

RISKSPECTRUM MAGAZINE

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RELCON SCANDPOWER

25 YEARS



RISK MANAGEMENT
- Experience and Future Outlook

25 years

On April 1st 1984 RELCON AB (today Relcon Scandpower) was established a quarter of a century ago! For me it is quite difficult to comprehend this time period. On one hand it feels like yesterday, on another like ancient times. However, I realized it to the full extent when just some weeks ago, I met this bright guy who was interested in joining us. He told me that he was born on March 28th 1984, i.e. he was exactly the same age as the company! Soon we will have employees that are younger than the company. It feels like that as an

“We are facing a generation shift”

established company and having continuously employed new people throughout the years, we are facing a generation shift. By the way, do you know that we were not the only company that was established on April Fool's Day? Exactly eight years earlier Apple Computers was formed with the introduction of the Apple I.

1984 was filled with many other significant events. A major accident happened at Bhopal, India, when toxic gas leaks from the Union Carbide plant killed about 2,000 and injured about 150,000 people. The same country suffered a tremendous loss when its Prime Minister Indira Gandhi was assassinated. Among other events one can notice that Ronald Reagan was re-elected as President of the United States

and that Carlo Rubia, in Italy, together with Simon van der Meer, in the Netherlands, received the Nobel Prize in physics for the discovery of subatomic particles. It seems to be such a long time ago ...

From the beginning, RELCON's operations were focused on the Swedish nuclear industry, particularly on assisting utilities. Consulting services provided included PSA and safety related licensing issues, e.g. SAR and Tech Specs. A short time after establishing the

“RELTREE was a predecessor of RiskSpectrum”



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RISKSPECTRUM MAGAZINE

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For free subscription, contact Relcon Scandpower.

Address Relcon Scandpower,
Box 1288, SE-172 25 Sundbyberg, Sweden

Visiting address Englundavägen 13, Solna

Tel +46 8 445 21 00 **Fax** +46 8 445 21 01

E-mail sales@riskspectrum.com

Website www.riskspectrum.com

Responsible Publisher

Jerzy Grynblat, President, Relcon Scandpower,
jerzy.grynblat@relconscandpower.com

Chief Editor

Johan Sörman, Vice President, Relcon Scandpower,
johan.sorman@relconscandpower.com

UK Consultant Editors

Corporate Risk Associates Limited, info@c-risk-a.co.uk

Design Lotta Westberg Layout, lottawestberg@comhem.se

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RELCON SCANDPOWER IN BRIEF

- ▶ Offices in Stockholm, Göteborg and Malmö, Sweden.
- ▶ Developers of the world renowned RiskSpectrum PSA Software
- ▶ Provides Risk Management consultancy services in:
 - Nuclear power licensing and PSA
 - Risk Analysis
 - Health and Safety
 - Reliability and Maintenance
 - Quality and Management
 - Human Factors
- ▶ Product line:
 - RiskSpectrum®PSA
 - RiskSpectrum®FTA
 - RiskSpectrum®Analysis Tools (RSAT)
 - RiskSpectrum®RiskWatcher
 - RiskSpectrum®FMEA
 - RiskSpectrum®Doc



young!

“An important aspect of the company’s culture was to maintain a ‘small company’ feel”

company focused on developing fault tree analysis software. Soon after in 1985 we released RELTREE, the first world software in its category designed especially for standalone PCs. It was written for the MS-DOS operating system and included a fault tree editor and a very powerful module for calculating Minimal Cut Sets. When released, RELTREE was competing with software executed on main frame computers. One of the benchmark studies compared RELTREE on a PC with a program executed on a Cray, at that time one of the most powerful main frame computers in the world. RELTREE was just slightly slower to solve the fault tree models! Since then we have regularly released new software products. RELTREE was a predecessor of RiskSpectrum, which today is licensed for use to operators for 50% of the world’s nuclear power plants.

The number of RELCON staff increased very soon after the company was established from 3 to 6 consultants; the growth of the company during subsequent years was moderate. Company policy was focused on competence, development of new services, healthy financial performance and a positive, inclusive, working environment for the company’s employees. Growth for growth’s sake was never

on the company’s agenda. Another important aspect of the company’s culture was to maintain a “small company” feel. This included a flat organisation, active consultants on all levels, direct involvement in, and influence on the company’s development. During the last 25 years we have been quite successful in keeping to this, and I regard it as one of the most important factors that has contributed to the positive development of our company. The corner stone of RELCON’s relation to company’s clients was to build up long lasting relations based on providing high quality services, flexibility and responding to clients’ needs and requirements. I am pleased to say that we have been quite successful in this respect; the company’s largest client in 1984 is still the largest client today and this has been the case for the last 25 years!!!

Today the company has about 60 employees and provides consultancy services in four major market segments: energy with emphasis on nuclear, oil & gas, the process industry and the transport sector. We are also increasingly being engaged on international assignments all over the world. The ‘renaissance’ of nuclear power is an important factor that is contributing to this development. I’m really proud of what we have achieved together, and must admit that the reality exceeds my wildest dreams.

One of the most important events in the history of RELCON was the “marriage” with Scandpower that took place in January 2007. It was not an easy step to take, complete independence was at stake. Working together with another company means that you have to adapt and compromise, you are no longer on your own. The decision was preceded by several joint projects and lengthy discussions. Our relations go back to the mid eighties; Scandpower was one of the first purchasers and users of RELTREE! Today, after more than two years following the merger, I can state that it was a success. Together we were able to achieve much more than both companies could manage on their own.

I would like to have a “crystal ball” and see what the company will look like in another 25 years from now. I would like to see that Relcon Scandpower will continue its positive development and will become larger and have a greater global presence. The inherited “RELCON-culture” exists widely in our company; it has contributed to our success during the last 25 years and certainly will do so for the next 25 years to come. ●

“RELCON’s largest client in 1984 is still the largest client in 2009”



Jerzy Grynblat President
jerzy.grynblat@relconscandpower.com

RISK
SPECTRUM

A brand built

RISK
SPECTRUM

25 years ago the first generation of RiskSpectrum software saw the light of day. It was called RELTREE and was one of the first fault tree analysis tools made for PCs. It is sheer coincidence that one of the first licensees was Scandpower in Norway.

It was only after beating tough competition from other Swedish, American and German software houses that the Swedish utilities decided to choose our RELTREE. We were proud to be chosen to support our Nuclear Industry with Risk Analysis services. At the beginning of the 1990's, RiskSpectrum PSA for DOS quickly positioned itself as the industry standard in most civil nuclear power generation countries in Europe.

Today there are some 1,600 copies of RiskSpectrum software licensed to 442 companies and organisations in 45 countries around the globe. 25 years from now, I foresee that RiskSpectrum will be widely used as a risk management tool in industries where people and the environment are exposed to risks. It will continue to be a brand that stands for quality and the software will remain at the cutting edge.

Software development has proven to be a daunting task, but we are fortunate to have very patient customers who believe in us. This is one of the pillars on which the RiskSpectrum success lies. We recognise that the quality aspect is very important and have taken this seriously. In turn this makes the development cycles longer which strains the licensee's patience.

Support, training and user group meetings - good for staying in touch

Today, Technical Support is handled exclusively via e-mail and our experience with our clients has been that it is very efficient. With the number of RiskSpectrum user licences ever increasing, we have the ability to man-up the software development group with highly

qualified software developers with excellent mathematical modelling skills and GUI expertise.

Before we announced the first open combined RiskSpectrum FT and PSA 4-days training course in Stockholm, we had held many training courses on demand at licensee's offices. 10 participants from 5 countries attended the course in 2003 and we decided to make this a recurring event twice a year. Since then the training course has expanded to include 5 days of material and attracts some 25-30 participants every year. Today courses are held in Swedish, English, German, Chinese and Russian in Stockholm and at licensee's offices several times every year.

We also organise user group meetings and this activity has grown from the first meeting in Erlangen, Germany in 1999 to 7 meetings planned for 2009 in USA, Germany, South-Africa, China, India, Sweden and the UK.

RiskSpectrum Magazine - good for building the brand

Starting in 2000 with only 8 pages and 1200 subscribers, you are now holding the 18th RiskSpectrum Magazine distributed to 8 000 individuals in 72 countries.

“Scandpower Norway was one of our first software customers”



Johan Sörman, Software Sales & Marketing Director at Relcon Scandpower, summarizes 25 years of RiskSpectrum sales and marketing software activities and looks forward into the future and beyond.



The first training course by RELCON in China was held at Daya Bay Nuclear Power plant in China in 1998.

on trust

The purpose of the magazine is to disseminate information about issues related to RiskSpectrum use and development and the latest safety management thinking around the world. We try to make sure that we include articles about issues that our customers are interested in and not necessarily just about RiskSpectrum. In fact, a majority of the articles are not about RiskSpectrum.

For us, it is more important that the magazine is not perceived as a product flyer, but a magazine with good risk and safety reading material.

GUNILLA VON FEILITZEN is the editor and project leader for RiskSpectrum Magazine and she was the one who presented the idea of a product magazine back in 1999. Gunilla is a journalist who specializes in producing newspaper-like magazines for marketing products and building brands.

– We are always bombarded with printed and electronic information and readers are not interested in traditional marketing material. I believe that the information that you want to disseminate today has to stand out; the information presented has to press the readers' red button! If you feel that something is forced upon you, you quickly put it aside. RiskSpectrum Magazine is a perfect example of a group of subscribers who have Risk Analysis and Risk Management in common, says Gunilla von Feilitzen.

The RiskSpectrum Website - good for making contact and user support

The 3rd version of our website, www.riskspectrum.com, is now available. We see it fulfilling our 5 requirements:

1. Allows casual searchers of Risk information to find us.
2. Allows our prospective clients to understand in detail what we are about.
3. Provides our valuable users with a means of sourcing technical support.
4. Facilitate the easy sharing of

information such as downloads (patches, documents and magazine).

5. Disseminate important company information to our valuable clients and staff.

A website should be living. It is a window display facing the world. I believe that we could do more with our website and we should also update it more frequently.

Great expectations

I have noticed that the younger generation PSA analysts learn how to use RiskSpectrum quicker. Another observation is that they expect that data can be transferred easily between software and databases without having to manually input them.

This generation, who mostly grew-up playing computer games and being exposed to high quality graphics, demand better GUI and automated features in our software.

I very much look forward to the coming years of RiskSpectrum software development. Our goal is to continue leading the development and research of this type of software. We are very well aware that it will require a lot of hard work which we are positively looking forward to.

With continued faith and encouragement from our customers, I believe we can do it!

One of the biggest challenges in the near term perspective is to solve the installation and SQL server problems we face with RiskSpectrum PSA. In the next RiskSpectrum Magazine we will have a special feature about this.

The Honey Moon is over

The merger with Scandpower in 2007 was a big step for RELCON. Before, internal marketing was never needed as most consultants were working with RiskSpectrum on a daily basis.

Now suddenly I had some 200 more



RiskSpectrum Magazine is distributed to subscriber in 72 countries.

consultants in Sweden Norway, USA and China that needed to get up to speed on how to promote RiskSpectrum.

I soon learned that risk assessments in the Oil & Gas industry and the nuclear industry use the same risk analysis methods, however with a different focus. With the know-how and the network in Scandpower, I believe we have a very good opportunity to lead the development of risk assessment tools also in the Oil & Gas industry in the near future. ●

By: **Johan Sörman**

Chief Editor, Relcon Scandpower AB
johan.sorman@relconscandpower.com



FACTS

RiskSpectrum Release History

- 1985: RELTREE (Fault tree editor and analysis engine)
- 1991: RiskSpectrum FT
- 1992: RiskSpectrum PSA
- 1998: RiskSpectrum PSA and FT Professional (first Windows version)
- 2001: RiskSpectrum FMEA
- 2002: RiskSpectrum RiskWatcher
- 2007: RiskSpectrum PSA (second Windows version)
- 2009: RiskSpectrum Doc



Trainee **Daniel Budzik**

Education: Ph.D. in theoretical particle physics Lund University, Sweden.

- I am employed at Relcon Scandpower and am part of a newly formed computational group with both deterministic and probabilistic analysis in Stockholm.



Trainee **Siri Revelsby**

Education: M.Sc. in Mechanical engineering from the Norwegian University of Technology and Science (NTNU).

- I am employed as Manager in Scandpower since August 2008. Previously, I worked for 13 years for Norsk Hydro and have comprehensive experience within the energy business area both from project development and operation & maintenance of power plants as well as trading of energy products in the Nordic power market.



Sponsor **Vidar Hedtj rn Swaling**

Education: M.Sc. in Socio-technical Systems Engineering, Uppsala University.

- I am an employee at Relcon Scandpower since 2006, as a Consultant at the Department of Analysis in Stockholm. I work with in the PSA field in a very broad sense, not least on the "input side" by means of carrying out failure data analysis and statistical analysis.



Sponsor **Jan A. Pappas**

Education: PH.D in Physics from the University of Oslo.

Jan is an internationally recognised expert on risk analysis, fire and explosion risks, as well as multidiscipline technical safety.

- I work as a Senior Principal Consultant at Scandpower AS in Norway. On the whole I have 30 years of experience in safety work in the oil and gas industry. During the last 23 years I was with Norsk Hydro where I had the position as Chief Engineer in Technical Safety.



Sponsor **Katrine Harsem Lund**

Education: M.Sc. in Process, Combustion, and Environment (Mechanical Faculty) from the Norwegian University of Science and Technology (NTNU), Trondheim.

- I work as a Manager at Scandpower AS in Oil & Gas industry. My job experience covers six years in an oil engineering company and seven years at Scandpower AS in Norway.



Working on a thesis at Relcon Scandpower **Linda Lanner**

- I am working on my master's thesis at Relcon Scandpower in Stockholm. The thesis is a part of the Master of Science Program in Socio-technical Systems Engineering at Uppsala University.

RISKSPECTRUM MAGAZINE met with Vidar, Daniel, Jan, Katrine, Siri and Linda at Scandpower to discuss the work, working environment and a job applicants views of a potential employer.

What was your first experience with the Scandpower Group?

– I was contacted by RELCON during my diploma thesis and was employed just before the merger with Scandpower. RELCON impressed me with its professional, social, and ambitious attitude, says, **VIDAR HEDTJÄRN SVALING**.

– My brother-in-law, who is also working in risk management, told me that RELCON was looking for people, says **DANIEL BUNDZIK**.

– I contacted the recruiter to find out more about the company and when I had completed my PhD and moved to Stockholm I contacted Relcon Scandpower.

JAN A. PAPPAS was quite familiar with Scandpower.

– From my previous position as Chief Engineer in Technical Safety for 20 years at Norsk Hydro, he says.

SIRI REVELSBY did not know much about Scandpower.

– I found an advertisement from Scandpower in “Teknisk Ukeblad” in Norway, says Siri.

Were there any specific qualities that you sought when you were looking for a job?

– You rely greatly on gut feeling, so it all comes down to the overall impression. But I would say that what are most important are your future colleagues, your daily assignments, and the possibilities of variety in the long term, says Vidar.

– I was very attracted to Relcon Scandpower’s plans of 2009 to develop a deterministic computational group. For me as an employee it is satisfying to be part of a dynamic company, says Daniel.

– Yes, several. For example: Professionalism, reputation, high quality of personnel in a large range of disciplines, eager to develop products and services, open and sharing attitude in the organisation and a focus on developing and taking care of the employees as well as

using the strengths of each individual, says Jan.

– I did not know anything about Scandpower’s reputation in the market, but what I had heard from my friend was that Scandpower gave opportunities for variations; both travelling and projects. In addition to being well paid, says **KATRINE HARSEM LUND**.

– A job opportunity which would be something different but still relevant to my previous work experience. Scandpower is involved in many different projects within analysis and management of risk which make the company an interesting place to work, says Siri.

Sponsorship – Appreciated from Both Ends

At Scandpower there is a long tradition of sponsorship and trainee programs.

– There are only advantages in having the privilege to participate in a sponsor program, whether you are the sponsor or a trainee, says, Vidar, Daniel, Jan, Katrine and Siri.

What do you think about being a sponsor?

– Firstly, it enables you to become acquainted with a new colleague from the outset, which is a privilege. Secondly, you are obliged to define your own position within the company and reinforce your knowledge of the way it functions. Also, you have to reflect on your own role and responsibilities, which is always a salutary experience, says Vidar.

– Coaching new employees is among the most meaningful activities experienced personnel can carry out. It helps the new person to:

– Get a flying start, have the benefit of learning from the experience of the sponsor, have a person to discuss issues with and pose questions to – hopefully without having to feel stupid, says Jan.

What is expected from a sponsor?

– The sponsor has to be open minded, able to teach, willing to help, encourage, physically available and provide time, and know one’s own limitations. There is also a question of ethics as the employee must feel confident that he or she can discuss issues in a confidential manner with their sponsor.

– I always learn and benefit from sponsoring young people, whether it is by them raising a question that I had never thought of previously, identifying a new angle on an old problem or simply by being affected by their enthusiasm, says Jan.

– It is important to feel welcome and have someone to talk to. Introduce the new employee to their colleagues. Present the company intranet and where to find important company information online.

During the first week, take the new employee to lunch, set out daily routines and provide an introduction to projects.

Also, it is essential to be available for questions, says Katrine.

Do you think a company with sponsoring programs is more attractive than others for those in search for a job?

– Definitely! , says Jan A. Pappas.

– Yes, the sponsorship program in addition to the Scandpower School, gives you a complete package that will help you get well acquainted with Scandpower and known amongst the other employees, says Katrine.

As a novice – in what way is your sponsor helping you to “feel at home” at your new working place and in your new role?

– Katrine Harsem was helping me from the very first day to feel at home. She guided me in how to approach all the new systems and tasks and was patient



What was your first experience with the Scandpower Group?

▶ with all my questions. As a new manager it felt very good to have a colleague in the same position as a sponsor to give me a quick introduction both on the formal and in formal expectations in this role. Katrine was also brilliant in remembering all the small important details for taking care of a new colleague, like taking me to the canteen, have a small chat about nothing, and proactive in giving small tips for how to settle in my new home, says Siri.

– The first day of work, I was welcomed by a nice flower on my desk; my sponsor Vidar Hedtjörn Swaling spared me no effort in providing me with useful information by ticking a long checklist containing governing documents, organisation, phone, alarm, and – very importantly - the wonders of the coffee machine. Even though the office had just moved a week before I started, the network was up and running and my computer was all set up. The second day at work I could begin with my first project; very professional!, says Daniel.

What are your future plans?

– I hope to develop my competence in both deterministic and probabilistic analysis and to be part of interesting pro-

jects, says Daniel.

– One of my main drives is to take on new challenges and learn something new in order to build a strong and comprehensive competence within the field of energy industry. For the

time being I am very satisfied where I am and my goal is to be excellent in some key areas, and know all about the services provided by Scandpower, says Siri.

Well Known Companies are more attractive

Linda Lanner is working on her thesis; a part of a larger project within the area of reliability data analysis and parameter estimation for Probabilistic Safety Assessment. The object is to evaluate the impact of different assumptions regarding the homogeneity of component failure rates in Probabilistic Safety Assessment.

She will also map the different assumptions made in PSAs for nuclear power plants worldwide and the motives behind these assumptions.

Linda joined Relcon Scandpower on 4 May 2009.

Why Relcon Scandpower?

– I came into contact with Relcon Scandpower when they arranged a course held at my university. Later on I received an email, which contained an advertisement for attracting a student to write a thesis. I thought the subject of the thesis seemed interesting, she says.

Are there any specific qualities you

consider when choosing a future employer?

– Companies who are good at organising events for students (e.g. case studies) and are represented at career fairs are obviously very professional.

– It is also important that companies provide opportunities for their employees to develop both on a personal and professional level, for example to gain experience by working alongside experienced and inspiring personnel and being provided with attractive career development opportunities. It is also positive, if the company is environmentally friendly, she says.

If you are looking for information about an organisation what kind of information do you look for and where do you go to find it?

– I prefer to obtain information about an organisation through their website. Moreover, it is always interesting to read about a company's history and their personnel, says Linda Lanner.

Do you and your fellow students discuss potential employers? Are you affected by how companies are portrayed in the media? Is it important that the company has a well known brand?

– We often talk about the future and at which companies to look for a job. Of course, most of us want to work for a company that has a good reputation and a well-known brand. Companies that often are mentioned in the media and receive high rankings in surveys for being the best employer apparently have a strategy for attracting the best, says Linda Lanner. ●

The Company's ...

... Web Pages are more and more important for job applicants.

In a survey made amongst 9723 university students in Europe, 93 percent said that they look for information about future jobs on the Internet. 81 percent of them use company web pages, 73 percent job sites and 44 percent use search engines. Other sources of information about vacancies are news papers, friends, and relatives.

98 percent ...

... of 4271 students from 44 countries said that the most sought after qualities were that their future employer should be able to offer them a working environment in which they can develop on a personal level, including sponsorship and coaching programs rather than high salaries and bonuses – at least during the first year.

88 percent ...

... announced that they will look for employers devoted to CSR (Corporate Social Responsibility). CSR reflects their private moral standards. Young people want to be proud of the company where they work and that the company embraces its social responsibility.

Rare Events Come Together

The right people coming together with a well timed business idea laid the foundation for RELCON in the mid 80-ties.



The story of RELCON started with three engineers who had a unique idea.

To put their idea into practice, they recruited two young researchers from the Royal Institute of Technology in Stockholm who specialised in Probabilistic Safety assessment. The back drop to the book would be the Three Mile Island accident and the changing regulatory environment in which a probabilistic safety analysis was beginning to become a requirement for licensing a nuclear power station.

The right business idea, the right people, at the right time made RELCON the first consultant services company of its kind in Sweden in 1984. 25 years later, it takes on a larger role from within the Scandpower Group.

Relcon Scandpower AB celebrated its 25th anniversary on 11 June 2009, by organising a seminar at Tammsvik Conference and Country House, 40 minutes west of Stock-

holm. Four distinguished speakers agreed to share their knowledge and provide valuable future insights.

JERZY GRYNBLAT, President Relcon Scandpower, introduces the speakers and explains why they were invited.

– We wanted to invite our guests to a day of interesting lectures and discussions in nice surroundings and end it all with a lovely dinner and festivities, he says.

Mr Karl Fleming and Relcon Scandpower have cooperated for many years under different forms. Karl is one of the most well known experts in the field of Probabilistic Safety Analysis in the nuclear industry. He has, similar to the pioneers of PSA, contributed with many analysis methods and models that today are widely used in the risk assessment community.

Björn Inge Bakken, CEO Scandpower Group, with many years of experience of risk assessment within the Oil and Gas industry gave us an interesting talk about safety assessment in that industry.

Mr Stefan Hirschberg from the Paul Scherer Institute in Switzerland, is a close friend of mine since the time we studied together at the Chalmers Institute of Technology in Gothenburg. Stefan is today a well renowned expert within risk analysis, in many different levels and applications.

Mr Lars Bodsberg gave us a slightly unusual and interesting lecture on ‘Accidents that Never Happened’. Lars is the research manager at Sintef, Norway, says Jerzy Grynblat, President Relcon Scandpower. •

SPEAKERS



PSA / PRA / QRA in the Oil & Gas Industry

By Björn Inge Bakken, CEO, Scandpower Group and Chairman of the Board at Relcon Scandpower



Historical Perspectives on the Development of PRA Technology and Challenges for the Future

By Karl Fleming, President, Consulting Services LLC, California, USA and Associate of Scandpower.



Energy System Risks in Perspective

By Stefan Hirschberg, Head, Laboratory for Energy Systems Analysis, Paul Scherer Institute in Switzerland.



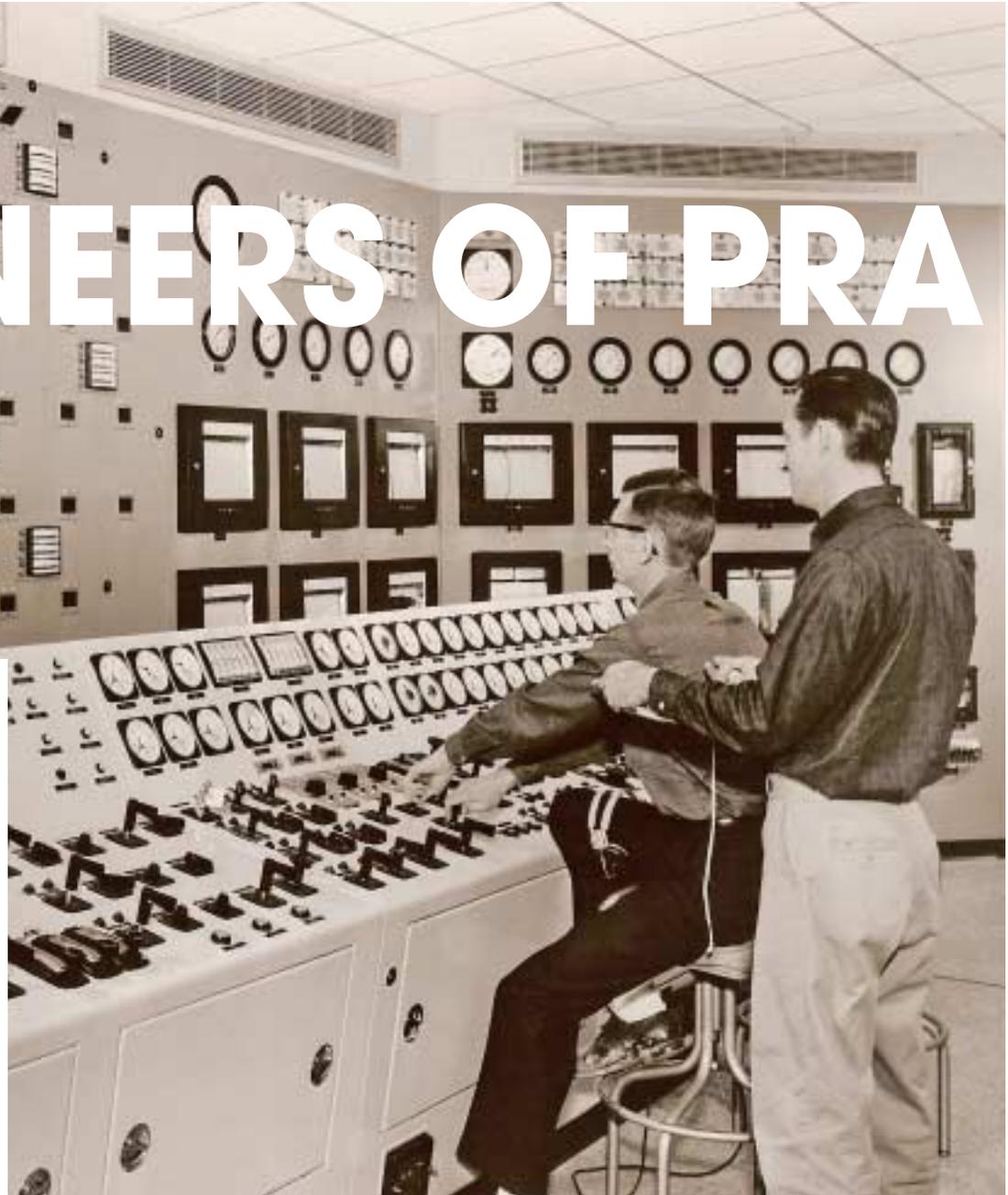
Why are there not more accidents?

By Lars Bodsberg, Research Manager, SINTEF Norway.

PIONEERS OF PRA



Mr. Karl N. Fleming is an internationally recognized expert in PRA and Associate of Scandpower. He is a member of the ASME Standards Committee on Nuclear Risk Management and a co-author of the ASME/ANS PRA Standard as well as hundreds of reports, papers, and peer reviewed articles on the development and application of PRA technology to nuclear reactor safety. His 38+ years of experience includes more than 25 years in LWR PRA technology and more than 10 years in HTGR PRA.



Several decades earlier, pioneers of PRA like **REGINALD FARMER** were drawing up event trees and calculating risks of releases from Advanced Gas-Cooled Reactors in the United Kingdom. These pioneers of PRA introduced initiating events and event trees as tools to delineate event sequences, developed the initial formulation of safety goals on the acceptable frequencies and releases from reactor accidents, and most importantly, recognized that a purely deterministic approach to safety assessment was both naïve and inadequate to manage the risks of nuclear power accidents.

Simply stated, the deterministic approach to safety, which provided the basis for licensing most of the current fleet of commercial nuclear power plants, consists of first judging which events were deemed to be “credible” without any quantification of the frequency of occurrence, and then taking the so-called “worst case accident” among those deemed credible

and performing a conservative safety analysis with conservative assumptions. Such an approach described with such esoteric phrases as “defense-in-depth” lead to a high level of confidence among regulators that the public was adequately protected against a nuclear accident. While this approach had considerable merit, it was not until after the current fleet of reactors was built and licensed that some of the limitations of the deterministic method began to be appreciated.

PRA not for Regulatory Decision Making

The foundation for these lessons was laid by another pioneer of PRA, **NORMAN C. RASMUSSEN** of MIT who led the first major PRA on a light water reactor. That PRA was performed during an intense political debate in the US about whether nuclear power was adequately safe. Each side of the debate used information from the Rasmussen report to prove



Norm Rasmussen

The guest speaker at Relcon Scandpowers 25 years anniversary Mr Karl Fleming:

“ *It has been a pleasure to be part of the PRA community since my engineering profession began in the early 1970’s. Since then I have been working to advance the technology of PRA in order to make informed decisions about the risks and benefits of nuclear energy. For some of my younger colleagues at Scandpower, who may not realize that PRA could actually be as old as me, it might be surprising to learn that the applications of PRA to investigate nuclear reactor safety actually began many years before.* ”

the opposing points of view. Proponents of nuclear power pointed to the low probabilities of reactor accidents, and opponents used information on the accident consequences without the low probability perspective to prove that nuclear power was unsafe. Due to all the politics surrounding nuclear power and the resulting debate about how to interpret the Rasmussen Report, the US regulators decided that PRA was too controversial to use in regulatory decision making and drafted a policy statement to the effect that PRA would be used in safety research projects but not in regulatory decision making – due to the “large uncertainties inherent in PRA”.

Three Mile Island was the turning point. While this draft policy statement was out for public review in March 1979, a partial core melt down accident occurred at Three Mile Island which shook the foundations of the regulatory decisions that had been based on the deterministic method. It was quickly recognized that, prior to the accident the Rasmussen Study, had determined that a small LOCA – as occurred at TMI - were much higher risk than the large LOCA that provided the focus of the plant licensing bases. This was the turning point in the development of PRA as a regulatory decision making tool and the recognition by US regulators that a purely deterministic approach to safety assessment was inadequate. With the benefit of hindsight, it was now appreciated that a false sense of security

had been reached by a string of ad hoc judgments used to frame the deterministic method. It is now recognized that a blend of deterministic and probabilistic approaches provides a more robust “risk informed” safety assessment approach.

Shortcomings of the Deterministic Method

This recognition and respect for PRA technology took a long time to develop, however. There were several other examples that occurred after the TMI accident that exposed the shortcomings of the deterministic method. These examples were made possible by another pioneer who advanced PRA technology in the nuclear utility industry long before it became a regulatory requirement.



John Garrick

He was my mentor in PRA and his name is **JOHN GARRICK**.

► The Union of Concerned Scientists submitted a legal petition to the US court system to shutdown the Zion and Indian Point nuclear power stations because they were sited too close to population centers near Chicago, and New York City, respectively. The technical case for the Court’s ruling that the plants were adequately safe was based on the first major PRAs that were performed following the Rasmussen Study.

► Deterministic rules could not resolve the question about whether it was safe to restart TMI Unit 1 after all the lessons from the TMI-2 accident were backfit into safer designs. A major PRA project

was performed to help justify restart

► Deterministic rules failed again when a new earthquake fault was discovered nearby a nuclear power plant under construction at Diablo Canyon. A major seismic PRA was performed to help prove that the seismic design was still adequate.

► Evolving changes in the deterministic rules for emergency planning led to a licensing impasse for Seabrook station, which was resolved by a full scope all modes Level 3 PRA on that plant.

► While licensing the current fleet of reactors in the U.S., the question of whether existing designs provided sufficient protection against beyond design basis core damage events was deferred as a so-called “unresolved safety issue”. This issue was never fully resolved until all plants were required to perform Individual Plant Examinations – a kind of a simplified PRA.

Today we take it for granted that PRA technology is a necessary element of a modern and robust approach to safety assessment for any complex engineering facility. But we have a lot to thank for the innovative contributions of pioneers like Reginald Farmer, Norm Rasmussen, and John Garrick without which our professions in the risk management area would be non-existent. ●

By: **Karl N. Fleming**
Scandpower Associate Consultant

OIL & GAS

RiskSpectrum Magazine asked six prominent people in Risk Management to share their experience and future outlook regarding risk management in their respective industry.

“How safe is safe enough? That’s still a question without answer.”

Dr. André Lannoy

The new director of the Petroleum Safety Authority, many referred to as “Mr. Safety”, enjoys a string of leading positions in several industry networks and has received several awards for his strong commitment to safety.

What were the most significant events during the period 1984 - 2009 in the area of safety and risk related issues in the oil & gas industry?

A major restructuring of the regulatory regime in the Norwegian offshore petroleum activities took place in 1985, first and foremost in light of some major accidents that occurred in the years around 1980. The changes were aimed at replacing a complex and inefficient regime, where numerous authorities enforced various statutory requirements, by applying different regulatory cultures and approaches.

This change paved the way for an overall focused approach to safety management, which concentrated on protecting personal health and safety, the environment and the economy. Over the years, a risk based approach has been developed. This approach aims to harmonise statutory requirements, as well as safety management practices and regulatory enforcement.

It provides for the Petroleum Safety Authority to execute the regulatory role in a manner that reinforces companies’ total responsibility for the safe conduct of their activities and for regulatory compliance. Effective risk management is a key to the prevention of harm to people, the environment and the economy.

Towards the end of the 20th century, indications were observed of a possible setback in the overall risk level in the industry. It was then clear to the industry that such a development was not acceptable. It has been, and still is, a challenge for the industry to ensure that risks are based on a long term perspective, aligned with corporate goals and adapting to changes within a company, and society and industry in general.

Recently, we have also observed incidents where investigations have revealed that companies fail to learn from earlier incidents. Failure to understand the risks involved has proved to be a common finding in the investigations.

What do you think likely to be the main headlines in the future (2009 - 2034)?

There is every reason to believe that the



TRANSPORTATION

The Professor of Safety Science, Dr. Andrew Hale, at the Delft University of Technology in the Netherlands gives us his views on risk management in the transportation industry. Prof. Hale specialises in risk perception and safety management systems, amongst other things.

Prof.dr. Andrew R. Hale, what was most significant for the period 1984 - 2009 in the area of the transportation industry?

– The last two decades have often seen spectacular drops in road accidents and a consistently high level of safety on railways and in commercial aviation, despite increased traffic on all transport systems.

Both of the last two industries have been receptive to new ideas and to the lessons that have been learned from safety developments in other industries – such as nuclear and chemical. They have embraced the notions of an explicit safety management system based on extensive risk analysis and the need to work actively on a positive safety culture, rather than relying largely on the implicit professionalism of their staff.

It is now accepted that all new technology and infrastructure should be subject to a detailed safety case and that safety management should be audited and, where appropriate, certified. However, intense competition following privatization within some sectors has presented great challenges to retaining safety as a main priority.

What do you think likely to be the main headlines in the future (2009 - 2034)

– Important challenges in the future will be to develop alternative

transportation systems which remain attractive for public use. The only completely safe transport is one which does not physically move; so virtual travel and enhanced telecommunication systems will give rise to significant safety improvements for the travelling public and cargo transporters. We need to improve our comprehensive risk modelling techniques

to understand better what are the most cost-effective ways of achieving safety objectives, but these safety objectives will need to be balanced against the other costs and benefits we get from transport, so that we do not become too risk averse. Above all, the lessons learned in driving down the accident figures in the developed world will need to be passed on to, and acted on, in the developing world, so that their accident figures drop as fast as possible to correspond with best world experience, says Andrew Richard Hale, Prof.dr at the Safety Group Delft University of Technology in The Netherlands. •



Prof. Andrew Richard Hale most recent project included the development of casual models for risk assessment at airports, incorporating technical, human and organizational factors.

Authority, Norway, Mr. Magne Ognedal, by strong international reputation and has works. He has also received international safety work.



Mr. Magne Ognedal qualified as a chartered engineer at the University of Newcastle, graduating in 1967. Since 1974 he has worked for the Norwegian Petroleum Directorate and since 1999 he has been Director of Follow-up.

offshore oil and gas industry will continue to evolve and develop during the next quarter of a century. We think it is vital that the industry, as well as the authorities, responds adequately to such developments because; otherwise, there is the possibility that the regulatory regime will not generate the desired improvement in technological and organisational areas

and fail to achieve the intended reduction in risk levels.

The industry's continuous search for more efficient operating methods may lead to the development of solutions which may involve new types of risks. Integrated Operations (IO) is an example of such a development. It is important that risks are identified, and maintained as low as reasonably practicable, and that the opportunities to improve safety by means of such development are exploited.

There is also reason to believe that the concern for increasing global environmental challenges will continue. The role of Petroleum Safety Authority within the regulatory authorities aims to encourage the industry to avoid accidental emissions of harmful substances. We execute our regulatory role in this area by focusing on risk reducing measures for preventing harm to the environment.

Our objective is not zero risk, but reducing the frequency of accidents to as low as reasonably practicable. We appreciate that accidents can happen. Therefore, contingency plans and adequate response organisations and equipment must also be in place at any time, says Mr. Magne Ognedal, director at the Petroleum Safety Authority in Norway. •

Dr. André Lannoy, in your view, what was most significant for this period (1984 - 2009) in the area of Risk Management? Which trends or events have had the biggest influence during this period?

- I believe that the period 1984 - 2009 has been very rich in events and political decisions in the field of Risk Management, says Dr. André Lannoy.

1980-88

In the 1980s the concept of ALARP "As Low As Reasonably Practicable" was developed and applied in the field of radiation protection.

1986

The publishing of the book "Risikogesellschaft" by Ulrich Beck about Social Risk in the New Era (see page 15). The accident at Chernobyl gave rise to widespread scepticism about the safety of nuclear power generation and had a negative impact on finding effective solutions to our energy challenges.

1990

During the European Safety and Reliability Association (ESREL) conferences in the 1990s Peter Kafka from Germany asked several times the question "how safe is safe enough?" We still have no answer to that question.

1992

At Rio de Janeiro, the precautionary principle was endorsed at the earth summit. The principle states that in order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. The United Nations Environment Program, www.unep.org

2000

The transition to the year 2000* and appropriately dealing with the potential 'millennium bug' can be considered as a big success for the risk management industry across the world.

** The inability of older hardware and software to recognize the century change in a date. The reason they could not was because the year was stored with only two digits; for example, 12-11-42 instead of 12-11-1942. Thus, when the year changed from 1999 to 2000, the date became 01-01-00, and the system thought it was January 1, 1900.*

2001

The "9/11" terrorist attacks on America at the World Trade Centre Towers in New York City and The Pentagon in Washington. The attack demonstrated that there are no limits to protecting public safety. Anything is possible, and especially things that cannot be anticipated in advance.

2007

The collapse of the bridge in Minneapolis in the US in August 2007 showed that structural safety and lifetime management of structures due to ageing and lack of financial resources would be a major concern in the future. In the same year also, the regulation REACH* was applied in the EU.

** The new EU chemicals legislation, REACH, was formally published at the end of 2006 and entered into force on June 1st 2007. REACH is set to drive major changes both in the global chemicals industry and in any industry that uses or processes chemicals. It affects organizations at every point in the production chain, from chemical manufacturers, to chemical distributors and to companies assembling products from component parts.*

2007-2008

Crisis in sub-prime lending and the wider financial industry. We are still coming to terms with the consequences of management failings and inadequate risk analysis and risk management.



RISK MANAGEMENT

Dr. André Lannoy research interests are ageing and life extension, degradation analysis, reliability frequential and bayesian methods and future of risk management at the 2020 horizon. He has worked as a scientific adviser of EDF R&D and is a lecturer at several French universities and engineering schools as well as author of many papers and books.



Dr. André Lannoy is a research engineer, member of the Institut de Maîtrise des Risques, in charge of the "products" commission and of the "structural safety" working group and member of honour of ESReDA (European Safety and Reliability Data Association).

Would you please suggest some developments that will make the headlines in the future (2009 - 2034)? Are there any trends that are likely to influence developments in the near future? *

– I think there are three scenarios that can be foreseen for the near future.

Number one:

Risk and oppor-

tunity.

Risk is accepted by the public. Sustainable development in innovation and technological and economical fields obliges industry to optimize safety and performance (including profitability). Risk management is a priority.

This is the scenario which I think is the more likely to occur and the one which I prefer.

R&D will increase, particularly in the following areas:

- ▶ life cycle management
- ▶ asset management
- ▶ management of complexity
- ▶ help for decision making and uncertainties
- ▶ use of operation feedback and expertise
- ▶ risk informed methods
- ▶ human and organisational factors
- ▶ reliability of software
- ▶ and structural integrity of new products.

Number two:

Safety and security at any price.

Risk is not accepted.

The consequences are refusal to innovate, opposition to technical progress and change, and reduction of investment. Risk management is reduced to the development of protection and preventive measures and controls.

Number three:

Failure of the management.

Sometimes risk is accepted and sometimes it isn't.

There is no transparency within safety studies. Short-term decisions are often not scientific nor clearly elaborated; it can be called "consensus mou" (in French, soft consensus) – risk management is not a priority.

Some messages can be sent:

▶ **To the politicians:**

Practise risk management, look at and measure the consequences of their decisions.

▶ **To the industry:**

Enhance R&D in the field of risk management

▶ **To the Universities:**

The message to universities developing teaching about risk management, safety and reliability is probably the most important.

▶ **To the safety authorities:**

Develop regulation while taking into account evolution in the area of Risk Management.

New knowledge, and its application, in the safety arena is a world-wide market!

I want to mention three main points of the contribution by Ulrich Beck in the publication "Risikogesellschaft" about Societal Risk in the New Era:

- ▶ The globalization of risk due to the change in technology, economy and industry; we live now in a global world and we must answer to the challenges of

global risk; consequently risk analysis must be systemic and include not only technical and environmental aspects, but also regulatory, social, political, ethic aspects.

▶ Political and social processes are now determined by the attitude facing risk: how to manage risk, how to avoid it, how to distribute it; the impression is that some people are exposed to risk and others who take advantage of risk, are not exposed; they have therefore the impression of inequality; they agree with taking risk (for instance smoking) but they do not want to undergo risk (for instance: they don't support the presence of smokers in a restaurant or in an office); this is the problem of perception of risk which can be solved with risk management; note nevertheless that this is not new, it has been like this since the roman empire ...

▶ The third lesson from Beck is maybe that everybody now, due to globalization, will be exposed to risk; in reality everybody is equal with regards to risk; for instance toxic products can be everywhere.

The mad cow disease has become and international problem. Anybody can be exposed; managers and political leaders are not prepared; risk analysis is considered a problem for experts.

I believe that Beck's book is very important: globalization of economy, environmental and social problems to be taken into account, new systemic risk analysis to develop, perception of risk and communication, feeling of inequality.

All these problems are risk management problems. •

* Kahn P., Lannoy A., Person-Silhol D., Vasseur D., Proactive forecasting study at the horizon 2020, REE, n°8, september 2008, P.85.



SOFTWARE

Ulf Berg was hired early on in the history of Relcon Scandpower and brought with him software code that was commercialized as RELTREE and RiskSpectrum PSA. Ola Bäckström is an expert analyst within PSA. He has 15 years of experience of risk analysis and risk management for nuclear power and transport. He today specializes in safety, reliability and development of the risk and reliability analysis software RiskSpectrum.

Ulf Berg and Ola Bäckström: What was most significant events during the period (1984 – 2009) in the area of software development?

– Twenty-five years ago, the IBM PC model XT had recently hit the market, boasting a 4.77 MHz processor, 640 kB of RAM and a 10 MB hard disk. The price tag was similar to that of a small car.

Fault tree analyses were made using main-frame computers, using cryptic text file inputs. A single

execution to solve a fault tree (convert to MCS) could easily cost hundreds or even thousands of dollars.

Fault trees were drawn by hand, which was tremendously costly and very labour intensive. The development of PC software for PSA modelling and analysis, along with the evolution of the PC itself, has made possible a remarkable increase in the efficiency and cost-effectiveness of PSA work.

The real paradigm shift happened during the 1980s and early 1990s when going from main-frames to personal computers, and from labour-intensive manual work

to integrated modelling and analysis applications like RiskSpectrum which allowed modelling, analysis and reporting “at your fingertips.”

RELCON played a key role in this development.

Perspective for next 25 years ...

What will make the headlines in the future (2009 – 2034)? Are there any trends that are likely to influence developments in the near future?

– The evolution of computer and user interface technology will surely bring more efficient modelling and improved analysis performance, but this will probably be a gradual evolution, not a revolution. One of the most significant changes will likely come in integrating much more documentation and reporting capabilities in PSA software, such that complete PSA documentation will become part of the PSA database.

– Up until now, PSA software managed the model and the analysis results, while documentation has largely been handled separately. This is an area which is still very labour-intensive and it is hard to keep the model and the documentation up-to-date and synchronized.

In this area we will likely see the next great leap forward in productivity, efficiency, and control of PSA work, says Ulf Berg and Ola Bäckström Relcon Scandpower. ●



Ulf Berg is an associate of Relcon Scandpower and supports the development of RiskSpectrum software through his own company.



Ola Bäckström is the manager of the software development at Relcon Scandpower.

NUCLEAR

Mr Waessman has over 30 years of professional experience in reactor safety and technology issues, nuclear management, operation and maintenance.

Mr Waessman, what were the most significant events during the period 1984 – 2009 in the area of nuclear industry?

– There were several incidents and developments, as follows, that I would identify:

▶ **1.** The Chernobyl accident - This gave rise to more focus on Severe

Accident Management and triggered new regulations on severe accident mitigations and measures such as filtered ventilation of the containment and core catchers.

▶ **2.** September 11- This gave rise to increased focus on security measures and triggered new regulation and improved physical protection measures

▶ **3.** Increased focus on Human factors and Organization - During the period new regulations/guidelines have been developed for safety culture, safety management, Man Machine Interface design and event analysis (Root cause determination).

▶ **4.** Increased focuses on diversification and physical separation based on Probabilistic Safety Assessment insight – New regulation in Sweden and Europe WENRA reference level and new passive reactors (AP1000, ESBWR etc).

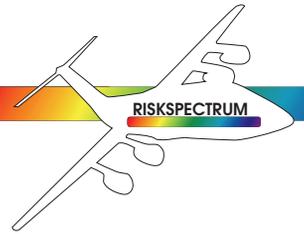


Per-Olof Waessman is Chief Nuclear Officer at Vattenfall AB in Sweden.

What do you think likely to be the main headlines in the future (2009 – 2034)

– I believe that nuclear will be one of the pillars to combat climate change:

Medium term by plant life extension and power up rates based on improved safety design, excellent experience feedback, and strong safety management and safety culture. Long term by nuclear new build says Mr Waessman, Chief Nuclear Officer at Vattenfall AB in Sweden. ●



2 or 6

more nuclear power units are to be supplied to India by France. The agreements were signed by Areva in France and the energy company Nuclear Power Corporation of India Ltd. The transaction is considered a start of a co-operation which ultimately will lead to the construction of at least 6 new EPRs (Evolutionary Power Reactor) in Jaitapur in the state of Maharashtra in the west part of India. ●

4 Italian

new nuclear power units will be in operation in Italy by 2020. An agreement between France and Italy will ensure that the first four nuclear power stations in Italy should generate 25% of the total energy demand in the country. ●



25%

of the world's population has no electricity and 33% has limited access to electricity.

515 billion dollars

This is the amount world investors should invest in environmental friendly energy sources, each year until 2030, according to a report from New Energy Finance which was present at a top-level meeting in Davos. Last year, the investment in developing environmental friendly energy extended to 150 billion dollars. ●

580 billion Yuan



or 64 billion Euro is the amount that China is investing in the energy sector in order to reduce their dependence on coal, which is the country's main energy source.

The energy sector includes nuclear, solar power and wind power, and within three years China's nuclear power stations will increase from today's 11 to 16. The plan includes building another 40 units by 2020. ●

440

billion dollars of the world's financial stimulus programs are to be used for 'green' investments. ●

one billion

More than one billion people of 15 years of age and older use the Internet. 41% live in Asia, 28% in Europe and 18% in the USA. 180 million people in China are using the internet.

45 billion dollars

was the bill for natural disasters during 2008 according to the world leading reinsurance company Swiss Re. In addition to this, serious disasters caused by human activities accounted for another 7 billion dollars.

The company confirms that the year 2008 was one of the worst years in history with regard to natural disasters. ●

175 billion euro

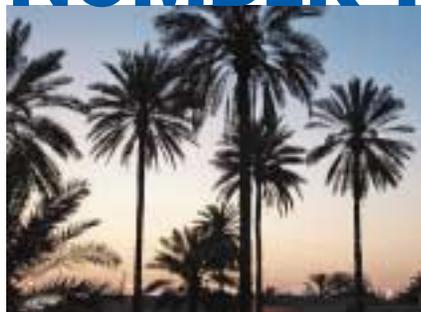
According to European Commission estimates in an internal report prepared for the international climate change negotiations to be held in Copenhagen in December - the global cost of tackling climate change will reach 175 billion Euros annually by 2020.

The overall climate goal is to reduce the increase in temperature in the atmosphere to 2 degrees centigrade compared to the pre-industrial level.

In their own climate battle plan, the European Union has required all airlines flying in and out of the European Union nations to cut their CO2 emissions to 97% of 2005 levels and, from 2012, to buy 15% of their polluting rights.

This implies reducing the discharge of greenhouse gases by 20%, increasing the contribution of renewable sources of energy by 20% and achieving energy savings of 20% by the year 2020. ●

NUMBER 1



Iran's first nuclear power station at Bushehr is now completed, according to the Russian state owned company Rosatom. The nuclear power station was under construction as early as 1975 but the work was stopped when the Shah of Iran was overthrown in 1979. The work was resumed in 1998 after an agreement between Russia and Iran.

12 percent

of Britain's carbon dioxide emissions come from the country's 26 million cars. The British government now wants to boost electric car sales with a total of 250 million pounds in five years. London has already started installed charging poles. ●



Declining demand for electricity

Global electricity consumption will fall this year for the first time since 1945, according to a dramatic portrait of the effects of the slowdown in developed and emerging economies from the International Energy Agency (IEA).

According to IEA will the global electricity demand fall by 3.5 per cent in 2009.

In China, where power use is seen as a more reliable barometer of economic activity than official economic measures, consumption will be more than 2 per cent lower than 2008. Russia will see a fall of almost 10 per cent, while OECD-countries will see a fall of almost 5 per cent.

Three-quarters of the global decline in consumption is

accounted for by industrial demand, reflecting the fall in China's manufacturing-heavy economy. Consumption in India, by contrast, is expected to increase by 1 per cent.

- This shows how deep a recession we are in. Oil demand has declined in the past due to oil price shocks and financial crises - but electricity consumption has never decreased, said Faith Birol, IEA chief economist to The Financial Times.

In a report published last year, it had forecast electricity consumption would rise 32.5 per cent between 2006 and 2015. World electricity demand grew by almost a quarter between 2000 and 2006. ●

Sources: *The Financial Times*, IEA, TT



Securing growth in USA

Scandpower operations within the US nuclear market are rapidly growing with new clients and new major projects. One of the cornerstones of the Scandpower business philosophy is to be close to the clients in order to be able to give both quick and adequate support to our clients. Consequently Scandpower opens a new office in Richland, Washington, in the north-west part of the USA.

- This new office is essential for the conduct of the major contract for the local client Columbia Generating Station (CGS). The contract includes Time Limited Aging Analysis as a part of structural verification of plant components, says Bengt Lydell, Vice President for Nuclear business in Scandpower Risk Management Inc.

- The office is instrumental in improving the work environment for Scandpower employees and will be a base for the future growth of our business in the US, continues Bjørn Inge Bakken, President and CEO of Scandpower AS.

Scandpower has been present in the US since 2001 through the daughter company Scandpower Risk Management Inc in Houston Texas.

Scandpower is constantly looking for more top qualified professionals and the new office will secure further growth of Scandpower in the north western region of the USA. ●



Stephen Gossin is managing the new office in Richland.

RISKSPECTRUM PSA

NEW RELEASE ON THE WAY!

RiskSpectrum PSA installation and database access problems has consumed most of our software development resources the past months. The problem is related to the incompatibility between SQL server and MS operating systems and with the release of hot fix 1.0.2 some of the issues could be solved. We have a new release on the way which we will write more about in the



Dr. Pavel Krcal joined the software department in Stockholm in March 2009. His PhD research area was Formal Verification of Real Time Systems.

next RiskSpectrum magazine due fall 2009.

New employee. Dr. Pavel Krcal was recently hired for helping out with all the development projects we have going. Today the software developers in the RiskSpectrum team totals 6. See RiskSpectrum Magazine from January 2008 for a more detailed presentation of the team.

New RiskWatcher released and

another one on the way. We recently released RiskSpectrum RiskWatcher 1.20, an update with changes based on feature requests from clients who use the software. Already, the technical specifications for version 1.3 have been compiled and coding will start after the summer holidays. RiskWatcher is now available in English, Russian and Chinese. ●

The 2nd China RiskSpectrum User Meeting



From left: Johan Sörman, Hao Zheng, Haibin Liu, Qinfang Zhang, Yong Cao, Jian Yang on a rainy birds nest tour.

The 2nd China RiskSpectrum® User Meeting was held on April 22 to 23, 2009 in Beijing by Scandpower Risk Management China Inc. together with Johan Sorman from Relcon Scandpower AB, Sweden.

Same as our first meeting hold in May 2008, the user meeting was very successful and well attended. A total of 21 participants from 8 RiskSpectrum licensed organizations attended the user meeting. Presentations about RiskSpectrum software development plan, RiskSpectrum PSA New version Q&A, Risk-Watcher Chinese Version, RiskSpectrum .DOC, etc. were presented by Johan Sorman, Xuhong He and Hao Zheng. Open sections were arranged for free discussions about problems (bugs) and questions in use of RiskSpectrum software tools in daily PSA practices.

The user meeting was received by the participants as a good platform for

face-to-face technical discussions as well as PSA information exchanges among the different organizations.

The user meeting was held in an open and friendly environment and it is our feeling that a nice little RiskSpectrum family is being formed in China.

– Even though I only know a few words of Chinese I could tell that the atmosphere was warm and the discussions were very open. Laughter and jokes were never far away, said Johan Sörman about the meeting. ●

By: **Xuhong He** Vice President, Scandpower Risk Management China Inc



RiskSpectrum Goes West

The 1st U.S. RiskSpectrum Users Group Meeting & Risk Management Seminar hosted by Scandpower Risk Management, Inc. took place 14-15 January, 2009 in Houston, Texas, USA. The meeting included many interesting presentations and discussions. Except for presentations about the latest development in RiskSpectrum software as traditionally held at RiskSpectrum user group meetings, the participants had the privilege to learn from the following presentations:

- ▶ Standard for PSA for Advanced Non-LWR Nuclear Power Plants by Karl Fleming (SRM, Inc., Associate Consultant)
- ▶ U.S. Utility Perspective on RiskSpectrum® & Risk-informed PSA applications by Robert Lindquist/Tom Hook (Arizona Public Service)
- ▶ Passive Component Reliability Analysis for PSA Applications by Bengt Lydell (SRM, Inc.)
- ▶ Next Generation Nuclear Plant (NGNP) Project. A Status Report by Karl Fleming (SRM, Inc., Associate Consultant)
- ▶ RISMET Project, the International RI-ISI Methodology Benchmark Study by Bengt Lydell (SRM, Inc.)

The meeting ended with an open RiskSpectrum Q&A session.

I think the meeting was a great success with a healthy mix of RiskSpectrum software related presentations and discussions and interesting presentations about the latest achievements and news from the nuclear industry.

This will from now on be an annual event on the North American continent. ●

By: **Johan Sörman**



REVAMPED RISKSPECTRUM WEBSITE

The revamped RiskSpectrum website was launched in January 2009. It features a fresh layout and much more user-friendly design, making it easier to access information and download software. The support section has also been remodeled, although support services are limited to holders of support agreements, all of whom have received user names and passwords.

The RiskSpectrum homepage can also be accessed via the Scandpower website with a single click, making information about the software easily accessible to a wider audience. See www.riskspectrum.com or www.scandpower.com



HEADQUARTER: Scandpower AS P.O. Box 3, NO-2027 Kjeller, Norway bib@scandpower.com Tel: +47 64 84 44 00.

Relcon Scandpower AB

Stockholm, Sweden
jgr@relconscandpower.com
Tel: +46 844 52 100

Göteborg, Sweden
lha@relconscandpower.com
Tel: +46 31 335 03 30

Malmö, Sweden
les@relconscandpower.com
Tel: +46 40 93 76 45

Scandpower AS

Bergen, Norway
ohj@scandpower.com
Tel: +47 55 30 05 55

Stavanger, Norway
joh@scandpower.com
Tel: +47 51 91 71 70

Trondheim, Norway
jst@scandpower.com
Tel: +47 73 54 63 60

Sandvika, Norway
tly@scandpower.com
Tel: +47 92 24 71 00

Scandpower Risk Management
China Inc.
haibo.chen@scandpower.com.cn
Beijing, P.R. China
Tel +86 10 6467 2860

Scandpower Risk Management Inc.
hjn@scandpower.com
Houston, Texas, USA
Tel: +1 713 654 1900

Scandpower Risk Management Inc.
srg@scandpower.com
Richland, WA, USA
Tel: +1 509 946 4334

Scandpower Risk Management
jrh@scandpower.com
Dubai, UAE
Tel: +97 14 391 4130

www.scandpower.com

www.riskspectrum.com

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Please send it to sales@riskspectrum.com