

MINUTES OF THE

Aarhus Round Table Cattenom, Emergency Preparedness and Response from the view of the public concerned

2014, May 17 in Schengen, Luxembourg

The round table took place in a Youth Hostel in Schengen/Remerschen on May 17th 2014. The event was organised by the Greens of Fichtelgebirge and Greenpeace Luxemburg on behalf of Nuclear Transparency Watch Working Group on Emergency Preparedness and Response. The round table started at 9:00 and finished at 17:30. Moderation was carried out by Ms Brigitte Artmann (Greens Fichtelgebirge) and Mr Roger Spautz (Greenpeace Luxemburg). Translation from German to English and from English to German was provided by Ms Patricia Lorenz (Friends of the Earth Austria)

List of participants:

- Roger Spautz, Greenpeace Luxemburg, NTW, nuclear expert
- Brigitte Artmann, Councillor for fire brigades & emergency preparedness, German member of NTW
- Phil Kearney Irish member of NTW, expert for questions about the Aarhus Convention
- Gilles Heriard Dubreuil, French member of the board of NTW
- Andrej Klemenc, REC/NTW member from Slovenia, minutes
- Dieter Majer, Ministerialdirigent a.D., former Technical Head of the German Nuclear Safety Office, EU stress-test expert for Saarland, Rheinland-Pfalz and Luxembourg
- Patrick Majerus, Nuclear Safety Office Luxembourg
- Dr. Werner Neumann BUND Germany, nuclear energy expert
- Ute Schlumpberger Saar, Chair Cattenom Non Merci, former councilor city of Perl - Cattenom
- Karl-Wilhelm Koch Rheinland-Pfalz, co-chair Cattenom Non Merci, councilor Vulkaneifel- Cattenom
- Antiatomnetz Trier Gabi Sarik - Cattenom
- Mayor Henri Kox Remich, Luxembourg- Cattenom
- Stephanie Nabinger MP Rheinland-Pfalz - Cattenom
- Anti-Atom-Aachen Walter Schumacher - NPP Tihange/Belgium
- Helmut Wesolek Greenpeace Kronach - NPP Fessenheim/France
- Wolfgang Mueller, councilor Bad Steben - NPP Grafenrheinfeld/Germany
- Patricia Lorenz, Friends of the Earth Austria
- Dan Michels, Greens Luxemburg
- Albert Artmann, Greens Germany
- Thomas Hecht, Greens Germany
- Martina Haase, West Castor, Aachen
- Heidi Schmitt, Cattenom Non Merci, Saarbruecken
- Interior Ministry ADD from Rheinland-Pfalz – written statement
- Interior Ministry Saarland – written statement
- Interior Ministry Lorraine - refused

- Different int. officers for emergency preparedness, fire brigades, technical and medical rescue teams, police, army, members of civil society (farmers) were interviewed by some of the participants.

Part I: Nuclear »Emergency Preparedness & Response« – Anything learned from Fukushima?

The introduction to the event was carried out by **Mr. R Spautz** who first **welcomed all participants** and afterwards **presented in brief the history of NPP Cattenom** from perspectives of decision making, public opposition and protests, construction, operation and its record of 750 incidents after start of its operation in October of 1986.

Why an Aarhus Round Table on EP&R?

Mrs Artmann briefly presented herself as a German founding member NTW, a district councillor of Wunsiedel, a councillor of the city Marktredwitz and the speaker of the fire brigade & emergency preparedness in her hometown. She pointed out that in spite of more than 60 years from the start of the commercial use of nuclear power **no public debate on EP&R has been organised neither by the nuclear industry nor by the public authorities** even after disasters in Chernobyl and Fukushima. Both the probability of a nuclear disaster and its consequences will go far beyond general expectations and assumptions. In 2012 the German *Federal Office for Radiation Protection (BfS)* concluded in a study **that a severe nuclear accident can have much wider ranging consequences than previously officially supposed** and that **the civil protection is not prepared at all**. Therefore it is necessary for local authorities, fire brigades, rescue teams and civil society to request on the basis of Aarhus Convention all necessary information from NPP operators and regulatory bodies and organise local round tables on EP&R to take as much as possible unexpected local problems into account **before** the emergency case. Mrs. Artmann made a critical statement on the interior ministry of Lorraine which refused to take part on the round table and also to CLI Cattenom which ignored the invitation. German federal states of Saarland and Rheinland-Pfalz were not allowed to take part in the round table because of local end European elections, but participated in written form. She also criticised lack of any cooperation between France and Germany on EP&R issues. At the end of her presentation she called for **more EP&R round tables throughout Europe** and showed flexRisk cards in case of a meltdown in NPPs Cattenom, Tihange, Grafenrheinfeld and Philippsburg that indicate that in case of a major nuclear accident in Europe most of the European territory will be contaminated to a level where one can without exaggeration speak about “the end of Europe”.

The Aarhus Convention and the case of Hinkley Point C

After short presentation of himself **Mr. Phil Kearney** recalled the rationale, the importance, the basic principles and the basic design of **Aarhus Convention** and its 3 pillars: 1. **Right to Know** – access to information; 2. **Right to Participate** in decision-making when options are still open; 3. **The Right to Access to (environmental) Justice**. He specifically recalled **Article 5** (collection and dissemination of

information), **Article 6** (participation in projects), Articles 6&7 (other areas: policies, plans, programmes, legislation) and **Annex 1** (specific activities including NPP and other reactors, reprocessing plants, installations designed for: the production or enrichment of nuclear fuel; the processing of irradiated nuclear fuel or high level radioactive waste, the final disposal of irradiated nuclear fuel; solely for the final disposal of radioactive waste; solely for the storage - planned for more than 10 years – of irradiated nuclear fuels or radioactive waste in a different site than the production site).

Within the second part of his presentation Mr. Kearney presented the recent **case where an Irish NGO (An Taisce) has legally challenged the decision of UK government to proceed with construction of a new nuclear power reactor at Hinkley Point (Hinkley Point C)** in front of the UK courts based on the argument of a lack of trans-boundary public participation. The court first rejected the case. For An Taisce the Irish NGO the costs of an appeal would be too high, yet the **Implementation Committee of Espoo Convention intervened** by claiming that in this manner the Convention has been violated. Following the intervention in question the UK judge decided that the appeal can go on and capped the costs of the appeal to 10.000 British pounds. If the appeal is successful this might set an important precedent regarding trans-boundary public participation on nuclear issues.

Mr. Dieter Majer raised a question on a **type of the reactor planned for Hinkley Point C** unit and Mr. Kearney explained that the AREVA designed **European Pressurised Reactor** is contracted.

Introduction about Nuclear Transparency Watch EP&R

Gilles Heriard Dubreuil presented himself as an advisor for ANCLII, the federation of Local Commissions of Information in France (there is such a commission attached to each NPP in France, according to the French law) and as the secretary of the newly formed Nuclear Transparency Watch network (NTW). NTW has been created in order to support the implementation of the Aarhus Convention in the Europe in the nuclear sector. He underlined the fact that the “Aarhus Convention” constitutes a very good framework for public engagement for it is grounding the need for public participation as a way to improve effectively decisions impacting environment and health (avoiding therefore ambiguities on the purpose of public participation). The creation of NTW is partly an outcome of the Aarhus Convention & Nuclear process that took place from 2008 to 2013 to (an initiative taken by ANCCLI and DG ENER). By its mission NTW is neither “anti” nor “pro” nuclear. It is aiming a creating societal vigilance on nuclear safety issues. It will support societal investigations at national and EU levels on relevant questions regarding nuclear safety as well as environment and health protection in the context of nuclear activities. It is aiming to provide support to public access to information, to ensure transparency and to provide necessary non-partisan expertise to civil initiatives on different nuclear issues like storage of spent fuel and other nuclear wastes, reactor safety, ageing/life-time extension of reactors and Emergency Preparedness & Response in case of a nuclear accident. The creation of NTW will also promote better coordination and structuration of Civil Society Organisations at EU level, striving for more transparency in nuclear issues in Europe, for expertise in support of civil society demands for better safety of nuclear facilities, for more and better cooperation between “civil society expertise” and experts working for public authorities and academic research on nuclear issues, promoting the development of a culture of participation through the organisation of round tables gathering the different nuclear stakeholders in the perspective of the Aarhus Convention. The contrasted European landscape regarding the future of

nuclear energy reinforces the need for more vigilance, transparency and participation of civil society. The ageing of nuclear structures in Europe is also a strong reason for increasing social vigilance on nuclear risks. The post Fukushima European stress tests did not take into account offsite provisions in case of a radiological emergency. The civil society organisations have voiced their concerns about the need to address this question and the European Commission has now decided to take it on board. For this reason the NTW Working Group on Emergency Preparedness & Response (EP&R) has been created and will propose at least some adequate recommendations to improve the state of the art of EP&R provisions in Europe based on experiences gained from Fukushima disaster and new paradigm of management of catastrophic events characterised by high risks for rescuers, large amount of exposed and affected people, long lasting health and environmental risks and diversity of information and advisory sources for victims. NTW WG EP&R will not only check if these provisions are in place and if they are adequate but will also focus on how provisions work in practice and what alternatives should be provided next to established EP&R scenarios. **Dieter Majer** pointed out that light water reactors are by design not safe so it does not make sense to improve their safety but to shut them down. The only improvement can be achieved by quality management of NPPs

Gilles Heriard Dubreuil replied that NTW approach is not limited to improvement of safety of existing reactors but also on new concept of nuclear safety and new concepts of nuclear reactors. On the other side increased safety requirements and demands are putting pressure for shutting down nuclear reactors yet this is a sword with two blades and the negative aspects of shutting down NPPs are also inadequate structures for safe management of existing NPP even after they are shut down.

In the opinion of **Brigitte Artmann** one should require from nuclear industry that it calculates and internalises all costs related to EP&R activities in the price of electricity from nuclear power plants.

Martina Haase asked if NTW strategy is to burden the price of electricity from NPP with internalisation of external costs to a level that would lead to shut down of the NPPs.

Phill Kearney clarified that the primary tasks of NTW is to put pressure for more transparency and better safety of nuclear industry and not directly to increased costs of operation of NPPs – the later might be however the consequence of more transparency.

Helmut Wesoleck agreed with focus on increased safety and more participation but on the other side one should not neglect specific high risks of certain NPP that can be only avoided by shutting down those NPP.

Wolfgang Mueller stated that 100% safety of NPP cannot be reached regardless to improvements yet a single major accident would caused damage that is beyond risk insurance liability of any insurance company.

Nuclear Transparency Watch – The ENCO Study and EP&R questionnaire

Mr. Andrej Klemenc informed the audience on the important achievement of NTW – upon a request of NTW EC DG Energy in early May 2014 agreed to provide full access to the study “**Review of current off-site nuclear emergency preparedness and response arrangements in EU member states and neighbouring countries**” that was commissioned in 2013. Mr. Klemenc presented in brief the

objectives and the recommendations of the study. He pointed out that the study clearly acknowledges its top level desk office work character and a large number of gaps and inconsistencies in the field, at very first a **general lack of strategies and arrangements for long term protective measures and return to normality following an emergency** and **coherence in cross border arrangements**. According to Mr Klemenc the study has also identified numerous opportunities for improvements of EP&R provisions and more efficient and effective EP&R management. NTW Working Group on EP&R will not only critically review the study but is intending to put an emphasis at its weakest point - lack of assessment of how – if at all – identified EP&R procedures and provisions would be implemented in practice . NTW WG EP&R after it inception seminar in Paris designed a questionnaire as a tool for its members to check out the reality of EP&R measures on the spot. At the end of his presentation Mr. Klemenc presented in brief this questionnaire.

Following the presentation of Mr. Klemenc **Mr. Heriard Dubreuil** made a comment on the inadequacy of the paradigm the ENCO study that is based on the presumption of centrally planned top down activities coordinated by a fully informed central office that is trusted both by implementation agents and by victims that are not seen as agents that are willing and capable to search for their own information sources, trustful advices and individual opportunities to improve their own situation and the situation of their dear ones (including pets). The accident in Fukushima provided the evidence that one needs to go beyond the paradigm of rational, centralised top down emergency plans and rather accept the paradigm of decentralised and contextual-rational management of chaos that will inevitably follow any major accident at any NPP.

Mr. Schumacher raised a question if activities to improve EP&R would have any impact on shutting NPP down and Mr. Klemenc replied that there might be an impact however this is not an objective of NTW as such.

Extension of lifetime and the risks of serious accidents at NPPs

Mr. Roger Spautz informed the participants on ongoing activities of the nuclear power plant operators to expand the life-span of 46 NPPs in Europe and the impacts of this according to the Greenpeace study on nuclear reactor ageing issued in early 2014. Cattenom is one of these NPPs: its life-time is planned to be extended for additional 20 years (to 60 years of operation). Mr. Spautz further on addressed different types of risks resulting from physical ageing of the materials exposed to high pressure, temperatures and irradiation, conceptual and technological ageing resulting from the fact that new knowledge cannot be easily practically implemented for technology and management designs based on outdated knowledge from 1970s when the majority of the reactors and the equipment were designed. He further mentioned problems of ageing of know-how, organisation and personnel; adaptation of personal qualifications to changed security requests; adaptation of personnel and organisation on changed frame conditions (political, policies, legal, ownership, electricity market etc.) and losses of know-how. Ageing cannot be avoided and can be managed only by considerable effort deployed, yet the later demand more resources which is however not in accordance with the pressures from energy markets. In addition it is more likely that because of ageing a disruptive event will cause additional problems and risks related to elimination of the disruption. Mr. Spautz also pointed out that a Fukushima like event in Europe would have influenced significantly larger population despite the fact that Europe is less densely populated than Japan since most of the radioactive pollution in Fukushima affected the open sea (Pacific Ocean). As

a consequence emergency zones needs to be significantly enlarged, which would however lead to higher evacuation times (up to 50 hours and more).

At the end of his presentation Mr. Spautz pointed out safety risks of NPP Cattenom: inadequate reserve systems of emergency cooling of the reactor vessel, inadequate capacities for storage of the overheated water in case of melt down of the reactors, inadequate protection of the containment against collision of fast combat airplanes or transport airplanes above 5,7 tonnes of weight.

Mr. Heriard Dubreuil informed the participants on the workshop on ageing of nuclear reactors organized by NTW in the European Parliament in March 2014. The issue is overlapping with EP&R activities, at very first regarding evacuation plans. In France one of NPPs that are planned to extend life span is also NPP Gravelines that is however situated nearby large summer holiday resorts. It is beyond imagination to evacuate 3 million people that are concentrated in the vicinity of the NPP during the period of summer vacation. He also addressed the dilemma whether it is better to support construction of generation 3 of nuclear reactors - that are believed to be considerably safer than generation 1 and are expected to need no evacuation plans- or to accept life-time extension and modernisation of some reactors as an opt-out alternative for getting out of nuclear age in generation of electric power in Europe.

Critical Expert View on NPP Cattenom

Mr Dieter Majer presented his view on the security of NPP from a perspective of his 30 years of experience in nuclear oversights in Germany on national level and level of federal states and as an expert that has been engaged in the stress test of Cattenom NPP after Fukushima disaster and has been in frequent contact with NPP Cattenom operators and French nuclear regulatory authorities. He pointed out the fact that NPPs are dangerous in principle and cannot be simply shut down when it comes to an incident - the heat released in nuclear reaction can in case of inadequate cooling lead to a melt down of the reactor and consequently to uncontrolled release of highly radioactive substances into environment. A NPP is in the last instance only safe to a degree of its capacities to transport heat produced in uncontrolled nuclear reaction out from reactor in a controlled way that is preventing radioactive contamination of the environment. From this aspect NPP Cattenom suffers from several deficiencies.

He emphasised that many relevant system-technical aspects and characteristic of a NPP (cooling possibilities, quality of system components, human errors, and safety culture of the operators) are influenced by legal, economy and administrative parameters and not solely by technical safety reasoning. He presented the concept of EU stress test by analogy with testing of a performances of a private car – stress tests has not addressed if »lights, steering mechanisms and brakes are OK but only if air bags and security belts are OK«. Therefore stress test of Cattenom has not taken into consideration if about 50 irregular recent events have had an impact on the safe operation of the NPP but only if level 4 measures – which means measures to minimise the damage from nuclear disaster - are adequate. However even at that level of testing NPP Cattenom has shown considerable deficiencies that according to the plan will be first eliminated in 2018, however most probably it will take about 10 years.

Cattenom is one of the largest NPP in Europe and is situated in one of the most populated areas on the continent, yet it has considerable deficiencies from safety perspective: it is not designed according to the international earthquake protection standards and has no safety strategy in case it

would be at the same time challenged by earthquake, floods or/and fire. It is not sufficiently equipped to manage extreme weather events: cold, drought, heat waves, floods. The cooling system relies only on 2 and not on – as it should be the case - 4 systems. Adequate supply with electric power in case of grid dysfunction is under question. The options for hydrogen recombination are not sufficient. The secondary containments could not sustain maximal potential pressure. Spent fuel might be affected by fire and is not protected by containment. In case of a severe accident the emergency control room might be severely damaged and consequently out of use. There are no plans and procedures what to do if an event would hamper 3 or 4 units. Mobile security and rescue equipment is not stored on proper locations and might be damaged in case of an accident in one of the reactors. Collision of a larger aircraft might destroy buildings that are vital for operation of reactors etc. Mr Majer summarised that according to his information and his knowledge due to the deficiencies in design, equipment and management NPP Cattenom cannot be operated in a manner that assure requested safety levels and should be shut down until the major safety deficiencies are eliminated.

Mr Karl Wilhelm Koch asked what is actually the problem with cooling of the reactors in NPP Cattenom in case of a severe accident.

Mr Majer explained that the problem is that NPP Cattenom has only two pipeline systems for cooling the reactors in extreme events when nuclear reaction cannot be controlled anymore, yet for an adequate safety level it should have four. In addition it has only one pipeline for channelling surplus heat into Mosel river and nearby lake that serve as »heat sinks«. In case of floods or a strong earthquake the one or the other or both sinks would not be available therefore new investigations are done on how to channel the surplus heat to underground water.

Mr Werner Neumann rose a question on how independent the French regulatory authority ASN is, and if it has a mandate to stop the operation of NPP or it can only demand safety improvements?

Mr Majer explained that on statutory level ASN is an independent body that has four independent commissioners. From his experience as a long year president of German-French nuclear safety commission he has observed that the attitude of ASN toward nuclear safety has after Fukushima considerably improved yet it is still not on the level as it should be.

Mr Heriard Dubreuil asked Mr Majer if he has ever presented or have been in a position to present his findings on safety of NPP Cattenom to the CLI Cattenom.

Mr Majer explained that has not been in a direct contact with CLI but only through events organised by French authorities where also CLI Cattenom has taken part and where his report has been delivered to all participants.

Ms Martina Haase was curious whether stress tests have been made also for other NPP in France.

Mr Majer explained that in person he has been only involved in stress test of Cattenom and partially also in stress test of NPP Fessenheim, however after Fukushima all French and other NPP in Europe have been stress tested according to the request of European Commission.

Mr David Michels recalled crash of a combat airplane nearby NPP Cattenom and asked what danger presents collision of an airplane for NPP Cattenom

Mr Majer replied that as an officially engaged investigator on the issue he cannot provide a direct answer however in Germany only 3 NPP would withstand collision of combat aircraft of type of Eurofighter without severe damage. However they would not withstand collision with heavy passenger of transport airplanes which is also the case for NPP in France.

Identification of gaps/difficulties in EP&R

Patrick Majerus, the director of the *Department of Radiation Protection of Luxemburg* first presented specific **challenges of EP&R in Luxemburg as a small country with large share of commuters** (50% of employees) **and of foreign population** (44 % of inhabitants) that consists from 170 nationalities. In the distance of 250 km they are 10 NPP in operation while in the distance up to 70 km they are three of which the largest and the closest is NPP Cattenom that is situated only 8 km from the border. Large share and diversity of foreign population and the fact that every second employee is commuting from the one or the other neighbouring country presents together with the fact that in case of emergency **5 decision makers** (Lux, Be, Fr, Saarland, Rheninland Pfalz) will be involved **very complex environment for EP&R decision making in Luxemburg**. The good thing however is that based on a special agreement, the *Department of Radiation Protection of Luxemburg* would be immediately and directly informed in case of an accident in NPP Cattenom, which is rather an exception in cross-border EP&R management. Yet the additional problem is that each accident is specific and there are therefore **no readymade recipes how to act**. In case of an accident one should take in consideration: uncertainties related to the reactor (type, design), quality and quantity of (potential) releases; time to release of nucleotides, weather situation/forecasts and appropriateness of a protective measure. Mr Majerus emphasised that **no »one size fits all« solutions** and provided an example of a crash of a large airplane that would not destroy everything – some systems might be still working, the others not would depend on where and how exactly would airplane crash and what is the design of the reactor and containment. The biggest challenges are **special accidents where no automatic procedures can be implemented**. Further on Mr Majerus listed **core preparedness elements in Luxemburg** (iodine prophylaxis, sheltering, evacuation) and emphasised that **preparedness is not response** therefore even well prepared measures could be poorly or wrongly implemented or no implemented at all. After Fukushima Luxemburg prepared a new emergency plan which is currently under approval.

Ms Haase referred to her experience with traffic chaos before and after football matches in Germany. Therefore one can in case of evacuation expect total **chaos on the roads**, at least in Germany.

Mr Majerus emphasised **the problem of the different communication and administrative cultures of the authorities** in different countries. The absence of harmonization between countries is an obstacle for effective and efficient EP&R. In case of an accident with cross border impact the differences in preparedness will lead to decisions for protective actions that vary widely between countries: a) different areas concerned; b) different timescales for execution, c) different groups targeted (e.g. children) and d) different operational measures. Mr Majerus also **addressed the issue of language skills** of the authorities since in case of emergency one cannot afford the luxury of consecutive translation. Key Emergency Officers in all countries should all have been trained to speak English perfectly in order to make adequate decisions in fast way based on the information they

would receive in English from authorities in other countries. In a state of emergency one also needs to balance a need of rapid dissemination of information to the public against the need to issue limited number of short and coherent messages understandable to the lay people.

Strategies of emergency precaution – position of the largest German environmental NGO

Dr. Werner Neumann - member of the *Scientific Board FoE Germany (BUND)* - *Speaker of Energy Working Group* and *Member of BUND Nuclear Power and Radiation Protection Commission* and from 1990 till 2013 the *Director of Municipal Energy Agency of the City of Frankfurt am Main*, presented position of the largest German environmental NGO on strategies of emergency preparedness. He reminded the audience that according to the study carried out by the Max Planck institute the probability for a meltdown of a reactor in NPP is 200 higher as it was estimated during construction boom in USA in early 1970ies. He emphasised that Germany is not prepared to undertake adequate emergency measures in case of a major disaster in NPP in Europe: iodine pills are stored in central storage, medical staff is not adequately trained including knowledge how to treat radiated patients, the number of beds in hospitals is not sufficient, emergency zones are too small, the threshold value for radiation of 100 mSv is too high etc. Further on Mr Neumann elaborated arguments for crush of the paradigm of risk probability and control in case of huge accidents that - like those in Chernobyl and Fukushima- has different reasons then predicted. Risks of rare and huge cases had different reasons that predicted therefore they cannot be treated by probability methods – it's not throwing dices. Probability of nuclear emergency cases cannot be calculated by „probabilistic“ methods that do not take into account technical consequences, emergency treatment and follow up. This definition of risk does not provide precaution yet since on the other side »impossible can happen« (Chernobyl, Fukushima) emergency plans based on neglecting additional risks are underestimating the full scope of a potential catastrophe. Now this additional risks (including risks of terrorist attacks or crash of an airplane of the size of Airbus 380 that has not been considered by any of E&R plans in Germany) needs to be calculated in (which was also acknowledged by the decision of „OVG Schleswig« Court). There is everywhere a fully insufficient emergency preparedness – and as a consequence nuclear reactors need to be stopped. BUND made scenario for phasing out nuclear energy in Germany till the end of September 2017 which is 5 year ahead of the official phasing out. Afterwards the EP&R should focus on spent fuel (fuel rods) storage, at very first on intermediate storage at NPPs. At the end of this presentation of Mr. Neumann raised the issue who takes the costs of risk and emergency preparedness. In Germany neither the government (the official tax authorities) nor the Parliament can exercise effective control over the reserves of nuclear industry dedicated to emergency and waste management/storage. If those reserves are too low then there will not be enough money for emergency task and waste management. If they are too high, the companies avoid paying taxes. For these reasons BUND proposed a national public fund for these reserves, for financing emergency preparedness and emergency actions (when needed), decommissioning of NPP and nuclear waste storage. Last but not least one should not forget that also liability insurance must be taken into account, however liability payments in case of nuclear catastrophes are limited because the costs of big catastrophes cannot be paid by the companies. Even the costs of retrofitting of NPP according to requirements from »stress

tests« are so high (25 billion €) that the industry hesitates to accept them. Therefore most of the recommendations for improvements will not be realised.

Mr Spautz explained that France transferred in 1986 1,2 mio € to Luxemburg for nuclear emergency preparedness.

Mr Schumacher: Are FoE Germany asking for a public national fund for decommissioning? If money will be transferred there then also the responsibility for EP&R will be transferred from NPP owners/operators to a public fund?

Mr Neumann: According to the German law, companies should have reserves but they also exercise control over this reserves, thus nobody actually knows if this money is there. BUND argues this money should be put in public fund otherwise it might be lost in case of bankruptcy or invested in coal power etc.

PART II: Cattenom - The public concerned - identification of relevant local emergency problems

Ms Ute Schlumpberger Saar the Chair of »Cattenom Non Merci« initiative sharply criticised the content and the wording of evacuation plan for Cattenom and EP&R trainings that are made behind the close doors. The plan is prepared only for short time evacuation and for a district of 125.000 inhabitants whereas people living outside 30 km zone are completely ignored. The marginal level of measured radioactivity that would demand evacuation is not precisely defined. Measurement of radiation in abandoned houses/apartments before the evacuated people will move back is not envisaged. According to the plan, evacuation should first happen after activities of police, civil rescuers, fire brigade and others will be coordinated. Those people who do not have cars will be left behind and first evacuated after the authorities will find who evacuated by private car and who was left behind. Before evacuation people should stay in shelters yet the plan is not defining the time frame for sheltering. The plan is based on presumption that all people in the emergency zone will patiently wait in their shelters and, after receiving information to evacuate, will go in their cars and in a disciplined manner drive to a given location without considering to make a detour in order to pick up their dear ones or stay at home since they would not be willing to left behind their pets. The plan is not taking into consideration eventual maintenance or reconstruction works on the road, too. Based on experiences with human behaviour in catastrophes one can expect that this kind of approach would in practice fail and result in a total chaos where everybody will try to save himself and his dearest according to his/hers best idea how to do it in a given moment.

Mr Karl Wilhelm Koch from Cattenom NON MERCI initiative referred to requests of the organisation of German physicians that are critical to nuclear energy to set – like in Japan – a value of annual doses of 20 µSv as the margin for resettlement of the areas exposed to radiation instead of current value of 50 µSv yet even this value is considered by many expert as too high. He recalled the fact that the main cause of the disaster in Fukushima was not the tsunami but the earthquake

that provoked breaking of the pipelines for cooling the reactors and spend fuel repository. Daiichi NPP in Fukushima was constructed to withstand earthquake of 8.3 magnitude yet it was exposed on March 11 2011 to an earthquake of 9.0. magnitude. NPP Cattenom is planned to withstand earthquakes of a magnitude 5.4 however in the region one can expect even magnitude of 6,0 or more. Taking into account the type, the number and the size of the reactors in Cattenom as well as the weather conditions one should conclude that 25 km emergency zone is by far too small. In case of emergency announcement the first effect that one can realistically expect is a break down of the network of cellular phones. Some areas might also stay without electricity supply. Parents would rush to schools and kindergartens to pick up their children yet their children might be sheltered in some other building. If the same amount of radioactive materials as it was washed from Fukushima to the Pacific ocean (400 tons) would be washed to the Mosel river, the whole Mosel valley downstreams would have to remain unpopulated for centuries..

Henry Kox, the mayor of Remerchen, member of the Parliament and spokesman of the Greens on energy noted that today the majority of the population in Luxemburg is against nuclear energy. After Fukushima, 98 out of 106 mayors in Luxemburg signed a petition against NPP. The petition also influenced the government to send a »diplomacy mission« in France in order to improve transparency of operation of nearby French NPP. Political pressure will continue in 2 weeks by a visit of Greenpeace ship with 3 environmental ministers on board on mission to replace nuclear energy with green energy. As mayor of Remerchen, Mr Kox is doing his best to put pressure on NPP Cattenom for better information and is looking forward to further cooperate with NTW in order to strengthen requests on transparency and improvement of EP&R toward NPP operators and relevant authorities. Remerchen is not within evacuation zone therefore he is not directly involved or informed on EP&R measures and plans. However the municipality has requested more information and clear structure of decision making in case of nuclear accident from the ministry. The municipality has signed a »Climate Pact« and is doing its best to promote and support energy efficiency and use of renewable energy on its territory.

Stephanie Nabinger, member of the Parliament of Rheinland Pfalz warned from the false training of multipliers that should be active in case of nuclear emergency. She also recalled that EDF should be liable for 400 billion € compensation of damages in case of a catastrophic event, yet its liability is limited to 95 millions €. In her opinion the only effective protection measure is to shut down NPP Cattenom.

Walter Schumacher from Aachen reported about cracks in the reactor pressure vessels of Tihange 2 and Doel 3. Until 2012 the two reactors were "normal reactors". In August 2012 there was the „shut-down" and the finding of the cracks. Doel 3 and Tihange 2 became "special"-NPPs. The struggle around these cracks began and without any doubt there was the support of Brigitte Artmann and her "international connection". (Remark: Meant is the expert welding meeting in the district office of Wunsiedel in October 2012 about the Temelin welding 1-4-5, file 15/2001/SUJB). In June 2013 the "special-NPPs" went online again and the struggle is continuing. In January 2014 the Aachen-conference took place, in March 2014 there was the latest shut-down. In May 2014 the "Aachen Report" was published and the FANC-visit took place in Belgium. Then the Belgian nuclear safety office FANC itself discovered 8707 findings in Doel 3 and 2030 findings in Tihange 2 with unknown characteristic like flakes, bubbles or cracks and with unknown origin, with up to 24 mm in size (average size 10 mm), concentrated in specific areas e.g. upper core shell in Doel 3, radial directed,

flaws are rounded in shape, were described as cornflakes, found between 20 to 100 mm (from the inner to the outer site). Mr. Schumacher said, the NPP is down - but it is not dead! Electrabel has not given up - they still make test to “proof” the safety and therefore, there is still a job to be done. “Bald strahlen wir” on the 8th of June is their “Manifestation & Party” .

Helmut Wesolek was with Greenpeace inside of NPP Fessenheim. He made clear that any ambitious person will be able to enter a NPP. It was not the intention of Greenpeace to review this but France is communicating it as end in itself. By doing this the responsible politicians turn away from the real problem. The biggest safety risk is the operation itself, in particular the aging of plants and extension of lifetime. Additionally are the risks of terror attacks and war and their apocalyptic consequences. Drones are available, also the in Bosnian war by NATO used graphite dust bombs, a plane crash with an A 380 or the Russian bunker breaking weapon AT 14 Spriggan, version 9M133 M-2 would be disastrous. This weapon weighs only 25 kilo, can be used by one single man only and can be fired fourth time. The target can be in a distance of 8 km and under a distance of 3.5 km the optical sighting device can be operated. The penetrating power for a single one of these missiles is stated with 1100 to 1300 mm armored steel. From this weapons system there are in Syria 100 launchers and 1,000 missiles. For Russia the numbers from 2009 are: 950 complete systems. Many countries in the Middle East, also globally, do have very uncertain and difficult to assess power structures and governments, some of them have such weapon systems. It is to be expected that there are at least older ones on the secondary market to the equivalent of a few cartons of cigarettes. The Fukushima disaster has shown that "spent fuel" can have a significant radiation potential and still often is far less protected than the reactor itself. Such trapezoidal sheet halls as in Fessenheim, at least in the upper half, have virtually no protection against terrorist attacks from the outside. A risk for Fessenheim is the Rhine channel embankment next to the nuclear plant. A large tonnage vessel placed at the dike would be able to set the whole site under water with possible consequences, as we have seen in Fukushima. A significant threat by Cyber Attacks like Stuxnet is also possible. Further operation - especially the old plant - is irresponsible.

Question of **Dieter Majer**, whether there is anything known about interim storages at NPPs and their protection against terror attacks.

Answer: Greenpeace has tried to get an approval for a visit in Gorleben because of the potentially exceeded radiation limits. The approval was first promised, but then was not granted because there were changes made in the Castor containers. The reason is that one is imagining new perpetrator profiles and adapted devices: these modifications refer to scenarii of an attack with special weapons. The catalog of measures cannot be seen, so that no one can make himself a picture of the adopted measures and their effectiveness. Also at the German nuclear power plant sites since 2011 there are plans and ongoing work concerning "new perpetrator profiles and adapted devices". No one can get information about the nature and progress of the work.

Wolfgang Mueller, councilor in Bad Steben, Germany, gave a view onto the situation in the far zone (10 km) of the round table participating nuclear power plant Grafenrheinfeld. He interviewed “at the base” authorities, Red Cross workers, hospital workers, police and army officers. The authorities are relying on the help of thousands of volunteers and there are no shelters. The Red Cross workers saw

problems if more than one hospital would have to be evacuated, because of the lack of volunteers and of the lack of not contaminated hospitals. He did not know where to shelter the public, where to get iodine tablets and supposed “the best would be to stay at the cellar”. A doctor added: We are not prepared at all. The police officers knew that there are no special training for nuclear emergency preparedness “we will be the first liquidators” was his fear. He did not know where iodine tablets would be available. An army officer told him, the army has squads for nuclear emergency but not for the public (because of the German Law). About iodine tablets he knew nothing. A nurse from a hospital knew that “by emergency case we shall go into the cellar”. What will happen to the patients she did not know. She had no nuclear emergency training, no information about iodine tablets. According to a fire fighter and active member from technical help brigade, the fire brigades cannot help and the local technical help brigade is only trained to help by flooding. A teacher knew nothing about nuclear emergency preparedness and what to do with the pupils. Mr. Mueller wondered what would happen to the animals on farms, animal shelters and agriculture industry. And what would happen with the persons in prisons, in schools for disabled children, with disabled persons at home or in common homes.

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