Republic of Croatia

NATIONAL REPORT

ON THE IMPLEMENTATION OF THE OBLIGATIONS UNDER THE CONVENTION ON NUCLEAR SAFETY

Zagreb, 1 September 2007

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List of Abbreviations

CEWS	Croatian Early Warning System
DHMZ	Meteorological and Hydrological Service of Croatia
EG	Expert Group
ECURIE	European Community Urgent Radiological Information Exchange
EURDEP	European Radiological Data Exchange Platform
FER	Faculty of Electrical Engineering and Computing
GALs	Generic Action Levels
GCH	Government Crisis Headquarters
GILs	Generic Intervention Levels
IAEA	International Atomic Energy Agency
IMI	Institute for Medical Research and Occupational Health
InterRAS	International Radiological Assessment System
IRB	Institute Ruđer Bošković
LM	Longer-term protective Measures
LPZ	Longer Term Protective Action Planning Zone
NPP	Nuclear Power Plant
CHPR	National Protection and Rescue Directorate – Commanding Headquarter for Protection and Rescue
S112S	National Protection and Rescue Directorate – Sector for 112 System
OILs	Operational Intervention Levels
PM	Preventive protective Measures
RODOS	Real-time On-line Decision Support
SONS	State Office for Nuclear Safety
TSC	Technical Support Center
UM	Urgent protective Measures
UPZ	Urgent Protective Action Planning Zone

1. Introduction

The Republic of Croatia attaches great importance to nuclear safety and commends the work of the International Atomic Energy Agency (IAEA) in this field. The legal regime on nuclear safety, which is comprised of internationally binding documents, was effectively established with the acceptance of the Convention on Nuclear Safety and the Joint Convention on Spent Fuel and Radioactive Waste Management. By the virtue of succession, Croatia became a party to the Convention on Physical Protection of Nuclear Material, Convention on Early Notification in Case of Nuclear Accident and the Convention on Assistance in Case of Nuclear Accident or Radiological Emergency.

The Republic of Croatia signed the Convention on Nuclear Safety in April 1995, and the instrument of ratification was deposited with the Depository on 18 April 1996. According to the Constitution of the Republic of Croatia, article 134, "international treaties, signed and ratified in accordance with the Constitution... are part of the national legislation of the Republic of Croatia..." Consequently the requirements of the Convention became part of the national legislation. By further development of national nuclear safety legislation (new laws and corresponding regulations), the measures and obligations defined by the Convention have been more directly implemented.

In the late seventies of the last century state power utilities of Croatia and Slovenia constructed the Nuclear Power Plant Krško (NPP Krško) on the territory of the Republic of Slovenia. The NPP Krško is situated 10 km from the Croatian border and 35 km from Zagreb - capital of the Republic of Croatia. Presently, two states, the Republic of Croatia and the Republic of Slovenia, share the nuclear liability and the ownership of the NPP Krško. On March 11, 2003 the Agreement between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on the Regulation of the Status and Other Legal Relationships, Connected with Investments in Krško NPP, its Exploitation and Decommissioning came into force. The area around Zagreb is the most populated area in Croatia and the most frequent wind direction on Krško NPP site is from the west towards Croatia.

Concerning Krško NPP licensing and operation, the Croatian regulatory body was the authority competent to provide appropriate consents. Nowadays, the Croatian regulatory body does not play any role concerning this issue. The Slovenian regulatory body is in charge to license Krško NPP operators, to review operation and modifications as well as to carry out regulatory inspections.

Since the Republic of Croatia does not have nuclear power plants on its territory or any other nuclear fuel cycle facility it is not obliged to report under each and every article of the Nuclear Safety Convention. Also, currently or in the short term period Croatia does not have any intention to build a nuclear power plant and there are no plans to include sites for nuclear power plants in the general land use plan of the Republic of Croatia.

With the aim to achieve simplicity and effectiveness, but also because of all the above mentioned facts, this report has been written in such a form that only the applicable articles of the Nuclear Safety Convention are covered. Also, the challenges which were recognised during the last Review Meeting of the Convention on Nuclear Safety are properly addressed in the report.

The Report is divided into three chapters: *Legislative and Regulatory Framework*, *Emergency Preparedness* and *Challenges and Planned Measures*.

In the chapter named *Legislative and Regulatory Framework* special emphasis has been placed on the new laws and regulations in the filed of nuclear safety. The functioning of the State Office for Nuclear Safety (SONS) is also described in this chapter.

The emergency preparedness system in the Republic of Croatia is described in a separate chapter regarding the situation of Croatia which has several nuclear power reactors in close vicinity to its borders, and according to the article 16 of the Nuclear Safety Convention.

Instead of the conclusion, the final chapter of this report is called *Challenges and Planned Measures,* where the most important future actions of the SONS are addressed.

2. Legislative and Regulatory Framework

By the Act on Nuclear Safety (Act governing all activities in the field of nuclear safety in the Republic of Croatia) from October 2003 (Official Gazette No. 173/03), the SONS was assigned to be an independent nuclear regulatory body in the Republic of Croatia. Furthermore, in October 2004 the Council for Nuclear Safety was established as an advisory body to the Croatian Parliament. Unfortunately, the adoption of implementing legislation to the 2003 Act on Nuclear Safety was delayed and finally on 9 May 2005 the SONS began its work. The SONS reports directly to the Government of the Republic of Croatia and the Director of SONS has been appointed by the Government. The SONS is funded from the state budget only. If needed, the SONS could charge the costs of any special/additional independent safety analyses from the legal entities/applicants. The SONS is dealing with regulatory, inspection and technical tasks, tasks related to the early exchange of information in case of nuclear emergencies, assistance in the event of a nuclear accident, international co-operation in the field of nuclear safety, safety of nuclear facility, trade, transport and handling of nuclear materials, accounting for and control of all nuclear facilities and materials, physical protection of nuclear facilities and materials, expert assistance in activities for preventing illicit trafficking in nuclear material, liability for nuclear damage, quality assurance and other tasks defined in "nuclear" and other related legislation. Besides the Director's cabinet the SONS is divided into two sectors: Nuclear Activities and Nuclear Materials. Today, the SONS has 13 employees and according to the systematisation, it is planned to have 18 employees.

According to the Act on Nuclear Safety the SONS is in charge of the operation and development of the Technical Support Center (TSC), which is the leading technical organisation in the case of nuclear emergency. Before the establishment of the SONS, former Nuclear Safety Department of the Ministry of Economy, Labour and Entrepreneurship was in charge of the operation and development of the TSC.

As part of its obligations defined in the Act on Nuclear Safety the SONS issued three new regulations in the year 2006. Names of new regulations are: Regulation on the control of nuclear material and special equipment (Official Gazette No. 74/06), Regulation on performing nuclear activities (Official Gazette No. 74/06) and Regulation on the special conditions for authorisation of legal entities to perform specific expert practices in the field of nuclear safety (Official Gazette No. 74/06).

The Act on Ionizing Radiation Protection and Safety of Ionising Radiation Sources from 2006 (Official Gazette No. 64/06) cancelled the former Law on Ionizing Radiation Protection from 1999 (Official Gazette No. 27/99 amended in 2003 – Official Gazette No. 173/03) which was dealing with radiation protection issues related to nuclear facilities. According to this Act, the development of the National Emergency Plan is under the jurisdiction of the Ministry of Health and Social Welfare. The National Emergency Plan is still in the development phase.

Also, it is important to mention the new Act on Protection and Rescue (Official Gazette No. 174/04 and amended 79/07). According to this Act in the case of large scale disasters (like nuclear accidents) the Croatian Government has *the right* to form its Crisis Headquarters.

Based on the Croatian Constitution, all the announced and ratified international treaties also form an integral part of the Croatian legislation and can be applied directly. So the following international legal instruments, to which Croatia is a party, should be mentioned as a part of Croatian legislative framework:

- Vienna Convention on Civil Liability for Nuclear Damage,
- Convention on the Physical Protection of Nuclear Material,
- Convention on Early Notification of a Nuclear Accident,
- Convention on Assistance in the Case of a Nuclear Accident of Radiological Emergency,
- Convention on Nuclear Safety,
- Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention,
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

Also, as a part of Croatian legislative framework it is worth to mention the bilateral agreements with Slovenia and Hungary on the early exchange of information in the event of a radiological emergency as it is recommended by the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident of Radiological Emergency. In the case of nuclear emergency, the relevant information such as the type of accident, time of its occurrence, location, cause of the accident, source term data, effective height of radioactive release, weather conditions etc, should be exchanged between the appropriate national authorities without any delay. It was mentioned in the last report that time for sending the information to Croatia in the national emergency plan of Slovenia is allowed to be up to 90 minutes, which is considered by Croatia as an unacceptably long period. The competent authorities of Slovenia were informed

about the problem and the direct notification arrangement with Croatia by Krško NPP was recommended at the joint expert meeting with civil protection representatives in April 2007. Croatia is now waiting for the implementation of the recommended arrangement.

Also, in the National Report from the year 2004 it was mentioned that the text of the Agreement between the Republic of Croatia and the Republic of Italy on the Early Exchange of Information in the Event of a Radiological Emergency was agreed in 2002 and that the Croatian party was waiting for the Italian party to finish the internal procedure for signing the Agreement. Unfortunately, this Agreement has not been signed yet and the Croatian party is still waiting for the Italian party to finish the internal procedure for signing the Agreement.

3. Emergency Preparedness

Croatia is a contracting party of the Nuclear Safety Convention which does not have a nuclear installation on its territory. Insofar as it is likely to be affected in the event of a radiological emergency at a nuclear installation in the vicinity, Croatia shall take the appropriate steps for the preparation and testing of emergency plans for its territory that cover the activities to be carried out in the event of such an emergency. According to the paragraph 3 of the article 16 of the Nuclear Safety Convention the Republic of Croatia has to submit a report about its emergency preparedness system.

There are 40 nuclear facilities operating within the distance of 1.000 km from the Croatian national territory, i.e. its major population centres (Zagreb – population around 780.000, Osijek – population around 115.000, Split – population around 189.000, and Rijeka – population around 144.000). There are 92 power reactors inside these nuclear power plants (1 to 6 reactor units per facility). Nearest to the territory of the Republic of Croatia are Krško NPP (PWR, 707 MWe, Slovenia) and Paks NPP (VVER, 4x440 MWe, Hungary). Krško NPP is situated 10,6 km from the western border, and Paks NPP 74,1 km from the northern border. Samobor (population around 15.000) is 22 km distant from Krško to the south-east, Zaprešić (population around 23.000) 24 km, and Zagreb 38 km. Beli Manastir (population around 11.000) and Osijek are 90 and 120 km away respectfully from Paks NPP to the south.

3.1 Organisational structure

As it has been mentioned before, according to the Act on Nuclear Safety, the SONS is in charge of the operation and further development of the TSC, the leading technical organisation in the case of the nuclear emergency. The SONS is also responsible for the maintenance and development of the Croatian Early Warning System (CEWS) as a significant tool for the TSC functions. The organisational scheme of the Croatian nuclear emergency preparedness system, given in Figure 1, includes four main participants: National Protection and Rescue Directorate – Sector for 112 System (S112S), Technical Support Center (TPC), National Protection and Rescue Directorate – Commanding Headquarters for Protection and Rescue (CHPR) and Government Crisis Headquarters (GCH).

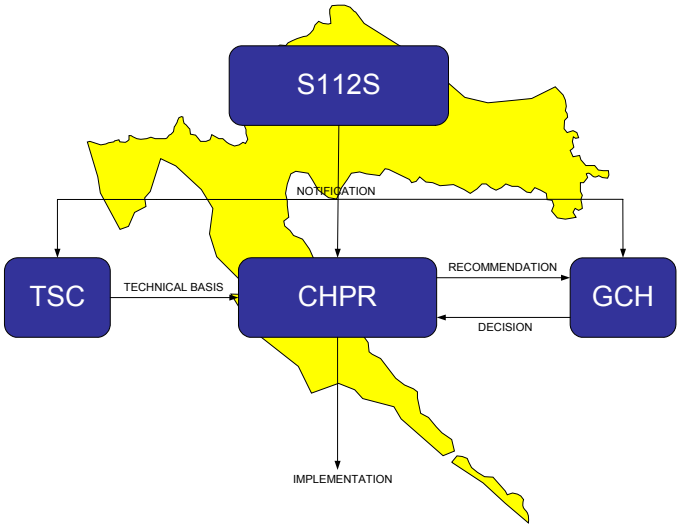


Figure 1 Organisational structure of Croatian emergency preparedness system

The National Protection and Rescue Directorate is an independent, professional and administrative organisation, tasked with preparing plans and managing operational forces as well as co-ordinating the activities of all participants in the protection and rescue system.

The Operational communication duty services within S112S operate 24/7 (National and County 112 Centres) and collect and process information, notifications and data. In the case of the nuclear accident they are tasked with informing the TSC, CHPR and GCH, if it is convened, according to the defined procedure. This service also keeps logs on the situation of events, dangers, accidents and disasters and it prepares the public alert system and coordinates the transferral of commands and decisions. According to the Convention on Early Notification of a Nuclear Accident, S112S is the National Warning Point.

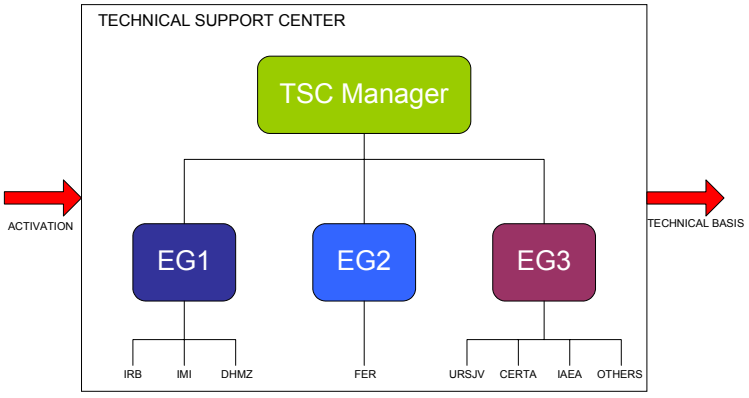
The CHPR is entitled to decide about the protective actions which should be implemented, based on the information provided by the TSC and on its own expertise. They are responsible for the protective actions implementation as well. In respect to protective action implementation, the CHPR has at its disposal the personnel and equipment from the local Protection and Rescue organisations, army, police, fire brigades and other resources which are commonly engaged in the case of any kind of natural disasters or emergency situations.

According to the Act on Protection and Rescue (Official Gazette No. 174/04 and 79/07) in the case of large scale disasters (like nuclear accident) the Croatian Government has *the right* to form its Crisis Headquarters. When it is convened the responsibility of the GCH is to make the final decisions on the sensitive protective actions (like evacuation) which must be implemented.

The TSC is located on the premises of the SONS. According to the Convention on Early Notification of a Nuclear Accident the SONS is the National Competent Authority. The responsibility of the TSC includes collecting data and information on the nuclear accident, analyzing the data, estimating the possible consequences and preparing technical bases for decisions on the protective actions to be taken. In order to satisfy these obligations the TSC is organized into the following three expert groups (see also Figure 2):

- Expert Group (EG1) for environmental monitoring (CEWS, collector stations, thermoluminiscent dosimeters measuring stations, Central Laboratory in Zagreb, mobile units, monitoring and weather forecasts),
- Expert Group (EG2) for analysis of emergency and estimate of consequences, and
- Expert Group (EG3) for preparation of technical bases.

The TSC is comprised of 7 experts including the manager. All staff members have alternates, meaning that 14 experts are engaged, who, besides their regular duties and jobs in their respective institutions, are trained to work in the TSC. Outside expert support is assured especially from the Faculty of Electrical Engineering and Computing (for sophisticated computer programs), Ruđer Bošković Institute (for laboratory work), Institute for Medical Research and Occupational Health (for the mobile measuring unit) and Meteorological and Hydrological Service of Croatia (for meteorological evaluation).



LEGEND:

IRB – INSTITUTE RUĐER BOŠKOVIĆ
IMI – INSTITUTE FOR MEDICAL RESEARCH AND OCCUPATIONAL HEALTH
DHMZ – METEOROLOGICAL AND HYDROLOGICAL SERVICE
FER – FACULTY OF ELECTRICAL ENGINEERING AND COMPUTING
URSJV – SLOVENIAN NUCLEAR SAFETY ADMINISTRATION
CERTA – CENTER FOR EMERGENCY RESPONSE, TRAINING AND ANALYSIS IN HUNGARY
IAEA – INTERNATIONAL ATOMIC ENERGY AGENCY

Figure 2 TSC organisational scheme

3.2 CEWS and other tools used in TSC

The TSC is equipped with the automatic monitoring system for early notification. Data from this system are sent daily to the neighbouring Slovenia and Hungary, according to the bilateral agreements. There are fifteen (15) automatic measuring stations for dose rate measurement of the external gamma radiation throughout Croatia, see Figure 3. These network systems are managed by the SONS and the IRB.

The SONS system consists of twelve (12) gamma measuring stations, the communication equipment and the central computer with the software for reading of the measured data. The stations are equipped for continuous measurement of gamma dose rate. The connection between the measuring stations and the central computer is performed by modem and telephone lines. Only one (1) station is equipped with the meteorological measuring equipment (wind speed and direction, quantity of precipitation and temperature). Since Croatia participates in the EURDEP (European Radiological Data Exchange Platform) system, the measured data from the stations managed by the SONS is sent to the central EURDEP system database three times a day.

The IRB system consists of three (3) gamma measuring stations, the communication equipment and the central computer with the software for reading of the measured data.

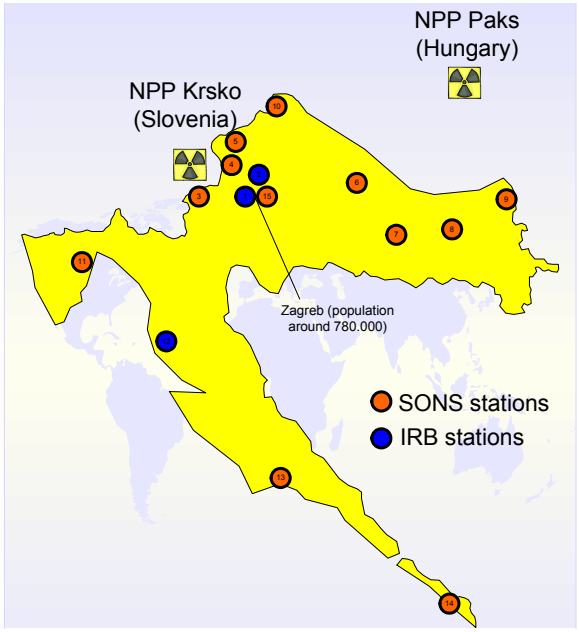


Figure 3 Automatic measuring stations for dose rate measurement of the external gamma radiation throughout Croatia, current status of CEWS

Operation of the TSC requires a number of documents defining in detail the obligations and responsibilities of the TSC as a whole and of the teams it is

comprised of. The manual and operational procedures for the members of the TSC are developed in accordance with the IAEA document TECDOC-955. The basic philosophy introduced within these documents is based on the idea to keep the process simple and effective. This approach allows data to be collected and evaluated quickly, and recommendations for decisions on protective measures to be made promptly.

In their work, the TSC members also use special program packages like the InterRAS or locally developed OIL-955 and PC-955.

The InterRAS (International Radiological Assessment System) is a well-know emergency assessment computer tool recommended by the IAEA. In the TCS this computer code is used for off-site dose rate projections.

The OIL-955 is a locally-developed program package for recalculation/revision of OILs (Operational Intervention Levels). Default OILs are used to assess environmental data and take protective actions until sufficient environmental samples are taken and analysed to provide a basis for their revision. With this program, data are quickly evaluated (all nine OILs can be recalculated/revised), and decisions on protective actions can be made promptly. During the development of this program, recommendations given by the IAEA in the document TECDOC-955 were strictly followed.

The PC-955 is also a locally-developed program package for the assessment of the status of the nuclear power plant after the accident (classification of the accident). During the development of this program, recommendations given by the IAEA in the document TECDOC-955 were strictly followed.

3.3 Emergency planning zones

The general approach related to Emergency Planning Zones recognizes the Urgent Protective Action Planning Zone (UPZ) and the Longer Term Protective Action Planning Zone (LPZ). The UPZ is defined as an area within the radius of 25 km around the NPP, and the LPZ is defined as an area within the radius of 100 km around the NPP. The LPZ includes the UPZ.

The western part of the Croatian territory is within the UPZ and the LPZ with regard to the Krško NPP (see Figure 4). The UPZ of the Croatian territory covers a 550 km^2 area and it has about 66.000 inhabitants, so that the average population density is quite high (120 inhabitants/km^2). The LPZ includes big population centres such as Zagreb, Karlovac, etc.

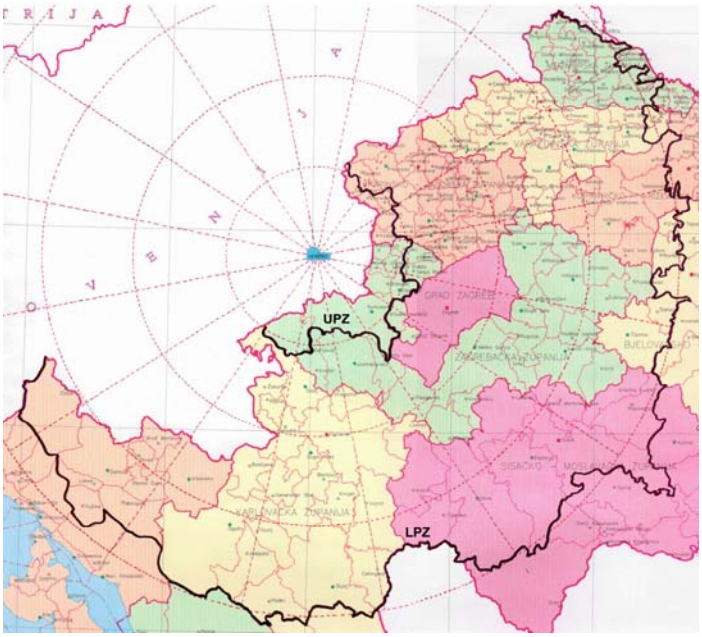


Figure 4 UPZ and LPZ in the Croatian territory regarding Krško NPP

The eastern part of the Croatian territory is within the LPZ with regard to Paks NPP. Paks NPP is located 75 km north of the Hungarian-Croatian border on the left bank of the Danube river. The LPZ covers a big part of the Osijek-Baranja County (see Figure 5), which is a well-known corn-producing region and agriculturally one of the most outstanding parts of Croatia.

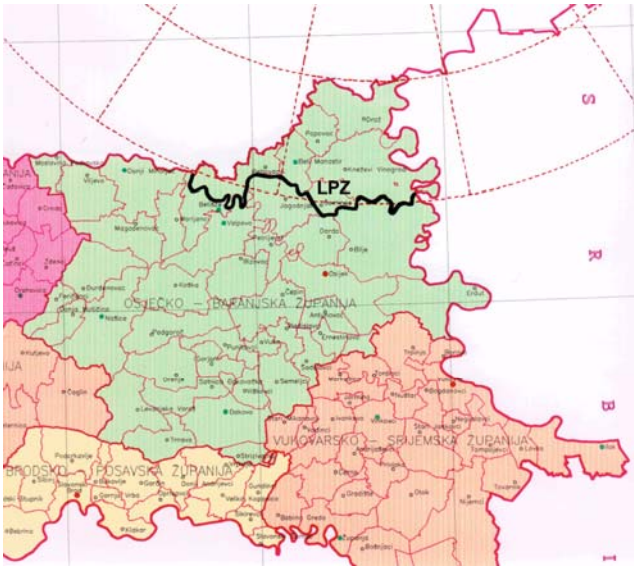


Figure 5 LPZ on the Croatian territory regarding the Paks NPP

Based on the definition of the Emergency Planning Zones, the National Emergency Plan in Croatia, according to the IAEA document TECDOC-953 (July 1997), belongs to the Emergency Planning Category I, which is the most demanding category. In this case it means that the National Emergency Plan in Croatia should

be developed in the same manner as it is developed in the countries which have nuclear facilities in their territory.

3.4 Emergency Classification

The emergency classification is based on an assessment of plant conditions, and according to the IAEA document TECDOC-955, three possible levels of emergency have been defined. These are:

- Alert,
- Site Area Emergency, and
- General Emergency.

The Croatian Emergency Preparedness System is based on the assumption that in the case of a nuclear accident the relevant authorities in Slovenia and Hungary are supposed to provide the appropriate information to the S112S (national warning point for this purpose), immediately after an alert or any other higher level of emergency is declared in their NPPs. Only this approach will save time to start the nuclear emergency response system properly. This point was and will be especially underlined from the Croatian side during meetings on bilateral agreements between parties in the field. In bilateral contacts with competent authorities in Slovenia and Hungary a lot of work has been done regarding this issue with the aim to reduce time for the transfer of information. The ultimate goal is to receive, if possible, the information about the alert or any other higher level of emergency directly from the NPPs. It was mentioned in the last report that in the national emergency plan of Slovenia the time for sending the information to Croatia is allowed to be up to 90 minutes. The competent authorities of Slovenia were informed about the problem and direct notification arrangement with Croatia from Krško NPP was recommended on the joint expert meeting with civil protection representatives in April 2007. Croatia is waiting for the implementation of the recommended arrangement.

3.5 Intervention Levels

The present Croatian approach related to the Generic Intervention Levels (GILs), Generic Action Levels (GALs) and Operational Intervention Levels (OILs) is as follows:

- Adoption of GILs and GALs values recommended by the IAEA (BSS, 1996), incorporated in the national laws,
- Adoption of OILs default values recommended by the IAEA (TECDOC-955), and

- Updated values during an accident will be calculated in accordance with the IAEA recommendations (TECDOC-955 by using procedures F1-F5).

It is clear that the ILs, ALs and OILs should be developed into the country specific values. Among others, these values depend upon the the UPZ and LPZ definitions, land shapes, roads, vicinity of settlements and towns, economic conditions in the area, etc. Specific national and local values for the ILs, ALs and OILs will also be established during the finalisation of the National Emergency Plan for Croatia.

3.6 Protective Measures

Croatia is well aware that harmful consequences of a nuclear accident can be reduced by the timely application of protective measures. Protective measures are divided into three groups: Preventive protective Measures (PM), Urgent protective Measures (UM) and Longer-term protective Measures (LM). The PM include activities such as checking communication and other equipment, controlling of iodine pills distribution, checking facilities for sheltering, informing and education of the public about the accident, etc. The UM include evacuation, iodine pills administration and sheltering, while the LM includes relocation, food restriction and other measures such as decontamination, etc. In respect to the protective measures, the Croatian Emergency Preparedness System is based on the assumption that all of the mentioned protective measures are supposed to be implemented within the UPZ area, whereas the evacuation and iodine pills administration are not expected to be implemented within the LPZ area.

The type of protective measures which should be implemented depends on the emergency level declared. The emergency level which will be declared in Croatia depends on our own projection about the development of the accident (responsibility of TSC), but also on the emergency level declared in the neighbouring countries, particularly in Slovenia and Hungary. The interface between the emergency level declared in a neighbouring country with an NPP and actions to be taken associated with the protective measures which should be implemented in Croatia is given in Table 1.

Table 1 Interface between emergency level declared in a neighbouring country with NPP and actions to be taken in Croatia

Neighbouring NPP country	Actions to be taken in Croatia
ALERT	▪ Summon members of the TSC ▪ Inform CHRP
SITE AREA EMERGENCY	▪ Convene members of the CHPR ▪ Possible PM implementation
GENERAL EMERGENCY	▪ UM and LM implementation

With the finalisation of the National Emergency Plan it is expected that protective measures implementation plans for the previously defined emergency planning zones are going to be updated and improved.

3.7 Public Information

There are two important subjects related to this issue and both are very sensitive. The first one is related to public education and the second one is related to public information during an accident.

The population living in the UPZ and LPZ are informed about the nuclear emergency response system in Croatia and potential countermeasures which should be taken in case of nuclear emergency. Nevertheless, many assessments (governmental and non-governmental) showed that the public knowledge on this issue was not on the satisfactory level. That was the reason why the SONS and the National Protection and Rescue Directorate – Civil Protection Sector decided to continue mutually with previously initiated specific program of public education. The main idea which is behind this action is to organise publicly oriented seminars in towns and villages located in the UPZ and LPZ. Seminars were organised and held in high-schools and municipality buildings. According to the Croatian laws, the National Protection and Rescue Directorate is a responsible body for providing information to the public about all kinds of accidents and for recommending activities which should be taken.

For general public information, beside its own website, the SONS also maintains the website dedicated to the emergency planning and preparedness with the emphasis to the Technical Support Center and daily measurements from the automatic radiological measuring stations (www.dzns.hr/tpc).

The distribution of calendars with children's artistic works on the subject of energetics and its influence on the environment is also important to mention as one of the SONS' activities for informing of the population in the UPZ about the Croatian Emergency Preparedness System. Additional information about the possible protective measures is given in the calendar. The calendar itself is distributed among all primary-school pupils of the UPZ.

3.8 Training and exercises

There are various kinds of national workshops which are organised periodically. The first kind is the workshop for the TSC members and its objective is to train the TSC staff. The second kind of workshop is dedicated to the National Protection and Rescue Directorate – Civil Protection Sector and its objective is to train the Civil Protection staff. The third kind of the workshop is also called Information seminar and has the aim to inform the specific target public groups (experts, media, general public, etc.) about the emergency preparedness, especially with the purpose of the TSC.

Exercises are also organised periodically. They are designed with the aim to train the S112S, TSC and CHPR staff, their communication and co-ordination. Among exercises it is important to mention the so-called TSC table top exercises with accident scenario developed by external support organisation. Also, it is noted that participation in international exercises is very important and highly recommended. The SONS and the TCS as its part, are actively involved in the international exercises organised by the International Atomic Energy Agency (CONVEX) and European Commission (ECURIE). In the year 2008 Croatia is planning to participate in the national exercises which will be organised in Slovenia and Hungary.

4. Challenges and Planned Measures

The systems EURDEP, ECURIE (European Community Urgent Radiological Information Exchange) and RODOS (Real-time On-line Decision Support) are used in many European countries for rapid data exchange and for the assessment of the radiological status in the case of nuclear emergency. Croatia participates in the EURDEP system and the measured data from the gamma measuring stations managed by the SONS is sent three times a day to the central EURDEP system database. Even though Croatia is not a member of the European Union it has been invited to join the ECURIE system. Currently, Croatia is in the process of integration into ECURIE system. Also, as a state party to the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident of Radiological Emergency Croatia participates in the EMERCON system coordinated by the IAEA.

In 2005 the PHARE project entitled "Installation of the RODOS System in the Republic of Croatia" was approved. The tendering procedure for this project is on-going and it is expected that the contract will be signed by the end of November 2007. From the viewpoint of the Republic of Croatia, the establishment of the modern decision support system and inclusion into the real-time international measured radiological data exchange would mean major improvement of the nuclear emergency response preparedness system.

In 2006 the PHARE project entitled "Support to the SONS in Upgrading and Modernization of the Croatian Early Warning System" was approved. The following outcomes of this projects are expected:

- unification of measuring equipment and putting under single control (of the SONS),
- introduction of automatic alarming/alerting and remote maintenance features,
- a wider network of measuring stations, including aerosol monitoring stations (see Figure 6),
- an integrated system with back-up, capable of overcoming computer and power failures, and
- new meteorological data from selected locations which are essential for decision makers.

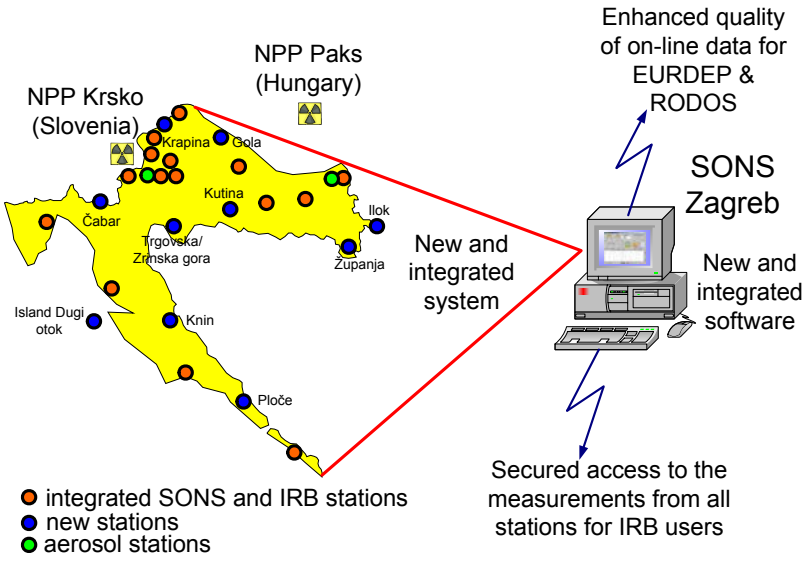


Figure 6 New CEWS as result of PHARE project entitled "Support to the SONS in Upgrading and Modernization of the Croatian Early Warning System"

Finally, as a challenge and planned measure which will improve safety, it is important to mention the finalisation of the development of the National Emergency Plan which is now under the jurisdiction of the Ministry of Health and Social Welfare. Also, it can be expected that the preparations for the first national-level exercise will start in years to come.