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## OFF-SITE EMERGENCY PLANNING IN CZECH REPUBLIC

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### INTRODUCTION

In the Czech Republic, the NPP Dukovany - PWR 440/213-type (4 blocks) is currently in operation (from 1985) and NPP Temelin - PWR 1000 (2 blocks) is under construction. Radiation accident on the NPP is defined as an unexpected or unintentional event in a facility with a potential of off-site consequences. The principles of emergency planning in Czech Republic now are based on the philosophy and principles described in the ICRP Publication 40 and the IAEA Safety Series No. 55, 72, and includes already the post Chernobyl experiences. Nevertheless, Czech Republic legislation experiences an extensive reconstruction. The Atomic Act, which will be based from point of view the structure, philosophy and principles on new International Basic Safety Standards [1], already being elaborated. That acts and related laws should solve our legislative problems on field of emergency planning and preparedness.

### EMERGENCY PREPAREDNESS

System of off-site emergency planning in the Czech Republic is based on the assumptions that when:

- the upper limit of the intervention level (IL) interval for given protective measure (PM) is exceeded, the implementation of that PM is regarded as necessary,
- the lower limit of the IL interval is exceeded, the optimization is provided with respect to the extent, feasibility and price of the given PM. Till the time when the "Atomic Act" will come into force, the recommendation issued by the Chief Hygienic Officer of the Czech Republic is valid, where the IL presented in the Regulations [2] are approved, provided that:
- the IL will be expressed in the term of projected or averted dose, depending on type of PM,
- for carrying out the urgent PM (sheltering, iodine administration and temporary evacuation), interval values of the IL determined in [2] are refined as the generic optimized intervention levels as follows for:
  - sheltering, the averted effective dose equivalent 10 mSv for a period of no more than 2 days,
  - iodine prophylaxis, the committed absorbed dose to the thyroid due to radioiodine 100 mGy,
  - temporary evacuation, the averted effective dose equivalent 50 mSv for a period no more than 1 week.

Site specific IL may be higher or in some case lower than the presented IL due to considered off-site or situation specific factors, e.g. the presence of special populations (hospital patients, school's children, etc.) the existence of hazardous weather conditions or competing hazards (chemicals), the transport problems (high density populations, large city).

At nuclear power plants (NPP) urgent PM are planned through the Emergency Planning Zone (EPZ). It is assumed up to 30 km from the NPP (NPP Dukovany has a radius of the EPZ of 20 km), detailed plans of protecting provisions are elaborated. For the other areas up to 60 km the plans contain only a list of personnel resources and means assigned for providing the preliminarily specified countermeasures.

In EPZ, general notification and warning is carried out and it is extended to a further area with respect to the assumed and actual development of the accident. In the course of the NPP accident, notification is carried out in two stages; at first stage particularly components active in the monitoring are activated. This stage starts at the pre-release phase (already in the presence of a suspicion that the given

unusual event could result in an accident with off-site consequences). A higher risk of the false positive evaluation of the event is also assumed. Notification resulting in the activation of the whole emergency preparedness system is carried out at the beginning of the release or in the case of a high probability of the suspicion that it may occur. At this second stage, the false positive risk should be reasonable with respect to economic costs resulting from false notification. Two stages method of notification makes it possible to timely acquire results of monitoring and it simultaneously prevents a false negative consideration of the event by the NPP Shift Supervisor.

Several urgent PM (sheltering, iodine prophylaxis) are planned and carried out in the course of an accident through the EPZ immediately after warning and without waiting for result of monitoring the actual radiation situation and without waiting for a decision of Regional Commission for Radiation Accidents (RCRA). In accordance with the monitoring results, urgent PM are then refined, cancelled or possibly extended to further areas. The evacuation of inhabitants is planned and prepared in surroundings up to 10 km from the NPP, and is provided in agreement with results of monitoring (however, without useless waiting for these results) based on a decision of RCRA. The other PM are implemented and refined based on monitoring results, actual course of accident and on the decision of RCRA based on using of optimization procedures.

The emergency planning structure in Czech Republic demonstrated on Fig. 1 is divided in two parts, local and national. On national level Governmental Commission for Radiation Accident (GCRA) is responsible for coordination of all practice related to liquidation of accident consequences recommendation on global PM for state authorities. At GCRA Expert Advisory Group (EAG), which ensures an evaluation of course of accident and proposals of recommendation on PM and liquidation of accident consequences for GCRA, is working.

At the State Office for Nuclear Safety (SONS) Coordination Crisis Centre (CCC) was established. It performs the function of the Contact point SONS and ensures the emergency management and technical support of GCRA.

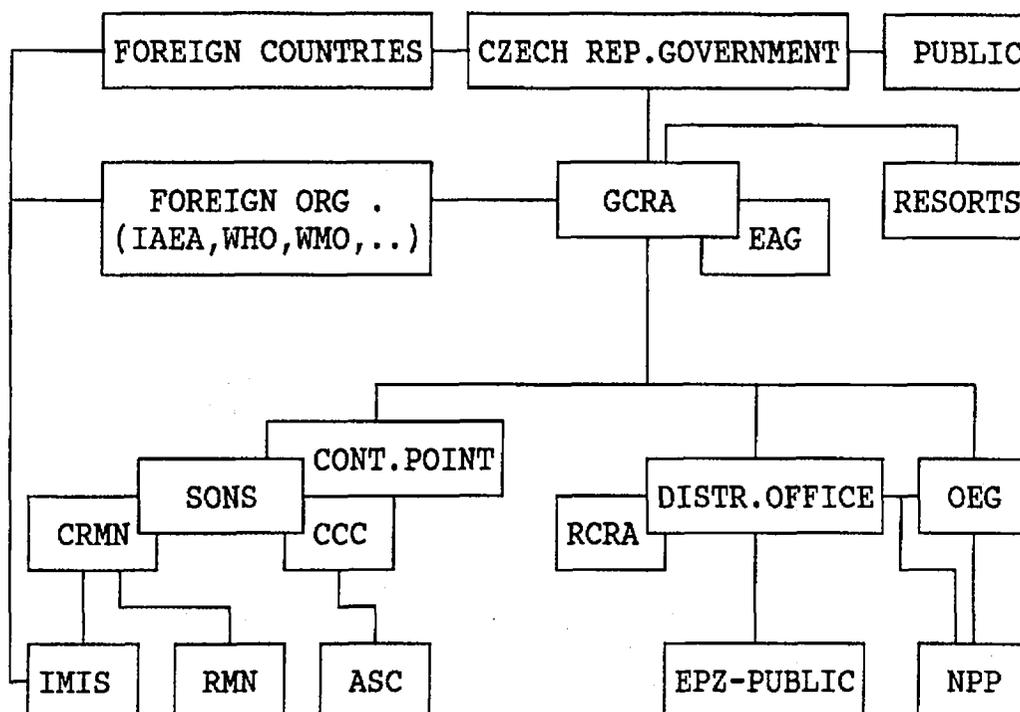


Fig. 1: The emergency planning structure in the Czech Republic.

On the basis of the Chernobyl experiences Czech Government decided in July, 1986 to set up the Czech Radiation Monitoring Network (RMN). Centre of RMN (CRMN) constituted [3] at SONS collects and evaluates data, provides state authorities with interpreted monitoring data, communicates interpreted data to GCRA, EAG, applies in RMS desirable operation modes, coordinates actions of RMN. CRMN is responsible for international exchange of emergency data by the means of Integrated Monitoring Information System (IMIS) which was constituted in cooperation of the Czech Republic and the Federal Republic of Germany.

As special division at Nuclear Research Institute in Řež Analytic Service Centre (ASC) is working as support for CCC and for NPP's on field in-site emergency planning. Integrated Rescue System (IRS) created special parts of Police, Fire-brigades, Medical Life-saving Service and Civil Defence is responsible for notification and warning on territory of republic and management and implementation of PM to reduce or avert accident consequences.

In the case of an occurring or suspected radiation accident on territory of republic, the operator of the facility involved must particularly provide notification of authorities, institutions and warning of the population through EPZ of facility (NPP). NPP is responsible for initial assessment of probable course of accident and cooperation with local authorities (District Office) in assessment, prediction of accident consequences for decision of RCRA on PM. Simultaneously with notifying, the monitoring starts to be developed as an activity necessary for the determination and assessment of the accident. District Office and their Regional (District) Commissions for Radiation Accidents (RCRA) are responsible for emergency preparedness, planning and for implementation of off-site PM and liquidation of accident consequences on managed district. The role of EAG on local level fulfils the Operational Emergency Group (OEG) which is responsible for the regional coordination of monitoring, evaluation of radiation situation, proposals of recommendation on PM in EPZ for RCRA.

## CONCLUSION

The emergency planning and preparedness in the Czech Republic has been based from the beginning on the same principles as in the other developed countries operating nuclear power facilities. It is possible to tell that from the technical as well as personnel standpoint, it is essentially provided at a relevant level. There are, however, problems particularly in the field of the legislation (organization, structure, responsibilities of different components of emergency planning system). Due to changes in the economic sphere (privatization) and in the organizational structure of state administration, certain parts of this system must be reestablished or reorganized. After completion in 1995-97 the overall system will be able to assure measurement of radiation fields, processing of measured data, prediction of potential course of the radiation situation and communication to the competent authorities for proposal and recommendation of protective measures.

For the whole problem, it is, however, of importance to complete the legislative problems as soon as possible - the Atomic Act and related laws, which will define the competences and responsibilities of particular components of the system with providing fulfilment of its functions from all the standpoints, including the economic one.

## REFERENCES

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3. Drábová, D., Malátová, I., Prouza, Z., Bučina, I.: Radiation Monitoring Network of Czech Republic, Symp. on Rad. Prot. in Neighbouring Countries in Central Europe, Portorož, Sept.4-8, 1995.