

Federal Environmental, Industrial and Nuclear Supervision Service

**FEDERAL STANDARDS AND RULES IN THE FIELD OF THE USE OF NUCLEAR
ENERGY**

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**REQUIREMENTS TO THE CONTENTS OF THE ACTION PLAN FOR PERSONNEL
PROTECTION IN CASE OF AN ACCIDENT AT NUCLEAR FUEL CYCLE FACILITY**

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REQUIREMENTS TO CONTENTS OF ACTION PLAN FOR PERSONNEL PROTECTION IN CASE OF AN ACCIDENT AT NUCLEAR FUEL CYCLE FACILITY

1. NP-077-06

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**3. Federal Environmental, Industrial and Nuclear Supervision Service
Moscow, 2006**

This regulatory document “Requirements to Contents of Action Plan for Personnel Protection in Case of an Accident at Nuclear Fuel Cycle Facility” sets forth basic requirements to the contents of Action plan for personnel protection in case of an accident at nuclear fuel cycle facility to be developed by the Operating Organization and defines administrative measures securing the implementation thereof.

This is the first publication*.

This regulatory document is developed in compliance with the legislation of the Russian Federation considering the requirements of the Federal standards and rules in the field of the use of nuclear energy as well as the recommendations contained in the IAEA documents: “Generic Assessment Procedures for Determining Protective Actions During a Reactor Accident”, “Generic Procedures for Assessment and Response during a Radiological Emergency”, “Method for Developing Arrangements for Response to a Nuclear or Radiological Emergency” .

The regulatory document has been reviewed from the legal point of view by the Justice Ministry of Russia (letter of the Justice Ministry of Russia of 12 February 2007 N 01/1104-AB).

* This revision of the Regulatory document has been developed by the Nuclear Safety Institute of the Russian Academy of Sciences. The proposals of Rosatom, Rostekhnadzor, SEC NRS, FMBA of Russia, FSUE «SSC RF IPPE», FSUE «SSC RF NIIAR», FSUE «PA «Mayak»», FSUE SCC have been considered and taken into account.

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1. PURPOSE AND SCOPE

1.1. This document sets forth requirements to the contents of Action plan for personnel protection in case of an accident at nuclear fuel cycle enterprise that includes a nuclear fuel cycle facility or facilities and commercial reactors with necessary employees (personnel) located within the boundaries of the location site determined by the design (hereinafter referred to as the "NFCE").and define administrative measures securing the implementation thereof.

1.2. This document applies to NFCE of any potential radiation hazard category under siting, design, construction, operation and decommissioning.

2. GENERAL REQUIREMENTS TO THE ACTION PLAN FOR PERSONNEL PROTECTION IN CASE OF AN ACCIDENT AT NFCE

2.1. Action Plan for Personnel Protection in Case of an Accident at Nuclear Fuel Cycle Enterprise (hereinafter referred to as "Action Plan") shall be developed by the Operating Organization and approved by its Head after the Action Plan is NFCE and agreed by all organizations, which could participate in the elimination of NFCE accident consequences. Action Plan shall be also agreed for:

- NFCE of Category I and II of potential radiation hazard - by Federal Medical and Biological Agency (FMBA of Russia), regional agencies of CD and ES in the town near to the NFCE and in the region (the autonomous area) where NFCE is sited;
- NFCE of Category III and IV of potential radiation hazard – by Regional Department of FMBA of Russia.

2.2. Action plan should be developed considering possible design basis and beyond design basis accidents with the most severe radiation consequences and taking into account the specifics of NFCE design lifetime.

2.3. Action plan for NFCE under construction shall be developed and effected prior to NFCE commissioning.

2.4. NFCE, which consolidates several nuclear fuel cycle facilities (factories, workshops, bays and etc.), shall develop on-site Action Plan for personnel protection for each facility being integrated into the Action Plan and containing the information specified in sub-sections 3.2.1-3.2.3, 3.2.5, 3.3.1, 3.3.7, 3.3.9-3.3.11.

2.5. Action Plan shall be revised at least each five-year period.

2.6. Approved Action Plan shall be subject to necessary amendments to and modification in case of new facility commissioning at NFCE Plant site or of the enforcement of new regulatory documents as well as on the basis of the results of NFCE Plant inspection of its readiness to emergency response held during drills and exercises.

2.7. Action Plan shall be coordinated with regard to timely warning of the accident threat (occurrence) and current information content and periodicity as well as administration of actions considering Action Plan for Personnel Protection in Case of an Accident at nuclear fuel cycle enterprise.

3. REQUIREMENTS TO THE CONTENTS OF THE ACTION PLAN

3.1. General Provisions

3.1.1. Brief description of nuclear and radiation hazardous operations carried out at NFCE, list of nuclear and radiation hazardous facilities and areas located at NFCE site shall be provided for.

3.1.2. It should be demonstrated that emergency prevention and elimination system, which is a subsystem of the Uniformed State System for Emergency Prevention and Elimination, has been established at NFCE in compliance with the Federal Law "On Protection of Population and Territories Against Natural and Man-Induced Emergencies" (as amended on 22 October 2002, 22 August 2004) (Legislation Code of the Russian Federation, 1994 N 35, Art 3648) and:

- competence and authority of the Commission on Emergency Prevention and Elimination and Fire Safety (hereinafter referred to as "ICEO") ensuring administration and guidance of emergency prevention and consequence elimination works shall be set forth by relevant Provisions;
- ICEO members as well as Emergency Operations Leader shall be specified by the order of NFCE Director;
- competence and authority of NFCE special units or personnel authorized to address personnel protection in case of emergency and civil defense operations shall be set forth by relevant Provisions;
- NFCE dispatcher service conducting routine control of NFCE Emergency Prevention and Elimination System shall be established;
- communication and warning system as well as information transmission system shall be created.

3.1.3. Members, authorities and competence of the expert analytical group, which is composed of NFCE experts and, if necessary, of specialists from the body for state control of atomic energy and other organizations rendering support to ICEO under "Emergency Preparedness/Alert" or "Emergency" regimes as well as during real-time analysis of the available data and preparation of proposals and recommendations on elimination of NFCE accident consequences, shall be listed.

3.1.4. It shall be demonstrated how possible over-radiation of the personnel, which may be involved in urgent operations, is estimated, which health care institutions will provide treatment to the over-radiated individuals.

3.1.5. The procedure for transmission to the mass media of timely information related to an accident and its consequence elimination work progress shall be established.

3.2. Basic data for planning of personnel protection measures

3.2.1. NFCE general information.

This sub-section shall provide for:

- geographic and administrative characteristics of NFCE site;
- information on NFCE site location against administrative territorial boundaries as well as water reservoirs and rivers, maps of NFCE site and controlled area. Recommendations for layout format are contained in Annexes 1, 2, 3;
- information on possible radiation impact to the individual and environment in case of an accident at NFCE;
- description of buildings housing NFCE, layout of its main process premises;
- NFCE basic parameters and operational modes;
- NFCE potential radiation hazard category of NFCE facilities and NFCE in whole.

3.2.2. Radiation monitoring

This sub-section shall contain:

- brief description of NFCE Radiation Monitoring System;

- information on structure, capacities and operational modes of Automated Radiation Monitoring System (hereinafter referred to as “ARMS”) and engineered devices for data transmission via ARMS channels;
- data on individual radiation control group (service), its functioning under NFCE normal operation and emergency as well as information confirming the possibility of immediate assessment of individual radiation doses of the personnel and individuals participating in elimination of accident consequences.

3.2.3. Radiation situation

This sub-section shall provide for:

- 1) radiation situation at NFCE main process rooms and at controlled area identified on the basis of computations or measurements made under NFCE normal operation;
- 2) results of calculated prognosis for consequences of possible accidents;
- 3) brief description of possible accident scenarios including:
 - estimated levels of radioactive surface contamination of the premises and equipment;
 - estimated levels of radioactive contamination of NFCE site and controlled area (hereinafter referred to as “CA”);
 - possible individual effective (equivalent) doses received by personnel under an accident;
 - possible number of the affected requiring medical care.
- 4) assessment of estimated radiation situation under various possible weather conditions (including inversion and convection, lack of atmospheric precipitations and atmospheric precipitations) for beyond design basis accidents, which consequences may result in exercising population protection measures.

3.2.4 Prognosis of affected areas under chemical accident

The following assumptions shall be made for computations:

- destruction of one ChHS storage tank which capacity is equal to total capacity of chemically hazardous substances (hereinafter referred to as “ChHS”) storage tanks if the above tanks are stored together, if separately – of the largest single tank;
- computation of affected areas should be made considering the largest quantities of released ChHS (in the destroyed tanks) reduced to 1 ton of chlorine.

3.2.5. Organizations which NFCE Operating Organization shall interact with

This sub-section shall list the organizations, which NFCE Operating Organization shall interact with during urgent operations under NFCE accident. The list of the organizations shall be developed considering consequence severity of a possible accident.

3.2.6. Criteria for “Emergency preparedness/”Alert” and “Emergency” regime announcement

This sub-section shall set forth:

- values of effective dose rate and, considering facility specifics, radionuclide volume activity in the premises and at NFCE site, which, when exceeded, are the grounds to make a decision for operation of NFCE and the Operating Organization under “Emergency preparedness/Alert” and “Emergency” regimes. The values of basic effective dose limit and permissible radionuclide concentrations in the premises of personnel permanent presence shall be assumed as criteria to announce “Emergency preparedness/Alert” according to Radiation Safety Standards. Values corresponding to “A” level of dose criteria specified in Radiation Safety Standards shall be assumed as criteria to announce “Emergency” at NFCE site.

- specific violations of NFCE safe operation conditions and/or limits, which, if take place, are the grounds to make a decision for operation of NFCE and the Operating Organization under “Emergency preparedness/Alert” and “Emergency” regimes;
- list of officials authorized to make a decision to announce “Emergency preparedness/Alert” and “Emergency” at NFCE facilities and NFCE Operating Organization in whole.

3.3. Major personnel protection measures

3.3.1. Material and technical support

This sub-section shall provide for:

- information on NFCEF existing protective structures (blockhouses, basement and other subsurface premises, surface buildings and constructions), class and capacity thereof ensuring the possibility for NFCE employees to immediately take a shelter;
- list/nomenclature of NFCE emergency stock of PPE, dosimeters, radiation survey and monitoring instruments, communication means and devices, tools, medicine, equipment and materials to equip services and units involved in accident consequence elimination operations. Dosimeters and radiometers with operating ranges corresponding to maximum radiation consequences of possible accidents shall be provided for;
- list/nomenclature of emergency stock stored at NFCE itself;
- established (if required) procedure for food and water supply to accident consequence elimination workers including personnel of external organizations as well as evacuated personnel involved.

3.3.2. Notification and communication procedure

This sub-section shall provide for:

- “Emergency preparedness/Alert” and “Emergency” regime warning procedure established on the basis of available communication facilities of NFCE personnel and Operating Organization officials as well as officials of the organizations to be interacted with during accident consequences elimination;
- notification scheme and list of those to be notified, phones of all members of ICEO and Emergency Operations Leader;
- dispatcher service members and functioning at the Operating Organization;
- data on available communication channels (main and auxiliary lines) ensuring immediate warning of NFCE personnel and Operating Organization officials as well as stable communication with local authorities and body for state control of the use of atomic energy.

3.3.3. Procedure for preparedness of the Operating Organization services and units involved in accident consequences elimination

This sub-section shall provide for:

- staff and equipment of the Operating Organization services and units involved in accident consequences elimination; schedules for getting them prepared;
- number of personnel of involved (if required) units of other organization and body for state control of the use of atomic energy if they take part in the elimination of accident consequences, the extent to which the above units are equipped with PPE and individual dosimeters, radiation survey devices, trucks and other engineered devices.

3.3.4. Protection of accident consequences elimination participants

This sub-section shall provide for:

- permission procedure for personnel and other individuals to radiation hazardous operations in the accident area;
- locations of emergency stock of PPE, radiation monitoring equipment and individual dosimeters as well as procedure for distribution and application thereof;
- administrative and engineered support for radiation monitoring to be held in the area of accident consequences elimination operations;
- procedure for control and accounting of individual effective (equivalent) radiation doses of the individuals involved in accident consequences elimination operations;
- locations and procedure for sanitary treatment of emergency operations workers and special sanitary treatment of those with skin and mucous tissue disintegrity;
- express method for preliminary assessment of radionuclide intake and procedure for identification of individuals subject to re-examination using biophysical technique and body spectrometry;
- procedure and methods for monitoring of the overalls and skin contamination while leaving contaminated area; garments are subject to monitoring during evacuation from NFCE territory;
- protection measures for facility guard external posts and supply of individual dosimeters.

3.3.5. Radiation and general surveys

This sub-section shall define:

- members of radiation and general survey groups and equipment thereof;
- procedure for acquisition, analysis and generalization of data obtained by radiation and general survey groups;
- procedure for reporting to the Operating Organization Administration as well as to (if necessary) the management of the organizations which the Operating Organization interact with during accident consequences elimination operations.

3.3.6. Medical care for the affected individuals

This sub-section shall list:

- 1) information on medical support of measures to protect NFCE personnel in case of an accident at NFCE, which provides for:
 - self- and mutual aid by using first-aid kits or individual anti-radiation first-aid box of nuclear personnel;
 - first aid rendered by the Operating Organization medical units (sanitary team, sanitary treatment post, sanitary officer);
 - first-aid rendered by aid post staff;
 - medical care by first-aid brigade staff in case dangerous-to-life affections;
 - first-aid rendered to the individuals with radiation thickness by specialized radiological brigade of medical station of FMBA of Russia;
 - specialized aid in case of radiation sickness to be rendered in special hospital identified in advance.
- 2) medical care measures for the affected within CA including:
 - information on consolidating posts for the affected;
 - information on stocks, storage and replenish of medical devices, drugs and equipment;
 - information on iodine therapy including identification of dose and situation-related criteria for intake of stable iodine and other anti-radiation medicine recommended by FMBA of Russia;
 - equipping of premises for affected individual sanitary treatment and relevant procedure.
- 3) medical care measures for evacuated personnel including:

- procedure for identification, keeping records and medical examination of over-radiated NFCE personnel and workers of accident consequences elimination operations;
 - scope of medical support for personnel evacuated from NFCE site and supervision thereof;
 - general instructions (protocols) for medical care;
 - instructions (protocols) for some specialized medical aid rendered depending on the type of radioactive affection
- 4) computation of forces and means required for medical care.

3.3.7. Physical protection

This sub-section shall address:

- 1) Administrative and engineered measures to enhance physical protection of emergency NFCE facility and other NFCE facilities as well as actions of reserve forces and guard units aimed at:
 - controlled access of emergency response teams to NFCE guarded premises;
 - creation of mobile reserve for emergency facility guard strengthening;
 - continuous control of NFCE guard in case of an accident;
 - prevention of unauthorized access to NFCE site, timely identification and suppression of unauthorized actions;
 - arrest of the individuals suspected in the preparation of sabotage (act of terrorism) and/or theft of nuclear material or radioactive substances.
- 2) Certificate on conformity of emergency measures planned at NFCE with the requirements of "Physical Protection Rules for Nuclear Materials, Nuclear Installations and Nuclear Material Storage Facilities".

3.3.8. Law enforcement

This sub-section shall list:

- 1) information on an official in charge for peacekeeping operations at NFCE site, Operating Organization, within CA and personnel evacuation routes;
- 2) Operating Organization units and other means and forces, which will be involved in peacekeeping operations;
- 3) administrative measures, which shall ensure that peacekeeping operations are maintained at NFCE site, CA and personnel evacuation routes.

The above measures shall *inter alia*:

- stop the movement of all types of transport at emergency facility site except those taking part in accident consequences elimination;
- control the movement of the sheltered at NFCE site;
- restrict the access to emergency facility site;
- manage the traffic at personnel evacuation routes.

3.3.9. Personnel evacuation measures

This sub-section shall provide for the information on:

- officials authorized to make a decision on personnel evacuation from emergency NFCE facility and territory of the Operating Organization location;
- individuals in charge for evacuation administration and implementation;
- evacuated individuals consolidation and embankment;
- organizations and individuals responsible for vehicles to ensure evacuation. It shall be demonstrated that trucks will be provided for all individuals subject to evacuation from CA;
- evacuation routes and engineered means to maintain communication with truck fleet.

3.3.10. Actions of NFCE operating personnel and Operating Organization officials during accident consequences elimination

This sub-section, considering NFCE specifics and situation, which may occur during an accident, shall specify procedure for the actions of NFCE operating personnel and Operating Organization officials when decision is made to announce “Emergency preparedness”/“Alert” and “Emergency” regimes.

On-site personnel protection plan shall be enforced in case of an accident confined within the territory of specific NFCE facility.

Annex 4 contains recommended action procedure of NFCE operating personal and Operating Organization officials during accident consequence elimination.

3.3.11. Operations for radioactive contamination source elimination

This sub-section shall provide for:

- input data for identification of decontamination operations priority;
- engineered means supposed to be used to eliminate any blockages and to ensure access to the areas and equipment subject to decontamination operations;
- decontamination methods and engineered means;
- emergency NFCE facility radioactive waste collection and removal methods as well as locations of radioactive waste ultimate disposal;
- organizations and units, which may be involved in decontamination operations;
- measures for prevention of radioactive contamination propagation;
- measures for minimization of liquid radioactive waste generation.

3.3.12. Fire fighting measures

This sub-section shall list administrative and engineered measures on fire prevention and nuclear and radiation safety in case of fire at NFCE site, major and extra forces and means for fire suppression. It should be justified that available engineered means for fire suppression and fire prevention measures planned by the Operating Organization are in compliance with approved fire safety requirements.

3.3.13. Operations for elimination of consequences of chemically hazardous substance release (discharge)

This sub-section shall contain a list specifying possible quantities of chemical substances at NFCE, which may be released (discharged) in case of emergency. Model table with chemically hazardous substance data is presented in Annex 5.

This sub-section shall specify administrative and engineered measures for eliminating chemical accident consequences and ensuring nuclear and radiation safety in case of an accident at NFCE site, major and extra forces and means for elimination of chemically contaminated bays. It should be justified that available engineered means for accident consequences elimination and administrative measures are in compliance with regulatory document requirements and ensure accident localization.

3.3.14. Accidents, which are not caused by NFCE operational events

This sub-section shall list emergency-related measures caused by external impacts of natural and man-induced nature, which are typical for NFCE site region and may cause radiation consequences.

3.4. Operating Organization preparedness for emergency response

This Section shall address administrative and engineered measures ensuring real-time and effective emergency response of NFCE personnel and Operating Organization officials as well as providing for:

- familiarization of the officials (within the competence thereof) involved in the implementation of the Action Plan, with its contents (familiarization is confirmed by their signatures);
- instructions and leaflets informing on personnel immediate actions in case of emergency to be kept at each working station, on storage locations and use of PPE, stable iodine and anti-radiation medicine as well as on shelter location and evacuation route (to shelter, to embarkation post) during evacuation from NFCE;
- availability for the operating personnel of NFCE control posts (boards), devices and instructions for possible accident classification on the basis of condition of safety systems, barriers preventing radioactive substance propagation in the premises and beyond NFCE site;
- development of list of officials remaining at their working stations pending the instructions of Emergency Operations Leader;
- improvement of personnel actions during training and drills, methodological drills or headquarters staff exercises to be conducted annually (all data transmitted to training centers are marked as "Exercise");
- periodic trial operation of warning system for the NFCE employees and organizations with which the NFCE interacts when eliminating accident consequences (when all data transmitted to the training centers are marked as "Exercise");
- periodic replacement of emergency stock of stable iodine and anti-radiation medicine.

NFCE SITE LAYOUT

NFCE site layout shall indicate:

- buildings, constructions and main engineering service lines;
- shielded emergency response operations center (if any);
- shielding constructions (blockhouses, basement and other subsurface premises, surface buildings and constructions for Operating Organization personnel sheltering);
- aid post to provide first aid and evacuation of the affected individuals;
- check posts;
- ARMS sensors and environment monitoring posts;
- electric sirens and loud-speakers;
- distribution posts of dosimeters, radiation survey devices, communication facilities, tools, medical supplies, equipment and materials for services and units involved in accident consequences elimination;
- tanks with explosive, flammable and combustible substances
- tanks with chemically hazardous substances.

NFCE CONTROLLED AREA MAP

Controlled area map shall indicate:

- CA borders;
- NFCE location;
- NFCE site enclosure borders;
- shielding constructions (blockhouses, basement and other subsurface premises, surface buildings and constructions for personnel sheltering);
- motor roads and railways;
- location of electric sirens and loud-speakers;
- ARMS sensor and environment monitoring posts;
- personnel special treatment posts;
- wind rose, average speed of near-surface wind and air average temperature.

NFCE SURVEILLANCE AREA MAP

SA map shall contain:

- SA borders;
- CA borders;
- NFCE city and settlement borders involved in CD&E measures;
- NFCE site;
- shielded emergency response operations centers;
- routes and dislocation of forces involved in accident elimination (concentration areas, in-going zones, borders at NFCE surveillance and controlled area ;
- evacuation posts;
- medical care institutions;
- motor roads and railways;
- location of electric sirens and loud-speakers;
- ARMS sensors and environment monitoring posts;
- sanitary treatment posts for individuals and rolling-stock;
- wind rose, average speed of near-surface wind and air average temperature.

**RECOMMENDED ACTION PROCEDURE OF NFCE OPERATING PERSONNEL
AND OPERATING ORGANIZATION OFFICIALS
DURING ACCIDENT CONSEQUENCES ELIMINATION ^{1*}**

No.	Action	Accident type			Person in charge	Timeframe
		confined	local	common		
First priority actions						
1.	Identify whether violation of limits and (or) conditions of NFCF normal operation takes place having accident attributes	+	+	+	NFCF operations personnel	in case of violation detected
2.	Act in accordance with instructions in case of violation of limits and (or) conditions of NFCF normal operation having accident attributes Shift to temporary shutdown regime, make sure of CR sub-criticality (in case of an accident at CR)	+	+	+	— // —	— // —
3.	Make decision on setting “Emergency preparedness/Alert” and “Emergency” regime, switch on emergency serene, inform Leader of the emergency operations on NCF condition	+	+	+	Shift supervisor	When emergency condition of the equipment as well as deterioration of radiation situation is identified by two or more independent monitoring channels
4.	Make warning of NCF personnel that “Emergency preparedness/Alert” or “Emergency” regime is in effect	+	+	+	— // —	After receiving the information confirming pre-emergency situation or NFCE accident
5.	Act in accordance with the instructions on personnel first priority actions in case of an accident	+	+	+	NFCF operations personnel	After making warning on “Emergency preparedness/Alert” and “Emergency” regime at NCF
6.	Take measures to prevent unsealing of protection control system and change of	+	+	+	Shift supervisor	— // —

	emergency protection settings					
7.	Take measures to confine consequences of the violations at NCF and activate emergency systems for radioactive release localization	+	+	+	NCF operations personnel	After detecting violation of NCF normal operation having accident attributes
8.	Take measures for personnel evacuation to premises (buildings) of satisfactory radiation situation, render first aid to the affected	+	+	+	Shift supervisor	In case of unsatisfactory radiation situation in permanently attended NCF premises where reference levels are significantly exceeded
9.	Make decision on setting "Emergency preparedness/Alert" and "Emergency" regime in the Operating Organization (if necessary) on the basis of the information received	+	+	+	Emergency Operations Leader (Operating Organization Director)	After confirmation of the information obtained from other NCF communication channels
10.	Inform Emergency Operations Leader (Operating Organization Director) on the situation at NCF	+	+	+	Director of emergency facility	After receiving the information confirming pre-emergency situation or NCF accident
11.	Intensify the work of units and individuals being in charge to address personnel protection in case of emergency and civil defense	+	+	+	—//—	After making decision to run "Emergency preparedness/Alert" and "Emergency" regime in the Operating Organization
12.	Intensify the activity of ICEO Chairman and expert and analytical group	+	+	+	ICEO Chairman	— // —
13.	Keep records in the log books to chronologically reflect equipment failures, commands and instructions received from the officials, actions conducted and results obtained as well as leadership for NCF operation management by Emergency Operations Leader or unit head	+	+	+	Shift staff individual identified by shift supervisor	When violation of NCF normal operation is detected
Second priority actions						
1.	Identify accident type (category) on the basis of radiation situation in NCF premises, controlled area and surveillance area	+	+	+	Shift supervisor (facility director)	As soon as necessary basic data are received

2.	Notify the organizations, which the Operating Organization interacts with during accident consequences elimination	-	+	+	ICEO Chairman	After attributing an accident to a certain class
3.	Assess radioactive release trace, conditions of its occurrence	-	+	+	Shift supervisor (facility director), expert and analytical group	Immediately after making warning on "Emergency preparedness/Alert" and "Emergency" regime at NFCE and during emergency and rescue operations up to full control over NFCE
4.	Analyze all modifications of NFCF parameters and radiation situation to identify whether these modifications will change accident type (category)	+	+	+	— // —	During emergency and rescue operations up to full control over NFCF
5.	Involve radiation survey group to assess exposure dose rate at NFCF	-	+	+	Head of Radiation Safety Section (Laboratory)	After making warning on "Emergency preparedness/Alert" and "Emergency" regime in the Operating Organization
6.	Make prognosis for offsite radiation situation	-	+	+	Specialist of expert and analytical group for radiation prognosis	As soon as necessary basic data are received
7.	Provide for the recommendations to local authorities on protective measures taking into account the information on NFCF condition and results of offsite radiation situation prognosis	-	+	+	Emergency Operations Leader	As soon as radiation situation prognosis results prepared by expert and analytical group are received
8.	Inform atomic energy authority and (or) local authorities on impossibility to eliminate (localize) accident consequences by the Operating Organization	+	+	+	ICEO Chairman	As soon as impossibility to eliminate (localize) accident consequences by the Operating Organization is justified
9.	Supply of radiation protection means to all individuals involved in accident consequences elimination at NFCF including those seconded from other organizations	+	+	+	Person in charge for resource support of urgent operations	Before emergency and rescue operations
10.	Provide for special shelter for personnel or ensure evacuation of personnel, who's presence at emergency	-	+	+	Person in charge for personnel evacuation	As soon as unsatisfactory radiation situation is identified

	NFCF site is unnecessary					
11.	Conduct selective monitoring of personnel to identify the necessity for decontamination operations	+	+	+	Head of Radiation Safety Section (Laboratory)	Prior to NFCF personnel evacuation outside controlled area
12.	Stop (restrict) access of the individuals not involved in emergency and rescue operations to the territory of the Operating organization	+	+	+	Head of Guard in the Operating Organization	After making warning on "Emergency preparedness/Alert" regime in the Operating Organization
Third priority actions						
1.	Make sampling of radioactive substance fallouts and make analysis thereof	-	+	+	Head of Radiation Safety Section (Laboratory)	When release of radioactive substances has been shutoff or radioactive cloud has passed
2.	Provide the recommendations to local authorities to identify the area subject to preparatory operations for protective measures	-	-	+	Emergency Operations Leader	After receiving prognosis of radiation situation outside controlled area
3.	Give recommendations on special ventilation operation, release periodicity and confinement based on radionuclide content and activity of NFCF release	-	-	+	Specialist of expert and analytical group for radiation prognosis	After receiving release parameters
4.	Make rescue arrangements, use monitoring and decontamination means for evacuated individuals	+	+	+	Emergency Operations Leader	As soon as necessary basic data are received
5.	Develop proposals on protective measures in agriculture	-	-	+	ICEO Chairman	After receiving the information on contamination of rural lands
6.	Ensure further monitoring of the over-radiated personnel and individuals involved in emergency and rescue operations	+	+	+	Head of Medical Station of the Operating Organization	During treatment and health improving measures
7.	Ensure accounting of doses received by urgent operations workers	+	+	+	Head of Radiation Safety Section (Laboratory)	As for data received

Note: "+" identifies the need to make actions in case of an accident of such type (category).

"-" identifies lack of actions in case of an accident of such type (category).

MODEL TABLE OF CHEMICALLY HAZARDOUS SUBSTANCES

USED AT NFCE

No.	Name of ChHS, aggregate condition (gas, liquid)	Tank volume and number (m³ – N)	Threshold toxic dose, mg·min/l
1.	Ammonia (l)		15
2.	Nitric acid (l)		1.5
3.	and other applicable chemically hazardous substances according to the last inventory data		