-042
Tabled	Tu-3-5	A Framework for Studying Overview Displays Best Practice	Alf Ove Braseth, Alexandra Fernandes and Marten Bloch, IFE	HTOR-001 Rev.1
15:00-15:30		Coffee Break		
15:30-15:50	Tu-3-6	Impact of overview displays on response accuracy and response time	Alexandra Fernandes, Marten Bloch, Robert McDonald, and Alf Ove Braseth, IFE	HTOR-041
15:50-16:10	Tu-3-7	Augmented Reality for On-Site Human Factors Control Room Assessment	Morten Gustavsen, Michael N. Louka and Peter Christopher Bach, IFE	HTOR-040
16:10-18:30		Exhibitions and Demonstrations		
19:00-21:00		Buffet Dinner		

Wednesday 27 th September				
08:30-10:50		Topic 4: Human-Automation Collaboration	Chair: Céline Poret, IRSN Secretaries: Awwal Arigi, Sizarta Sarshar	Ref.:
08:30-09:00	We-4-1	Keynote address: Should Automation Be Transparent? The Answer Isn't Clear	Greg Jamieson , University of Toronto	
09:00-09:20	We-4-2	Results from 2022 and 2023 phased study in the new Halden SMR Simulator	Claire Blackett , Awwal Arigi, Maren Eitrheim, Alexandra Fernandes, IFE	HTOR-029
09:20-09:40	We-4-3	Failure modes in human-automation integration	Jing Xing , Niav H. Green, NRC	Paper
09:40-10:00	We-4-4	Operator Responses to Systemic Automation Failure	Gyrd Skraaning Jr. , Daniel Odéen, IFE, Greg A. Jamieson, University of Toronto	HTOR-052
10:00-10:30		Coffee break		
10:30-10:50	We-4-5	Controlling a plant with the support of adaptive automation: empirical studies results	Rossella Bisio , IFE	HTOR-051
10:50-14:30		Topic 5: Digital Systems for Operations and Maintenance	Chair: Sarah Lawrie, NNL Secretaries: Hoa Thi Nguyen, Jens-Patrick Langstrand	Ref.:
10:50-11:20	We-5-1	Keynote address: Opportunities and Challenges in Applying New and Emerging Digital Technologies to NPP Operations and Maintenance	John de Grosbois , COG	Video pres.
11:20-11:40	We-5-2	Advanced Condition-based Maintenance using Digital Twins	Harald P-J Thunem, Sanjay Misra , IFE	HTOR-058
11:40-12:00	We-5-3	Advanced Condition Monitoring for Decision Support	Mario Hoffmann , Chau Tran, IFE	HTOR-059

12:00-13:30		Lunch		
13:30-13:50	We-5-4	Situation awareness (SA) in outage work: an agentic perspective on SA errors, recognition, and mitigation	Prosper Kwei-Narh , Espen Nystad, IFE	HTOR-037
13:50-14:10	We-5-5	Human performance improvement tools and situation awareness in outage work	Elizabeth Solberg , Prosper Kwei-Narh, IFE	HTOR-036
14:10-14:30	We-5-6	Comparing Nuclear and Offshore Petroleum Organizations	Asgeir Drøivoldsmo , IFE	HTOR-038
15:00-18.30		Social activity: Hunderfossen		
19.00 – 21:00		Buffet Dinner		
Thursday 28th September				
08:30-11:10		Topic 6: Digital Transformation of Decommissioning	Chair: Fei Song, SNERDI Secretaries: Michael Louka, Réka Szöke	Ref.:
08:30-09:00	Th-6-1	Keynote address: AMORAC – Autonomous Mobile Robot for Automated Clearance	Frank Querfurth , Framatome GmbH	
09:00-09:20	Th-6-2	Radiological risk visualisation and perception using wearable augmented reality	Michael N. Louka , Mikel Salazar, IFE	HTOR-060
09:20-09:40	Th-6-3	Lessons learned from using and developing open standards to enable safety-oriented decision-support for field workers	Mikel Salazar , Michael N. Louka, IFE	HTOR-061
09:40-10:00	Th-6-4	Automated Assessment of Field Worker Performance: Theoretical Framework, Performance Indicators in XR Training Simulators and User tests results	Lucas Stephane , Peter Christopher Bach, Edward Langstrand, Sathiya Kumar Renganayagalu, IFE	HTOR-026, HTOR-062
10:00-10:30		Coffee Break		

10:30-10:50	Th-6-5	Enabling Robotic and Remote Operations in Decommissioning: Safety Centered Framework	Lucas Stephane , Svein Tore Edvardsen, Abdenour Benkrid, Levente Nyusti, IFE	HTOR-063
10:50-11:10	Th-6-6	Holistic approach to digitalisation and robotics for sustainable nuclear decommissioning	István Szőke , Réka Szőke, Mustafa A.H. Jarallah, Omar Zahra, IFE	Paper
11:10-14:45		Topic 7: Cyber Security for Main Control Rooms	Chair: Michael Passens, GRS Secretaries: Ankur Shukla, Sizarta Sarshar	Ref.:
11:10-11:40	Th-7-1	Keynote address: A look into the cyber nuclear crystal ball	Matt Gibson , EPRI	
11:40-12:00	Th-7-2	Systematic Literature Review – Cyber security threat landscape for nuclear.	John E Simensen , Hans Olav Randem, Stine A. Mikkelsplass, Per-Arne Jørgensen, IFE	HTOR-054
Tabled	Th-7-3	Workshop summary: Operationalizing threats and vulnerabilities in relations to system specific effects.	John E Simensen, IFE	HTOR-043
12:00-13:15		Lunch		
13:15-13:35	Th-7-4	System modelling for security – appending cyber security threat and vulnerability information to existing system models.	Ankur Shukla , John E Simensen, Fabien Sechi, Stine A. Mikkelsplass, IFE	HTOR-055
13:35-13:55	Th-7-5	Testbeds for Cyber Security of Nuclear Power Plants (NPPs): Key Characteristics and Architecture Design	Sabarathinam Chockalingam , Ankur Shukla, Fabien Sechi, IFE	HTOR-044
13:55-14:15	Th-7-6	A Comparative Analysis of State-of-the-Practice Intrusion Detection Systems	Aleksander Lygren Toppe , Stine Aurora Mikkelsplass , Sabarathinam Chockalingam, IFE	HTOR-045

14:15-14:45	Th-7-7	The role of control room operators during a cybersecurity incident	Espen Nystad , Prosper Kwei-Narh, Coralie Esnoul, Levente Nyusti, IFE	HTOR-048
14:45-15:05		Coffee break		
15:05-16:30		Panel session with Main take-aways	Chair: Bruce P. Hallbert, INL Secretary: Andreas Bye Panel: Topic chairs	
19:00		Aperitif		
19:30		Banquet dinner		