

# ALARP 2018: RISK MANAGEMENT FOR ENGINEERING

Institution of  
**MECHANICAL  
ENGINEERS**

Safety and Reliability Group  
**Seminar**

**18 September 2018**  
Hyatt Regency Birmingham

## SEMINAR SPEAKERS INCLUDE:

Paul Stanworth, HM Specialist Inspector of Health and Safety, Hazardous Industries Directorate, Chemical Explosives and Microbiological Hazards Division (CEMHD)  
**Health and Safety Executive**

Ryan Maitland, Principal Nuclear Safety Inspector  
**Office for Nuclear Regulation**

Nancy Leveson, Professor of Aeronautics and Astronautics  
**Massachusetts Institute of Technology**

Anna Collard-Scruby, Human Factors Programme Specialist  
**Civil Aviation Authority**

**NEW FOR 2018**  
PRE-EVENT WORKSHOP  
17 SEPTEMBER 2018

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# ALARP 2018: RISK MANAGEMENT FOR ENGINEERING

18 September 2018, Hyatt Regency Birmingham

**THERE WILL ALWAYS BE RISKS IN THE ENGINEERING INDUSTRY BUT TO AVOID UNNECESSARY COMPLICATIONS AND COST CAUSED BY RISK, THE INDUSTRY NEEDS TO ENSURE THAT IT IS FOLLOWING THE ALARP PRINCIPLE.**

Attend ALARP 2018 to learn best practice in the application of the ALARP principle in risk management from thought-leaders in nuclear new build, aerospace and the visitor attraction industries.

Hear from the key organisations in regulation to ensure your processes are compliant with current standards. Learn about the latest risk assessment approaches to use in your company. Hear best practice in ensuring safety cases are legally sound throughout design, development and operation of engineering systems.

Meet with safety engineers, design engineers, ALARP and human factors specialists to benefit from cross-industry insights.

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## KEY PROGRAMME HIGHLIGHTS:

- **NEW FOR 2018: DNV GL** reveal how they are enhancing Merlin Entertainments' approach to delivering roller coaster ride safety
- **General Nuclear System** highlight ALARP challenges on their joint venture nuclear new build with China General Nuclear Power Corporation
- **OinetiQ** discuss human reliability analysis when making ALARP judgements
- The **Civil Aviation Authority** discuss cognitive bias in aerospace engineering
- **Sellafield Ltd** introduce their new dedicated function for human factors

## ATTEND THIS SEMINAR TO:

- Hear from human factors and ALARP specialists from organisations across industry engineering sectors including **Sellafield Ltd, OinetiQ, Office for Nuclear Regulation, Civil Aviation Authority, General Nuclear System** and **DNV GL**
- Ensure your organisation is compliant with standards outlined by the **Health and Safety Executive**
- **Reduce risk in your operational processes** by hearing case studies from successful applications of the ALARP principle
- **Gain a greater understanding of the human bias** and how to use this best to help your projects
- **Discuss best practice** with safety engineers, process safety managers, design engineers and ALARP specialists

## ORGANISING COMMITTEE:

Safety and Reliability Group  
**Institution of Mechanical Engineers**

## MEMBERS CREDITS:

Pete Stewart, Director  
**Hydrock**

Keith Miller, Member of the Safety and Reliability Group  
**Institution of Mechanical Engineers**

John Jost, Deputy Safety Manager (ETPS)  
**OinetiQ**

Charles Bridgford, Fuel Route Engineer, Fuel Route Systems, CTO  
**EDF Energy**

Steve Hillier, Asset Risk and Governance Team Leader, E.ON Climate and Renewables (EC&R)  
**E.ON**

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# PROGRAMME

<b>TUESDAY, 18 SEPTEMBER 2018</b>	
08:30	REGISTRATION AND REFRESHMENTS
09:00	<b>CHAIR'S OPENING REMARKS</b> Pete Stewart, Director, Hydrock
<b>REGULATORY STANDARDS AND GUIDANCE</b>	
09:10 KEYNOTE	<b>VIEW FROM THE HEALTH AND SAFETY EXECUTIVE</b> Paul Stanworth, HM Specialist Inspector of Health and Safety, Hazardous Industries Directorate, Chemical Explosives and Microbiological Hazards Division (CEMHD), Health and Safety Executive
09:40	<b>REGULATORY VIEW ON APPLICATION OF ALARP IN A NUCLEAR ENGINEERING CONTEXT</b> Ryan Maitland, Principal Nuclear Safety Inspector, Office for Nuclear Regulation
10:05	<b>PROBABILISTIC VS. DETERMINISTIC RISK ASSESSMENT</b> Keith Miller, Member, Institution of Mechanical Engineers' Safety and Reliability Working Group
10:30	<b>THE LEGAL PERSPECTIVE OF ALARP</b> Anne Davies, Partner, Gunnercooke LLP
10:55	<b>QUESTION AND ANSWER SESSION</b>
11:15	NETWORKING REFRESHMENT BREAK
<b>ALARP IN DESIGN PROCESSES</b>	
11:45	<b>NUCLEAR NEW BUILD: IMPORTING A DESIGN DEVELOPED UNDER A PRESCRIPTIVE REGULATORY REGIME INTO THE UK CONTEXT</b> Chris Quick, UK HPR1000 GDA Design Lead Project Correspondent, General Nuclear System (on behalf of EDF Energy)
12:10	<b>OVERVIEW OF SYSTEMS THEORETIC ACCIDENT MODEL PROCESSES (STAMP/STPA)</b> Nancy Leveson, Professor of Aeronautics and Astronautics, Massachusetts Institute of Technology
12:35	<b>QUESTION AND ANSWER SESSION</b>
12:45	NETWORKING LUNCH
<b>ALARP IN AN OPERATIONAL ENVIRONMENT</b>	
13:45	<b>ADAPTING HUMAN FACTORS AT SELLAFIELD LTD: A SITE UNDER CHANGE</b> Jonathan Pyke, Human Factors Specialist, Sellafield Ltd
14:10	<b>PROTECTING THE MAGIC: ENHANCING MERLIN'S APPROACH TO DELIVERING RIDE SAFETY</b> Mark Boulton, Director, DNV GL
<b>TAKING INTO ACCOUNT THE HUMAN BIAS INTO ALARP</b>	
14:35	<b>COGNITIVE BIASES IN AEROSPACE ENGINEERING</b> Anna Collard-Scruby, Human Factors Programme Specialist, Civil Aviation Authority
15:00	<b>QUESTION AND ANSWER SESSION</b>
15:15	NETWORKING REFRESHMENT BREAK
15:45	<b>HUMAN RELIABILITY ANALYSIS: CAN WE 'COUNT' ON THE HUMAN WHEN MAKING ALARP JUDGEMENTS?</b> Garnet Ridgway, Senior Flight Test Professional, QinetiQ
16:10	<b>QUESTION AND ANSWER SESSION</b>
16:15	<b>PANEL DISCUSSION: MANAGING CURRENT CHALLENGES OF ALARP</b> Paul Stanworth, HM Specialist Inspector of Health and Safety, Hazardous Industries Directorate, Chemical Explosives and Microbiological Hazards Division (CEMHD), Health and Safety Executive Mark Boulton, Director, DNV GL Keith Miller, Member, Institution of Mechanical Engineers' Safety and Reliability Working Group <ul style="list-style-type: none"><li>• How ALARP principles can be applied in different engineering environments</li><li>• Managing ALARP in complex multi-layered systems</li><li>• Designing with maintenance in mind- taking into account human error in operation and maintenance</li></ul>
17:00	<b>CHAIR'S CLOSING REMARKS</b>
17:15	<b>END OF SEMINAR</b>

For the most up-to-date and detailed programme for the event, please visit [www.imeche.org/alarp](http://www.imeche.org/alarp)

- This programme is subject to change.
- The Institution is not responsible for the views or opinions expressed by individual speakers.

# PRE-SEMINAR WORKSHOP RISK REDUCTION AND ALARP

17 September 2018, Hyatt Regency Birmingham

**ATTEND OUR PRE-SEMINAR WORKSHOP ON 17 SEPTEMBER 2018 ON RISK REDUCTION AND ALARP, WHICH WILL COVER THE BASICS OF THE ALARP CONCEPT AND DEMONSTRATING ALARP ALONG WITH RISK REDUCTION THROUGH THE PROJECT LIFECYCLE.**

Take the opportunity to bring your own practical examples and questions from your workplace to share and discuss with your peers.

## **TAKE PART IN GAME-BASED LEARNING ACTIVITIES WHICH ENABLE:**

- The effective communication of simple but very important safety messages across your workforce
- The ability to deliver the messages in a memorable way, providing a long-term benefit to your business
- The workforce to relate these messages to their specific roles, to ensure tangible safety improvement

### **MONDAY, 17 SEPTEMBER 2018**

<b>09:00</b>	REGISTRATION AND REFRESHMENTS
<b>09:15</b>	<b>WHAT IS ALARP? BASICS OF RISK MANAGEMENT</b> <ul style="list-style-type: none"><li>• The ALARP principle</li><li>• ALARP as a process</li><li>• Gross Disproportion</li><li>• Group Exercises</li></ul>
<b>11:00</b>	MORNING REFRESHMENT BREAK
<b>11:15</b>	<b>WHAT IS ALARP? ASSESSING BENEFIT AGAINST SACRIFICE</b> <ul style="list-style-type: none"><li>• Game-Based Learning</li></ul>
<b>12:15</b>	LUNCH BREAK
<b>13:00</b>	<b>WHAT IS ALARP? ALARP IN THE LIFECYCLE</b> <ul style="list-style-type: none"><li>• Demonstrating ALARP</li><li>• Group Exercises</li></ul>
<b>14:00</b>	<b>DISCUSSION OF REAL-LIFE SCENARIOS</b> <i>Opportunity to bring your own real-life examples to the session and discuss potential solutions</i> <ul style="list-style-type: none"><li>• Game-Based Learning</li></ul>
<b>15:15</b>	AFTERNOON REFRESHMENT BREAK
<b>15:30</b>	<b>DISCUSSION AND CLOSE-OUT</b>
<b>16:00</b>	END OF WORKSHOP

## **WHO SHOULD ATTEND?**

Engineers across all industry sectors should attend ALARP 2018, including:

- Mechanical Engineer
- Safety Engineer
- Package Support Engineer
- Safety Case Engineer
- Process Safety Manager
- Product Safety & Reliability Manager
- System Safety Manager
- Principal Inspector
- Design Engineer
- Director of Policy Research & Risk
- Delivery Manager
- System Designer
- Task Engineer
- Principal Scientist
- Environmental Engineer
- Technical Specialist
- Senior Reliability Manager
- Principal Asset Integrity Engineer
- Safety Case Manager

### **KEYNOTE ADDRESS FROM HEALTH AND SAFETY EXECUTIVE:**



**Paul Stanworth, HM Specialist Inspector of Health and Safety, Hazardous Industries Directorate, Chemical Explosives and Microbiological Hazards Division (CEMHD), Health and Safety Executive**

Paul Stanworth is a Chartered Mechanical Engineer working in the Health and Safety Executive's Chemicals, Explosives and Microbiological Hazards Division. His role involves providing engineering support to regulatory inspections and investigations, particularly those carried out as part of HSE's Ageing Plant work stream at major hazard sites subject to the Control Of Major Accidents Hazards (COMAH) regulations.

### **KEY SPEAKERS INCLUDE:**



**Anna Collard-Scruby, Human Factors Programme Specialist, Civil Aviation Authority**

Anna Collard-Scruby is a Chartered Occupational Psychologist, and joined the CAA in May 2018 as the Human Factors Programme Specialist. Her previous experience includes three years with the Human Factors team at NATS Prestwick (Scotland), and seven years serving as a Psychology Officer with the Royal New Zealand Air Force. Anna has worked across a broad range of aviation psychology and human factors activities including; human performance analysis, performance coaching, personnel selection and training, interrogating research, safety data analysis and classification, change management, unit development, resilience and wellbeing, military deployment support, and human factors advice and assurance.

**Ryan Maitland, Principal Nuclear Safety Inspector, Office for Nuclear Regulation**



Ryan Maitland is a Principal Inspector at ONR and for the past 9 years has predominantly undertaken a range nominated site inspection roles on operating Power Stations, Dounreay and Urenco. Ryan is currently working as a Technical Advisor to the Chief Nuclear Inspector and is a member of ONR's ALARP Working Group.

### **WHY SHOULD SAFETY ENGINEERS, PROJECT ENGINEERS, DESIGN ENGINEERS, ALARP AND HUMAN FACTORS SPECIALISTS JOIN THIS SEMINAR?**

“““

**I think a shared conversation about how to move things forward, particularly with a diverse bunch of people, is always really useful.**

**Anna Collard-Scruby, Human Factors Programme Specialist, Civil Aviation Authority**

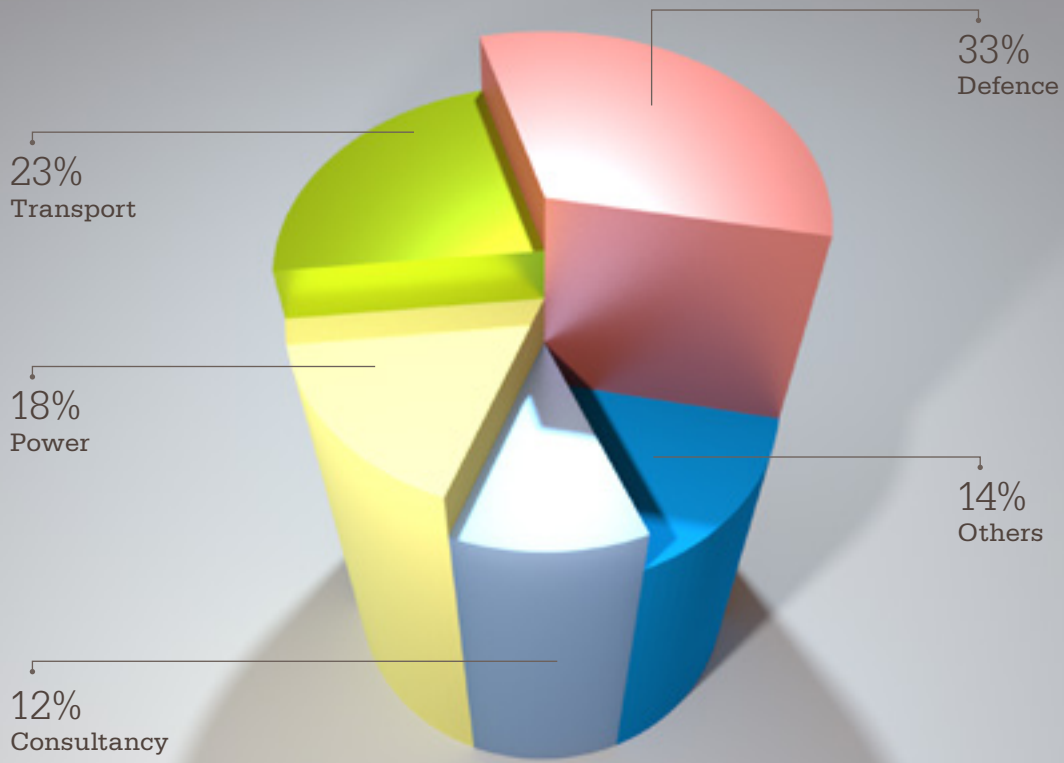
“““

**To enter the debate about methods and change.**

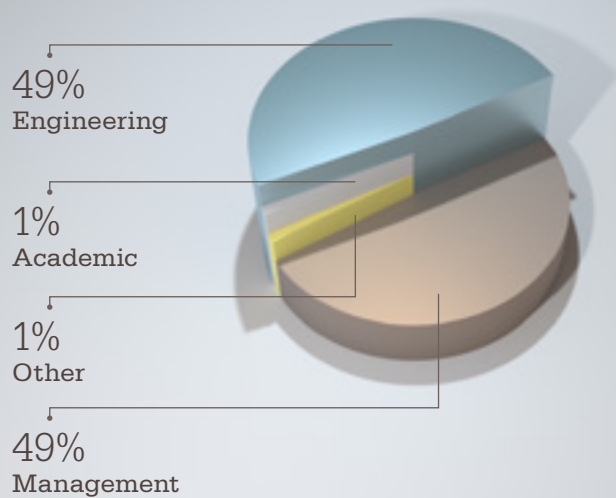
**Keith Miller, Member, Institution of Mechanical Engineers' Safety and Reliability Working Group**

# WHO ATTENDS ALARP? ATTENDEE BREAKDOWN

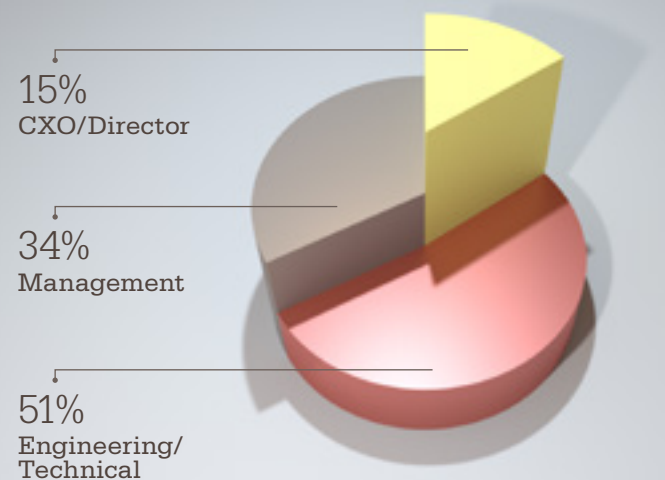
## ATTENDEE SECTOR



## ATTENDEE FUNCTION



## ATTENDEE SENIORITY



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## DELEGATE FEEDBACK FROM THE PREVIOUS SEMINAR

“““

ALARP is a simple acronym that means so many different things in so many different contexts. The event was a great way to experience all of its different attributes and pull all of them together. The wide selection of classes and presenters ensured a very coherent and in-depth understanding

Programme Lead, Risk Based Nuclear Safety, Sellafield Ltd

“““

Both technically and holistically this seminar reached the intent and spirit of ALARP principles across many of the common boundaries of the attending sectors

Head of Product Safety, Maritime Services, BAE Systems

“““

A good event to go and meet industry leading experts and absorb key and practical information to use in your projects

Project Engineer, AEGIS Engineering Systems

“““

This event would be of use to those involved in taking investment decisions in a capital intensive industry with process safety risks

Regulatory Reporting Manager, Cadent

“““

A well-organised and supported seminar, I will attempt to attend future IMechE events in the future

Configuration Manager, Jacobs Engineering

“““

Valuable insights into cross-sector understanding of ALARP, with valuable legal and regulatory context

Technical Director, ATS Management Limited

“““

A very well managed introduction to the possible applications of ALARP

Environment Officer, EDF Energy

More than 90% of attendees would recommend their colleagues to join the ALARP seminar.

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## HOW TO BOOK YOUR PLACE

### FEES AND CHARGES

Registration fees include entry to the sessions, refreshments and a copy of the conference proceedings.

Seminar	Seminar and Workshop	Seminar only
Member, Institution of Mechanical Engineers / Supporting Organisation	£558 + VAT = £669.60	£329 + VAT = £394.80
Non-member	£698 + VAT = £837.60	£399 + VAT = £478.80
Full-time Student/Retired		£99 + VAT = £118.80

Group booking discounts are available. Contact us for more information.

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- 2 Email:  
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- 3 Phone:  
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Please read the information listed below as each booking is subject to the Institution's standard terms and conditions.

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Completed application forms should be returned to the address above, along with the correct payment. Attendance at the event will be confirmed on receipt of the full balance. All participants are advised to bring a copy of their confirmation with them on the day, to ensure the fastest possible entry.

#### SPECIAL REQUIREMENTS

Please inform us of any special requirements, ie dietary or access, on the relevant section of this form.

#### CANCELLATION

For a refund (minus £25+VAT admin charge), cancellations must be received at least 30 days prior to the event. Replacement delegates are welcome at any time. The Institution reserves the right to cancel any event. In this case, the full fee will be refunded unless a mutually convenient transfer can be arranged. In the event that the Institution postpones an event for any reason and the delegate is unable or unwilling to attend on the rescheduled date, they will receive a full refund of the fee paid. The Institution is not

responsible for any loss or damage as a result of a substitution, alteration or cancellation/postponement of an event. The Institution shall assume no liability whatsoever if this event is cancelled, rescheduled or postponed due to a fortuitous event, Act of God, unforeseen occurrence or any other event that renders performance of this conference impracticable, illegal or impossible. For the purposes of this clause, a fortuitous event shall include, but not be limited to: war, fire, labour strike, extreme weather or other emergency.

Please note that while speakers and topics were confirmed at the time of publishing, circumstances beyond the control of the organisers may necessitate substitutions, alterations or cancellations of the speakers and/or topics. The Institution reserves the right to alter or modify the advertised speakers and/or topics if necessary without any liability to you whatsoever. Any substitutions or alterations will be updated on the event's webpage as soon as possible.

#### LIABILITY

The organisers do not accept liability for any injuries or losses of any nature incurred by delegates and/or accompanying persons, nor for loss or damage to their luggage and/or personal belongings.

#### CONFERENCE VENUE

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#### CRANE SAFETY 2018: RAISING SAFETY STANDARDS FOR CRANE AND LIFTING OPERATIONS

12 September 2018, London

This is a unique opportunity to learn industry best practice from the regulator, crane operators and manufacturers. Hear how your organisation can address the challenges of risk and incident reduction, cost savings vs maintenance and compliance with safety legislation.

[www.imeche.org/cranesafety2018](http://www.imeche.org/cranesafety2018)



#### NUCLEAR MATERIALS: AVOIDING STRUCTURAL INTEGRITY FAILURES

3 October 2018, Manchester

Join to discuss in-operation materials challenges experienced by the current UK generating fleet and how to effectively manage them. Gain key insights into the best ways to assess and investigate problems to reduce risk of material failures.

[www.imeche.org/nuclearmaterials2018](http://www.imeche.org/nuclearmaterials2018)

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