Fukushima Lessons and Challenges in the Czech Republic

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13th IRPA, Glasgow, May 18, 2012

Greetings from Dana Drábová

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The Czech Republic

- small country in the centre of Europe
- app. 10 million inhabitants
- one independent regulatory authority - the State Office for Nuclear Safety responsible for nuclear safety, radiation protection and control of non-proliferation of chemical, biological and nuclear weapons
- 2 NPPs (Dukovany, Temelín), 6units, currently in the preparatory stage for new build of 2 units in NPP Temelín

Context

- Fukushima is a severe accident nevertheless there will be before and after Fukushima
- Despite precautions taken, an accident can never be completely ruled out.
- Complete experience feedback will take time, probably a decade(s)

Overview of first responses to the Fukushima accident in the Czech Republic

- March 11,2011 - information via national contact point operated by Ministry of Interior (Integrated Rescue System) to Emergency Contact Point of SUJB, activation of SUJB emergency team (on alert 24/7)
- Communication with Ministry of Foreign Affaires and Embassy – estimation of some hundreds Czech citizens in Japan,
- Intensive communication with media, citizens, embassy in Japan, recommendations to Czech citizens living in Japan and travelling to and from Japan,
- Control of food and goods imported from Japan,
- Preparation of explanatory and educative documents describing an accident, countermeasures, radiation protection principles, health effects, etc…

Overview of first responses to the Fukushima accident in the Czech Republic

Iodine profylaxis

Addressed intensively as a specific problem, due to media incorrect information the citizens understood that stable iodine is a kind of general protection against ionizing radiation and they requested immediate distribution.

The Czech Embassy in Tokyo was provided with iodine tablets, we didn't expect the necessity of administration of iodine tablets in Tokyo, but we recommended to follow the instructions of the local Japanese authorities, we had to take also into account that ambassadors of different countries in Tokyo shared information and recommendations given by their authorities

Overview of first responses to the Fukushima accident in the Czech Republic

Public and media communication

The intensive demand for interviews, statements, comments, explanations from the beginning of the event – SUJB faced a problem with limited number of staff able to communicate with media directly,

Daily observation and evaluation of situation in Japan, after some time it was necessary read a huge amount of documents, there was a team of evaluators established

Updated information were published daily on SUJB website

The most frequent questions were about health effects of ionizing radiation, explanation of quantities and units used in radiation protection, iodine profylaxis, actual radiation situation in CR and in Japan, conditions for travelling anywhere, contamination of food from Japan – measures, contamination of goods, etc…

Overview of first responses to the Fukushima accident in the Czech Republic

Environmental Monitoring

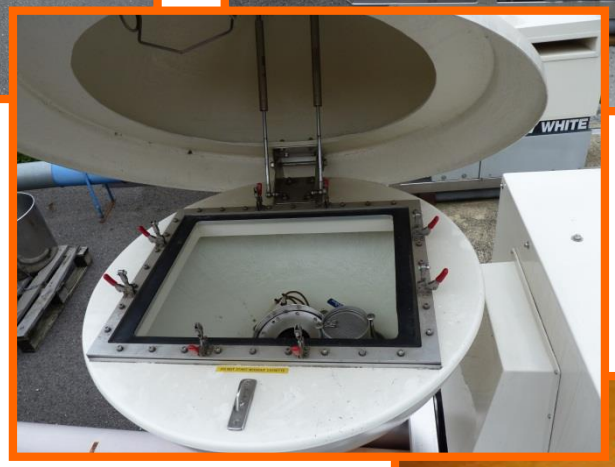
SUJB activated additionally to a continuous radiation monitoring some labs within the National Radiation Monitoring Network, it was not full activation because our country was not in emergency situation, data were available directly on website of the National Radiation Protection Institute (TSO) coordinating the evaluation and collection of results

Special attention was given to:

- Measurement of air filters (4 measurement point with daily period, 6 measurement point with 3 day period)
- Measurement of food of Japan origin

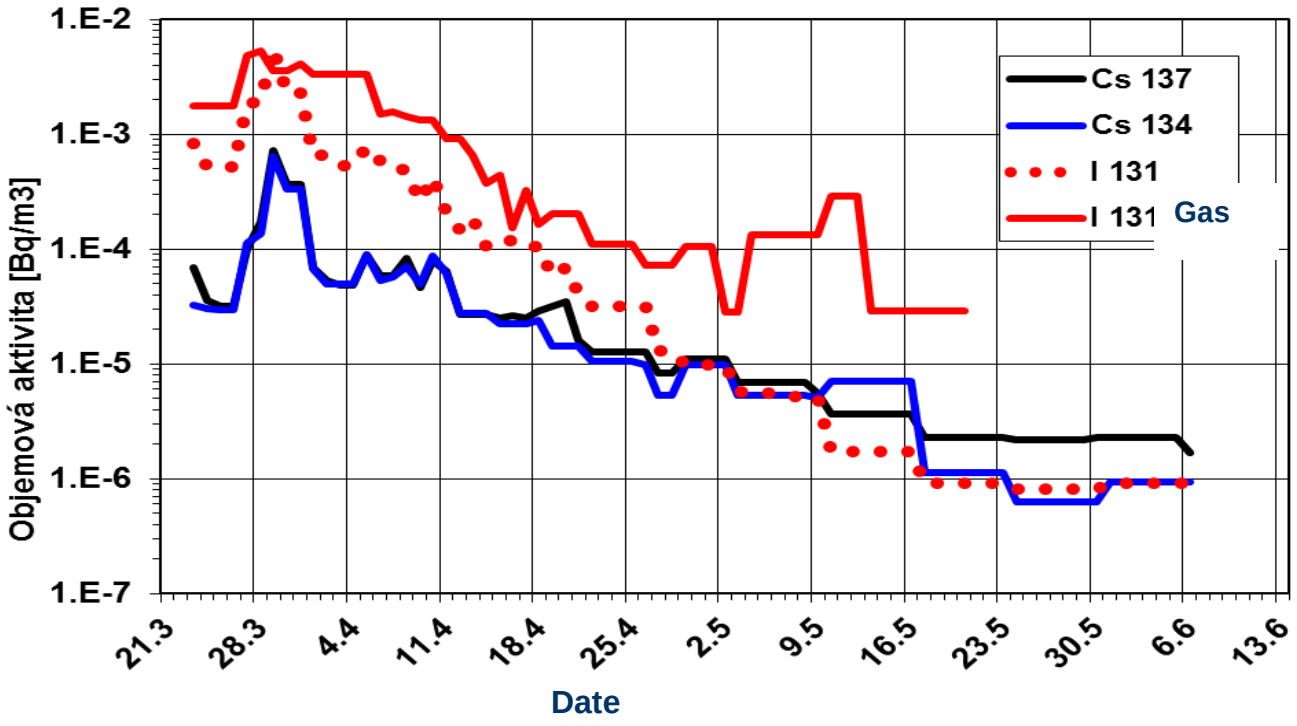
Sampling systems

Snow white
Hunter
Dwarf
Sierra Micso (KI)
Pirkko (fall-out)



SÚRO,v.v.i., Praha, www.suro.cz

Results


1.E-2
1.E-3
1.E-4
1.E-5
1.E-6
1.E-7
Objemová aktivita [Bq/m3]
21.3
28.3
4.4
11.4
18.4
25.4
2.5
9.5
16.5
23.5
30.5
6.6
13.6
Date
Cs 137
Cs 134
I 131
I 131 Gas

Overview of first responses to the Fukushima accident in the Czech Republic

Food Import

Monitoring of food and foodstuff imported from Japan was (and still is) based on EC regulations, and performed by the Czech Agriculture and Food Inspection Authority and State Veterinary Administration. There is only a small range of the food/foodstuff imported from Japan. Results of monitoring are continuously put on the web side http://www.szpi.gov.cz/en

Overview of first responses to the Fukushima accident in the Czech Republic

Cargo, imported goods surveillance

- SUJB didn't require a measurements of goods primarily,
- but there was a need to address growing public concern and pressure from manufacturers using components from Japan,
- recommendation to use a service of subjects/companies skilled with measurements of dose rate or surface activity ,
- in the case of finding any value exceeding normal background SUJB offered consultation (use of clearance values established or based on specific scenarios) – but there were not such cases found

STRESS TESTS
Actual results summary

- **No immediate actions required**

  Earthquake - Czech massive - no tectonic structures to cause strong earthquakes

  Flooding: from river – not possible,

  Resistance against extreme weather sufficient

  Loss of electrical power, loss of ultimate heat sink – critical cliff edge times identified

  Accident management – critical scenarios identified

- **Opportunities for robustness improvement identified**

  Close cooperation with VVER users group for harmonization of technical measures

  Some additional measures were added after evaluation by SUJB

STRESS TESTS
Severe Accident Management

- Measures to increase robustness:
  - delivery or storage of more coolant inside CTMT (ETE), in close cooperation with Group of VVER Technology Users
  - technical measures to increase robustness against severe accidents (in-vessel retention, core debris management), in close cooperation with Group of VVER Technology Users
  - additional recombiners installation to assure containment integrity during severe accidents (decided before Fukushima)
  - to increase staff capabilities and capacities to manage extreme plant accident conditions (all Units affected, loss of all emergency centres, loss of communication systems, decision-making for high-risk strategies, shifts turnovers in long term, ...).
  - completion of additional technological procedures to manage beyond design basis accidents,
  - extended training and drills for SA conditions

STRESS TESTS
International Co-operation

As a good example of an international effective co-operation could be presented an idea to build up a joint VVER technology users center for severe accident management – including NPPs Dukovany (CR), Bohunice a Mochovce (Slovak), Pakš (Hungary). Due to their proximity this common center could enable an effective investment to the mobile DGs, heavy machines and another equipment, which will not be with the highest probability used however will need a continuous maintenance to ensure a permanent preparedness.

Fukushima Lessons

- **Emergency preparedness**

- review emergency plans in the light of extensive infrastructural damage with long repair time
- reassess strategies for the protection of the population during accident of prolonged duration
- address and include in emergency plans a distant emergency situation
- focus on an identified weaknesses in communication between relevant governmental bodies involved in emergency preparedness
- maintain technical and expert support, equipment, and radiation monitoring permanently at high level
- consider a harmonisation of source terms determination - credible scenarios – corresponding source term – anticipated release of radioactive effluents

Fukushima Lessons

- **Public and media communication –**

- educate and train enough staff of regulatory body and TSO for intensive and direct communication with media including TV and live broadcast,
- keep a close and active contact with media with the aim to educate them in radiation protection and risk perception in a general sense,
- continue to organize seminars, briefing sessions
- update continuously the information on the website
- publish, comment and explain consistently any event related to nuclear and radiation safety

Fukushima Lessons

- **Public and media communication**

- prepare an explanatory and educative documents explaining basic principles of radiation protection fully understandable for non-professional public
- discuss with educational experts how to include a basic information in the syllabus in the schools – starting in elementary school and try to enhance a public literacy in risk perception

Fukushima Lessons

- **International cooperation and communication**

- enhance coordination of communication between regulatory authorities at European and international level – with the aim to avoid an overloading with messages of the same content and create an effective international communication during the radiological event,
- continue with the effort to harmonize an approach to emergency management and to use a similar criteria for decision making in emergency situation with the aim to increase a reliability of public to the measures taken by the regulatory authorities in different countries worldwide (e.g. criteria for urgent protective actions, approach to the regulation of export and import of food and feed – it is for sure suspicious for public if one country prohibits import of food and another country tries to convince people that some hundreds becquerels should be acceptable for them)

Fukushima Lessons

- **The comprehensive experience feedback of the Fukushima accident can take up to 10 years** and the current understanding of the accident may be modified.
  - First evaluation, lessons taken, stress tests are just the beginning of a long process.
  - It is necessary to learn lessons from this accident, in a continuous process of improvement of nuclear safety, radiation protection and emergency preparedness in the Czech Republic, Europe and worldwide because

SAFETY IS AND ALWAYS WILL BE A MOVING TARGET FOR US

THANK YOU FOR YOUR ATTENTION