CIVIL EMERGENCY PREPAREDNESS AT THE IGNALINA NUCLEAR POWER PLANT

EMERGENCY PREPAREDNESS AT IGNALINA NPP

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REVIEW OF THE IGNALINA NPP SAFETY AND EMERGENCY PREPAREDNESS

In this report I am supposed briefly to account for activities already performed add still ongoing regarding the Ignalina NPP safety upgrading and personnel preparedness to act in cases of accidents.

The Ignalina Nuclear Power Plant (INPP) contains two RBMK-1500 reactors, the first unit went into service in December 1983 and the second unit become operational in August 1987. This type of reactors differ from those RBMK-1000 operating in Russia and Ukraine nor only by a higher power level but also by improved safety systems one of these specially designed and improved Accident Localisation System (ALS).

The power generated at Ignalina NPP is approximately 50 % lower in cost than at alternative electric power sources. In 1993 Lithuania set a world record for the share of nuclear-generated electricity produced in one country, with nuclear energy providing 88,1% of power produced in Lithuania. In 1996 and 1997 the Ignalina NPP generated 85,8 % and 81,3 % of all the country's electricity respectively.

The Government and the Ministry of Economy of the Republic of Lithuania and also INPP management implemented and continues to implement the plant safety upgrading measures, to eliminate emergency situations or to reduce it maximally and to eliminate it in the shortest time periods.

It is reasonable to stress the fact that the Ignalina NPP is unique in the scope and comprehensiveness of studies carried out to verify design parameters and level of risk. After the fall of the Soviet Union the design and operational parameters of the plant became accessible for western experts. An effective assistance regarding nuclear safety was provided by Sweden, subsequently other countries contributed to this assistance with significant nuclear expertise.

International studies were of different forms. Especially valuable mode of assistance utilised the knowledge of international experts in extensive international study programmes which purpose was:

a) collection,systematisation and verification of plant design data;
b) analysis of the level of risk;
c) recommendations concerning upgrading level of safety;
d) transfer of methodology to Lithuanian specialists.

There were carried out the following large scale international studies:

-BARSELINA (1992 – 1996) – a probabilistic risk study conducted by Swedish, Lithuanian and Russian experts;

-SAR (Safety Analysis Report, 1995 – 1996) – a very wide international study funded by a grant from Nuclear Safety Account of EBRD (European Bank for Reconstruction and Development). The objective of the study is to provide comprehensive review of plant status emphasising safety aspects.

This study was conducted by the Ignalina NPP, Russian (mainly RBMK reactor designer RDIPE), Canadian and Swedish specialists.

-RSR (Review of the Safety Analysis Report, 1995 – 1997) – an extensive review of the SAR performed by independent group of international experts.

Specialists from the U.S.A., the United Kingdom, France, Germany, Italy, Russia and Lithuania contributed.

Mentioned studies provide a verified state of the art base of knowledge which makes it possible to evaluate the present level of plant safety. Compare it with levels of other reactors and also to plan improvements in plant hardware and operational procedures which upgrade the level of safety. The Ignalina NPP is the only plant with RBMK-type reactor the information of which is accumulated, verified, systematised and is available.

Data concerning the plant safety provided in this review are based on conclusions drawn by international experts. One of the main SAR inferences is that none of the analysed safety problems require the immediate shut down of the plant.

The safety of nuclear plant is of great interest not only to Lithuanian public, but also to some foreign organizations. The following questions are the most frequently occurring:

Is it possible for Ignalina NPP to have a similar accident to that of the Chernobyl NPP ?

The consequences of Chernobyl accident are unique. The main courses are not the mistakes made by operators, but defects in design of RBMK-type reactors of that time. In a limited operating range the core reactivity coefficient was positive. This defect had fatal consequences. It is important to mention that this defect was eliminated. Subsequently hardware modifications were made which altered characteristics of Ignalina NPP. These were: introduction of absorber-rods, alternation of the fuel enrichment and modernization of control rod design. Therefore it is impossible to equal reactors of the Ignalina NPP with those of the Chernobyl NPP.

The implemented modifications quarantee that the total power coefficient of reactivity remains negative under all possible circumstances. Extensive western experts analysis verified this characteristic. Even in case of hardly probable event, i.e. the similar operational mistakes were made as in Chernobyl accident, the consequences would be limited and neither nearby population nor plant personnel would suffer.

Do the Ignalina NPP generating units have containment?

In the field of safety the main stress is on function, but not on appearance. The function of containment is to ensure that in case of hardly probable event during which radioactive materials are released from the fuel elements they do not reach the environment. Many of western type reactors possess containment. Bellow mentioned facts indicate that we have similar to generally accepted containment.

At the Ignalina NPP this function is accomplished by complex system, of great capacity, but not so prominently visible, so-called Accident Localisation System. This system functions according to the same principle as GE (General Electric) or BWR (Boiling Water Reactor) designed by ABB.

The multifunctional ALS (Accident Localisation System) is one of design characteristics excluding the Ignalina NPP from other plants with RBMK-type reactors.

What are the probabilities and potential consequences of accidents?

Safety is too important issue to leave it to relative evaluation influenced by emotions and prejudices. It is necessary to refer to objective criteria, which can be quantified in terms of absolute indexes. In many technical spheres (e.g.transportation) such criteria are provided by statistical analysis of the database provided by previous events. This method is not appropriate in nuclear power field, as the number of accidents is much too small. That is why a method was developed which uses component failure data and detailed analysis to determine two aspects of an accident: the probability of occurrence and the consequences. The combination of these two indices for all possible accidents provides a measure, which can be used comparing the safety of different nuclear power plants and reactor types.

After comprehensive analysis of the Ignalina NPP, international experts elicited that indicators of probabilistic risk of having an accident at Ignalina NPP are equal to indicators of

Western NPP designed in 60 – 70 –ties and which are under operation. It is worth noting that reactors of the Ignalina NPP are the only RBMK-type reactors compared this way.

It is worth characterising such an important conclusion in a more detailed way. Provided conclusions certainly do not imply that the Ignalina NPP is identical to Western BWR-type reactors. It is a channel type reactor, with the graphite stack as a moderator and differs from Western BWR-type reactors. The documentation of the analysis detailing the consequences of these differences is very comprehensive.

The probability of malfunction (e.g.piping ruptures, valve failure) at Ignalina NPP is higher than for comparable western BWR-type reactors. The objective reason for this is the higher complexity of the plant (a considerable large amount of pipes, valves and associated equipment), the lower level of quality of Soviet design and construction.

From the point of positive side of evalution the international analysis pointed out that the Ignalina NPP is astonishingly robust and that a great number of malfunctions will not led to fuel overheating and the release of radioactive substances will not reach beyond the containment.

It needs stressing that extensive studies carried out by western experts at Ignalina NPP include recommendations for enhancing plant safety and that this important issue is in the scope of attention of international experts.

The major part of recommendations were already adopted and implemented. The Lithuaninan Government and its regulatory bodies fully accept that concern for safety is a continuous process requiring constant efforts and vigilance. A brief list of the past and still ongoing safety improvement projects is presented later.

Safety improvement programmes

Following Chernobyl accident hardware modifications were implemented at the Ignalina NPP to ensure that a negative power coefficient of reactivity exists at all operating regimes. The changes include the modification of control rods, introduction of additional absorbers, implementation of fast reactor scram system and improvement of operating regulations concerning core control.

Efforts to improve the Ignalina NPP safety increased after Lithuania became fully responsible for the plant operation. The Ignalina NPP management with the assistance of international experts worked out a short-term Safety Improvement Programme, which was approved by VATESI in 1993. To implement this programme a Grant agreement was approved by the European Bank for Reconstruction and Development on behalf of the Nuclear Safety Account. The Grant supported 20 projects concerning improvements of operation and safety. Operational safety improvements include nondestructive monitoring, seals for pressure tubes, routine maintenance instrumentation and equipment, radiation monitors, renewal of design and maintenance documentation, delivery and commissioning of a full scope INPP compact simulator. Commissioning of data process system TITAN, low flow and low reactivity margin reactor trip system, engineering studies concerning the second emergency shutdown system, seismic, fire and hydrogen explosion prevention and other systems also became issues of concern in a short-term Safety Improvement Programme.

Following implementation of Safety Improvement Programme the activities in upgrading plant safety are still ongoing. The new Safety Improvement Programme of the Ignalina NPP based on the recommendations of the Safety Analysis Report, its review and experience gained during implementation of the first Safety Improvement Programme is in the process of implementation. The new Safety Improvement Programme was approved by Lithuanian institutions in 1997. The programme will be continuously renovated and reviewed annually and it will be completed in 3 years (1997 – 1999).

All the activity in the frame of Safety Improvement Programme is divided into three groups:

- Design modifications;
- Management and organization development;
- Safety analysis.

The new Safety Improvement Programme is being implemented especially rapidly. The Ignalina NPP management and especially Director showed a very positive attitude towards implementation of recommendations in the area of safety culture. This is applied to all levels of the plant.

In a well-developed plan it is also foreseen to apply western technical expertise for implementation of essential tasks. Some examples of SIP-2 (2-nd Safety Improvement Programme) implementation are provided bellow.

The work to develop safety cases for Accident Localization System and Reactor Coolant System is executed in compliance with work schedule. This schedule is realistic and would provide a good basis for VATESI in taking decisions concerning licensing process. The Ignalina NPP accepted recommendations for indispensable improvement in the Control and Protection System (CPS) and started a detailed and complete single failure analysis for this system. A thorough analysis was perfomed to find out whether failure of a single component could course a loss of safety function.

Defence line of CPS/EPPS (Emergency Process Protection System) was enforced by the efforts of Ignalina NPP and its contractors. Due to it the overall plant safety was improved. The Ignalina NPP makes arrangements for implementation of an additional emergency protection system (DAZ) based on a high pressure signal from steam separators and a low flow indication through Main Circulation Pumps. This system will be commissioned at the first unit in 1998 and at the second unit in 1999. This is aimed at effectively eliminate consequences of emergency process and reactor shutdown. The activities for implementation of the independent reactor shutdown system were started this year under PHARE sponsorship.

Improvement of methods and methodology related to equipment control and plant piping system has a great role in upgrading plant safety. At the beginning of 1992 the Ignalina NPP and Swedish firm ABB TRC AB co-operated in application of modern means for non-destructive monitoring at INPP. This activity was directed to control the primary system elements by applying computerized means of control.

The main target of control is:

- Welding of casings to fuel channels;
- Welding connections of piping 800 in FMCL;
- Welding of steel 08X18H10T piping 300;
- Branches of ECCS;
- Fuel channels.

The results of co-operative activities proved that modern western technology of nondestructive system could be successfully implemented at INPP.

In the course of these years INPP personnel underwent training and certification in compliance with EN473 norm at ABB training centre (Sweden) and received certificates of international standard.

I am going to review very briefly the activities concerning plant safety improvement and nuclear safety.

1. l.Reduction of steam reactivity coefficient.
2. Change of all-type Control and Protection System rods to modernised ones.
3. Implementation of FRS (Fast Reactor Scram) system.
4. Implementation of enrichment fuel (2,4 %) with burning out absorber.

A lot of attention is paid to "human factor", personal responsibility of individual specialist and managers of all ranks.

In relation to this a programme in the area of safety culture was adopted and implemented.

Aims and tasks of Safety Culture

Safety culture is a matter of concern of every worker executing any activity influencing the plant safety. Safety culture covers behaviour of separate individual, plant operating mode and is the main element of Quality Assurance Programme.

In June 1997, INPP safety culture development plan for 1997 was worked out and approved by Director General. The plan includes issues of priority related to problems in the area of Safety Culture and the main tasks are defined.

The main aims and tasks in improving Safety Culture at INPP are:

- Plant authority approval of the safety policy and devotion to this policy.
- Achieve the situation in which Safety Culture becomes key element of plant monitoring activity.
- Change the attitude of the plant personnel towards the work done, formation of new thinking method and inner critical position which exclude irresponsibility, develop self-regulation in the maters of safety.
- Carry out audits in the area of safety culture in order to reveal difference between existing

Activities and operating procedures with following corrective actions and improvements.

- Analysis of operational experience and incidents due to defining the areas for upgrading.
- Open and effective way of transmitting information related to the activities carried out at the

plant to all personnel in order to understand aims and plant operation perspectives by individual worker.

- Constant personnel training by demonstrating instances of good and bad practise.

Personnel notification about INPP policy in the area of safety and quality assurance

Brochures issued and distributed among plant personnel contain explanations of the key issues of the policy in the field of safety and quality assurance, the content of the brochures was review and discussed with the plant personnel during Safety Culture workshops. Due to Safety Culture audits the personnel understanding and adoption of the INPP safety policy was tested.

All above listed measures aided to enhance the plant operation safety to higher degree.

Though great activities are performed in enhancing the plant operation safety, the INPP management pays a lot of attention to preparadness for emergency elimination or plant equipment failures and take measures to stop emergency spreading, especially in cases when are radiation release into atmosphere.

For this purpose "Ignalina Nuclear Power Plant Emergency Preparedness Plan" was drawn up and became operational. It is the main guiding document to carry out organizational, technical, medical, evacuation and other activities to protect the plant personnel, population, the plant and the environment from accident consequences, catastrophes, natural calamities, threat of attack and blackmail.

In case of an emergency at the plant the requirements of this "Emergency Preparedness Plan" are applied to Emergency Preparedness Organization Management and to the whole INPP personnel. The plan using procedure, its execution, amendments in order to correspond to alternated situation and to reflect the real status are specified in the operative instruction "INPP Emernency Preparadness Plan execution and Amendments to it".

This plan was worked out instead of "Personnel Protection Plan in Case of an Emergency at INPP".

The old plan was drawn up in compliance with the requirements of Nuclear Ministry of Soviet Union and at the moment it did not correspond to IAEA requirements.

Great assistance was rendered by Swedish experts in drawing up the new emergency preparadness plan, permanently consulted our work group in working out the main plan regulations.

This plan is worked out on the basis of requirements of the following documents:

- Nuclear Power Plant Safety Assurance General Regulations, (VD-B-001-0-97);
- Operating Organization Preparadness in Case of an Emergency at PP.IAEA Operative Instruction No.50-59-06;
- Population Protection Plan of Lithuanian Republic in Case of an Emergency at INPP, 1955 05 04;
- State Nuclear Energy Safety Inspection Emergency Plan, VATESI;
- The Standards of Lithuanian Hygiene HN73-1997, "Basic Radiation Safety Standards";
- Nuclear Power Plants Operation Quality Monitoring. Operative Instruction A.IAEA, Vienna;
- Population Protection Plan of Visaginas Town in Extreme Situations;
- Fire Extinguishing Operative Plan at First and Second Units of Ignalina Nuclear Power Plant;
- Fire – Prevention Plan for Elimination of Extreme Situations at Ignalina Nuclear Power Plant and Visaginas Town;
- Generic Assessment Procedures for Determining Protective Actions during a Reactor Accident, IAEA – TECDOC-955/R;
- Method for the Development of Emergency response Preparadness for Nuclear or Radiological Accidents, IAEA – TECDOC –953/R.

"Ignalina Nuclear Power Plant Emergency Preparedness Plan" consists of 3 parts:

- General Part;
- Operative Part;
- Appendices;

General Part of the Plan contains:

- policy, goals, tasks set by INPP management for Emergency Preparedness Organization;
- responsibility of INPP management for emergency preparedness planning and organization;
- INPP Emergency Preparedness organization chart;
- tasks of INPP Emergency Preparedness Organization Services and Units;
- INPP Emergency Preparedness Organization notification and preparedness;
- measures applied in case of an emergency at INPP;
- premises and technical means needed for execution of emergency preparedness functions;
- co-operation with other organizations rendering assistance in case of an emergency;
- resources kept at the plant in case of an emergency and additional resources of other organizations;
- irradiation dose limits;
- personnel training.

Operative Part of the Plan consists of:

- list of Heads of Emergency Preparedness Organization Services, their check-lists and instructions.

Appendices to the Plan contain:

- Guiding document for determining emergency classes;
- Personnel Protection from Harmful Toxic Releases and Activities Instruction in Case of an Emergency at the Plant or any Neighboring Installation;

- Fire Prevention Measures Plan in Case of Extreme Situations at INPP and Visaginas Town;
- Heads of Emergency Preparedness Organization Services Training Instruction;
- Numeration of Emergency Preparedness Organization provision with individual protection

means, dosimetric and monitoring devices;

- Numeration of Emergency Preparedness Organization Services provision with control and

communication means, technical and medical stock;

- Numeration of Emergency Preparedness Organization Services provisions with transport,

special machinery, lubricants and fuel.

The Plan is applied to the INPP personnel, Special and Fire Brigade personnel, and also to other contractor organizations personnel carrying out works at INPP.

Measures are carried out at INPP controlled area in accordance with the Plan.

Personnel protection of other enterprises and organizations at the INPP controlled area is carried out according to plans drawn up by these organizations under agreement with INPP authority.

Population protection of Visaginas town is carried out according to "Population protection Plan of Visaginas Town in Case of Extreme Situations", worked out by Visaginas town authority under agreement with INPP authority.

Population protection of settlements belonging to radiation affected zone in case of an emergency at INPP is carried out by Civil Defence Departments of Lithuania, Latvia, Byelorussia.

Information about an emergency, its dimensions and projected consequences is communicated by INPP in accordance with the plan procedures.

To our understanding emergency preparedness is INPP personnel qualifying and training,and actions taken in order to eliminate emergency situation threatening people, the plant and the environment.

INPP management is responsible for measures in the controlled area. Local and state institutions carry responsibility for measures outside this area.

In case of an emergency we must ensure safety of non-emergency unit and we will lead the following policy:

- inform the personnel, territorial and state institutions;
- take timely measures to protect the personnel and carry out emergency-recovery work in

order to take the situation at the plant under control, to localize and eliminate emergency consequences;

- to inform all foreign respondents, institutions and the media about the accident by means of

possessed communication means without hiding and distortion of emergency facts, willingly give information about the event at the plant;

- ensure unity and reality of goals and tasks of all Emergency Preparedness Organization Services personnel;
- analyze thoroughly the present emergency state and forecast the development of the situation;
- organize emergency preparedness activity in compliance with the requirements of the plant

documents orientating to better international experience;

- constantly improve emergency preparedness activity; implement new notification, communication and information accumulation and transmission technical means.

Emergency Preparedness Organization was founded in order to ensure all measures related to putting into execution Emergency Preparednesss Plan at the plant.

INPP Director General is personally responsible for emergency preparedness at INPP, Each Head of Emergency Preparendness Organization is responsible for the competence and necessary konwledge of the subordinate personnel.

Emergency Preparedness Organization must be able to cope with emergency situations at the plant or threatening it in order to protect people, environment, INPP equipment and premises.

The Plan was agreed with institutions of great authority. This Plan is the guiding document in all the situations; also it is versatile in order to be able to work out temporary procedures in realizing emergency preparedness tasks.

In order to ensure the correct activities the following conditions should be observed and executed:

- all INPP personnel must know the notification signals, assembly places and initial activities

during these signals;

- emergency Preparedness Organization personnel is instructed and is trained regulary;
- regular exercises for personnel are planned and performed;
- special premises should be equipped to carry out Emergency Preparedness Organisation

tasks

- to eliminate emergency situation the plant ir equipped with necessary installation, security

and measuring means supply;

- predictable emergencies and INPP work drawbacks should be analysed and predictable consequences should be foreseen taking into consideration unfavourable conditions;
- computerized monitoring system is functioning constantly including environmental radiation and meteorological control in the controlled and 30 km observed areas;
- computerised radioactive releases monitoring system function constantly;
- notification and communication system of the plant personnel and the population of Visaginas town is created;
- individual dosimetric control of the plant personnel is assured.
- Emergency Operation Centres should be founded at the plant and Visaginas town territory and equipped with necessary technical means:

a) communication;
b) computers;
c) notification;
d) information collecting and processing;
e) computerised emergency consequences forecasting and evaluation system.

Information about taken decisions and bases of these decisions should be registered in logbooks.

Authority and responsibility of Heads of Emergency Preparedness Organization are clearly stated in Emergency Preparedness Plan.

I want to analyze Emergency Preparedness Organization chart in a more detailed way. (Using organization chart I am going to inform you what services were established and what structural divisions are their subordinates).

To execute the tasks set by the plant for Emergency Preparedness Organization a number of organizations and state institutions are employed:

1. Medical institutions:

a) Hospital of Visaginas town:

- First aid brigade;
- Reception department;
- Policlinic;

- In-patient department (surgical, therapeutic department);

b) First aid brigades of neighboring regions (Ignalina, Zarasai, Švenčionys,Utena);

c) Institutions of Health Ministry (Vilnius University Hospital "Santariškių Clinics", Kaunas Medical Academy Hospital "Kaunas Academic Clinics");

d) Radiation Protection Centre of Health Ministry ;

e) Visaginas Section of Ignalina Branch of Utena Public Health Centre;

f) Zarasai Section of Utena Public Health Centre;

g) State Warehouse of Medicine.

2. Fire Brigade:

a) Fire brigades of Visaginas town;

b) Fire brigades of neighboring regions;

c) Fire brigades of Lithuanian Republic.

3. Visaginas Mechanization Enterprises.
4. Visaginas Bus Park.
5. Special Transport of Visaginas town.
6. Extreme Situations Management Centre of Visaginas town.
7. Civil Defence Department of Utena County.
8. Civil Defence Department of Lithuanian Republic.
9. Joint Experimental Centre of Environment Ministry.

Emergency intervention levels are set at the plant for application of measures reducing consequences of plant work derangement.

Emergency Preparedness Plan is put into execution under decision of INPP Director General.

There are set the following emergency classes:

- incident;
- emergency situation;
- alert;
- local emergency;
- on-site emergency;
- general emergency.

Separate intervention level corresponds to each emergency class.

Incident – it is malfunction of power plant systems, exterior event or personnel mistakes due to

which normal operation is disturbed and safe operation limits or conditions can break.

Emergency situation – it is a disorder of design process parameters meanings leading to an emergency.

Alert – it is power plant state characterized by disorder of normal plant operation limits or conditions, but do not leading to an emergency.

Local emergency – it is disorder of plant process leading to release of radioactive materials and ionizing radiation beyond the bounds of equipment, process systems, premises, buildings into the plant area exceeding meanings set for normal plant operation.

On-site emergency – it is disorder of plant process leading to release of radioactive materials into the controlled area exceeding meanings set for normal plant operation. There is a possibility for personnel irradiation and contamination of premises, buildings and territories with radioactive materials exceeding the standards.

General emergency – it is disorder of plant process leading to release of radioactive materials beyond the controlled area exceeding meanings set for normal plant operation. There is a possibility for personnel and population irradiation exceeding the standards.

RADIATION DOSE LIMITS IN CASE OF AN RADIATION EMERGENCY

In case of an emergency at INPP the following radiation dose limits are fixed for the plant personnel and the Emergency Preparedness Organization personnel.

Personnel	Radiation dose limits
INPP personnel	50 mSv/year, 5 Rem/year, on the condition that in 5-year Period the average doses will not exceed 20 mSv/year.
Emergency Preparedness Organization Personnel	100 mSv/year, 10 Rem/year.

Dose for the personnel of both INPP and Emergency Preparedness Organization must not be exceeded:

- pupils of the eyes – 150 mSv/year;
- skin, extremities (hands, feet) – 500 mSv/year (this limit is applied to skin dose of average $1 cm^2$ area with the maximum irradiation amount).

INPP Director General or Technical Director fixes the limit of 100 mSv/year for Emergency Preparedness Organization personnel in case of putting into execution INPP Emergency Preparedness Plan and when it is necessary:

- to rescue people;
- to escape collective irradiation;
- to escape emergency spreading and its catastrophic consequences.

In these particular cases irradiation dose must not exceed 100 mSv/year, i.e. double maximum permissible dose.

While rescuing people it is necessary to take all possible measures for personnel eliminating an emergency not to exceed 10 maximum permissible doses (500 mSv) and to avoid fatal health effects.

Irradiation dose for pregnant women must not affect foetus growth. The limits of these irradiation doses are equalled to limits of population irradiation doses and they are:

a) 1 mSv dose rate per year;
b) in special cases – 5 mSv dose rate per year on the condition that in five years period the average dose will not exceed 1 mSv/year;
c) for pupil of the eye – 15 mSv/year;
d) for skin – 50 mSv/year (this limit is applied to skin dose of average 1 cm^2 area with the maximum irradiation amount).

EPO services personnel taking part in emergency elimination works and who are exposed to greater radiation doses should submit voluntary agreement in written form.

PERSONNEL TRAINING TO ACT IN CASE OF AN EMERGENCY

The whole INPP personnel must be trained to act in case of an emergency.

The training comprises:

- initial preparedness meeting the requirements for held post while assigning to work;
- periodical annual training in accordance with annual training schedules;
- practical skills improvement during training and exercises.

The whole INPP personnel during the period from assigning to work till issuing pass to work
independently undergoes 2 hours training covering activities in case of an emergency.

Quantity of training hours and subjects are specified by INPP Civil Defence and Emergency Headquarters. These are:

- notification signals in case of an emergency;
- personnel assembly places during alarm;
- storage facilities of individual protection means and radiation protection preparations;
- bases of radiation effects on health;
- individual protection means and radiation protection preparations deliverance rules;
- personnel activities according to warning signals;
- behaviour rules at the assembly places in case of an emergency.

Once per two years the whole personnel undergoes instruction for initial preparedness activities
in case of an emergency.

Once per three years the whole personnel takes part in training and exercises to improve practical skills in case of an emergency at INPP.

These requirements are also applied to contractor organizations personnel working at INPP.

Sent on mission personnel before issuing the pass to INPP is instructed at INPP Civil Defence and Emergency Headquarters how to act in case of an emergency.

Operative personnel till issuing the pass to work independently should be additionally trained how to act in case of an emergency according to Preparation for a Post Programme.

Once per year while checking the knowledge of the operative personnel it is checked the personnel preparedness to act in case of an emergency. Actions of the operative personnel should be listed in the operative personnel annual training programme.

Not less than once per 2 months the operative personnel takes part in emergency prevention training.

Emergency Preparedness Organization Management till they are appointed to their posts should be trained correspondingly. Subjects and quantity of training hours are fixed by Head of Civil Defence and Emergency Headquarters and approved by INPP Director General.

Heads of Emergency Preparedness Organization Services are annually trained according to schedules and subjects specified by INPP Civil Defence and Emergency Headquarters.

Not less than once per year Heads of EPO Services take part in training of the Headquarters to improve practical activities in case of an emergency at INPP.

Not less than once per four year Heads of EPO Services take part in training organized by Republican Civil Defence Headquarters.

EPO personnel must undergo initial preparedness meeting requirements set for held post in EPO till assigning to this post.

Head of EPO Service specifies subjects and quantity of training hours for initial preparedness.

Emergency Preparedness Organization personnel are annually trained according to schedules and subjects specified by Head of Emergency Preparedness Organization Service.

Subjects and quantity of hours for exercises and training are specified by Head of Service and approved by Head of Civil Defence and Emergency Headquarters.

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