2009 ISOE INTERNATIONAL ALARA SYMPOSIUM

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13-15 October 2009, Vienna, Austria

Legislative and statutory framework

INTERNATIONAL TREATIES OF THE RA

- CONVENTION ON NUCLEAR SAFETY. RATIFIED ON 24.09.1997.
- CONVENTION ON EARLY NOTIFICATION ABOUT NUCLEAR ACCIDENT. RATIFIED ON 22.06.1993.
- CONVENTION ON ASSISTANCE IN CASE OF A NUCLEAR ACCIDENT OR RADIOLOGICAL EMERGENCY. RATIFIED ON 22.06.1993.
- VIENNA CONVENTION ON CIVIL LIABILITY FOR NUCLEAR DAMAGE. RATIFIED ON 22.06.1993.
- REVISED SUPPLEMENTARY AGREEMENT CONCERNING THE PROVISION OF TECHNICAL ASSISTANCE BY THE IAEA TO THE GOVERNMENT OF THE RA. RATIFIED 04 JUNE 2003
- CODE OF CONDUCT ON THE SAFETY AND SECURITY OF RADIOACTIVE SOURCES. ARMENIA HAVE MADE A POLITICAL COMMITMENT WITH REGARD TO THE CODE OF CONDUCT IN DECEMBER 2005

Convention on Safe management of spent fuel and safe management of radioactive wastes is not yet approved by Armenian Parliament

Legislative and statutory framework

LAWS

- Law on Safe Utilization of Atomic Energy for Peaceful Purposes (01.03.1999) Supplements as of 18.04. 2000 and 25.12.2004
- Law on Licensing (27.06.2001)
- Law on Population Protection in case of emergency situation (29.12.1998)
- Code on Administrative Offenses (Code on Sanctions 5.12.1996)
- Criminal code (30.11.1996)

Legislative and statutory framework

By the Government of RA were approved several Decrees:

1. On establishment of Regulatory Authority (ANRA) and its Statute
2. Requirements for the licensing of different type of activities;

- Nuclear installations construction, commissioning, operation and decommissioning
- Ionizing radiation sources import/export, use, storage, transport
- Radioactive waste treatment, storage and disposal
- Emergency preparedness and response

Legislative and statutory framework

The following regulations on Radiation Safety are in force:

- Decree № 1219 as of 18 August 2006 on approval of **"Radiation Safety Norms"**
- Decree № 1489 as of 18 August 2006 on approval of **"Radiation Safety Rules"**
- Decree №631-N as of 4 June 2009 on approval of **"Procedure for the radioactive Waste Management"**

Some regulations of RF are still in use including radiation protection specific regulations for the NPP's

All related to radiation protection regulations including guides and manuals are in ANRA's short and long term plans

Legislative and statutory framework

Laws and Regulations to be reviewed

- Law on Safe Utilization of Atomic Energy for Peaceful Purposes (01.03.1999) Supplements as of 18.04. 2000 and 25.12.2004

During the review of the General Atomic Law the ANRA will use the requirements of IAEA "Handbook on Nuclear Law".

- Law on Licensing (27.06.2001), amended and supplemented as of 16.03.2004
- Decree № 1219 as of 18 August 2006 on approval of "Radiation Safety Norms".

The review of this general standards will be done after issuing of new version of IBSS.

- Some licensing procedures

Legislative and statutory framework

As far as the new type of practice will be started in Armenia, the set of new regulations related to the mining and milling are also in the stage of development;

Review of existed legislation on nature protection and natural resources

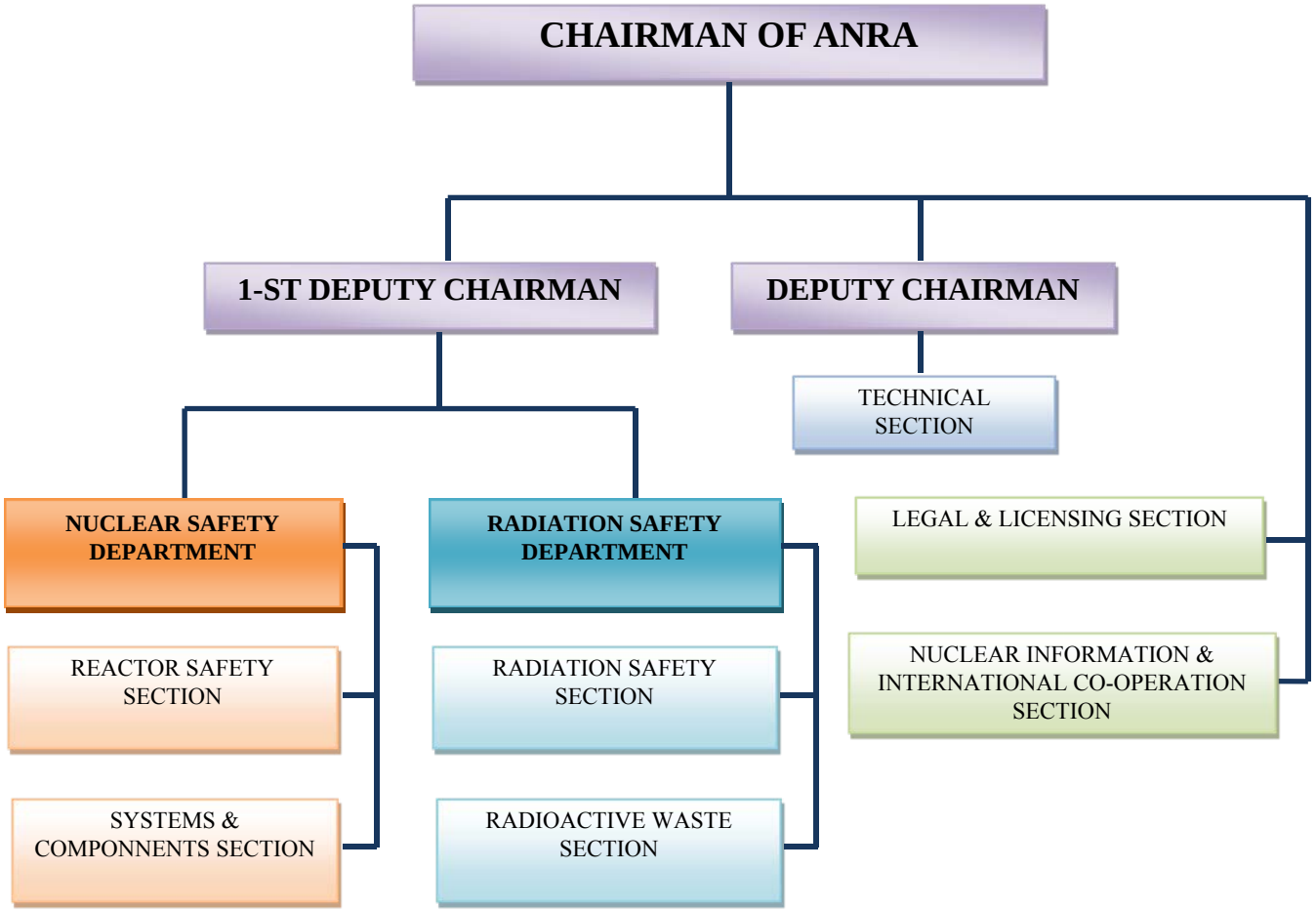
Develop or review the radiation protection requirements for the mining and milling industry (open underground)

Regulatory Authority

The ANRA established in 1993 and is a state authority responsible for regulation of nuclear and radiation safety in the Republic of Armenia. The authorities of the ANRA are stated in the Law on Safe Utilization of Atomic Energy for Peaceful Purposes and in the ANRA Statute.

The ANRA is a state authority directly reported to the prime Minister of RA.

ARMENIAN NUCLEAR REGULATORY AUTHORITY



ARMENIAN NUCLEAR REGULATORY AUTHORITY

REGULATORY BODY FONDING

The ANRA is financed from the state budget.

ARMENIAN NUCLEAR POWER PLANT


ГРУЗИЯ
ГРУЗИЯ
Ноемберян
Алаверди
Калинино
Казах
оз.Чилдыр
Гукасян
Тауз
Дебед
Степанаван
Севкар
Кура
Спитак
Иджеван
Ковлар
Мингечаурское вдхр.
Гюмри
Ванадзор
Берд
Гянджа
Башкенд
Карс
Маралик
Касах
Раздан
Севан
АЗЕРБАЙДЖАН
Анипемза
Раздан
Камо
Арагац
Ереван
оз.Севан
Варденис
Октемберян
Гарни
Кагызман
Эчмиадзин
Мартуни
Масис
Арташат
Веди
Истису
Игдыр
ТУРЦИЯ
Джермук
Арарат
Каракесе
Ехегнадзор
Седарак
Лачин
Базарчай
Диядин
Шарур
Горис
Догубаязит
Сисиан
Маку
Кафан
Шот
Нахичевань
Каджаран
Эрджиш
ИРАН
Джульфа
оз.Ван
Мурадие
Мегри
Ордубад
44°
45°
46°
41°
40°
39°
0
50
100
150 км
АРМЕНИЯ

NUCLEAR FACILITIES IN ARMENIA

1.The Armenian Nuclear Power Plant (ANPP), the only nuclear power plant in the region, consists of two VVER/440/270 units (that is a modified, seismic design VVER/440/230). Unit 1 started its commercial operation in 1976 and Unit 2 in 1980. Both units were shouted down shortly after the 1988 Spitak earthquake. In April 1993 the government of Armenia decreed to restart the ANPP Unit №2 due to the energy crisis in the RA.

Re-commissioning works were performed from 1993 to 1995 and in November 1995 Unit 2 restarted operation. At this moment the ANPP Unit N1 is in conservation regime (long-term shut down).

2.Dry Spent Fuel Storages:

First Dry Spent Fuel Storage Facilities license had been issued in 2000, with capacity for 612 fuel assemblies. The storage is filled and closed.

Second storage facility currently under the operation.

Radiation protection requirements for the occupational exposure

The Radiation Safety Norm and the Radiation Protection Rules for the regulation of safety and control of employees, public, medical exposure and the environment were putted in force in 2006.

These regulations are stated the dose limits for the staff (category A and B), for the public and for the medical exposure (guidance levels). The limits are in line with the IAEA Safety Standards.

For the implementation of the limits, as well as for the fulfilments of the principles of optimization of the doses and the related radiation risks, the radiation safety rules (Chapter XIV) stipulates the requirements on Radiation protection of the workers and the safety of the sources. The more detail radiation protection and safety requirements are stated in the special regulations for the nuclear facilities including NPP's.

CONTROL OF OCCUPATIONAL RADIATION EXPOSURES

ANPP has more then 873 staff under the radiation safety control. Most of them (excluding the shift staff) are not permanently work at controlled area and they could be involved during the outages or maintenance or refuelling activities at ANPP upon necessity.

CONTROL OF OCCUPATIONAL RADIATION EXPOSURES

For the ALARA implementation proposes by the special order of management the ALARA committee has been established and the program for its implementation has been adopted.
This program includes the technical and organizational measures as well as dose planning approach, which periodically reviewed by the radiation Protection Department and Management of ANPP.

In accordance with ALARA program the following organizational and technical actions for dose reduction are established:
•“Dose order” with special requirements on given condition shall be issued
•During the repair and refuelling remote mechanisms shall be used as maximum as possible;
•before starting the maintenance activities decontamination of rooms, equipment under repair shall be performed, if necessary;

CONTROL OF OCCUPATIONAL RADIATION EXPOSURES

- during performance of activities only the personnel whose presence is required must be at work places;
- the tools used when performing maintenance activities shall have special labelling and shall be placed on special trays or in boxes made of easily decontaminated material. The tools contaminated during maintenance activities are to be decontaminated. The use of these tools for maintenance of non contaminated equipment must be ruled out;
- when performing electric welding and gas welding activities it is necessary to take actions on preventing radioactive aerosol inhalation; the welding of small parts and equipment must be performed on special stands equipped with local exhaust ventilation;

CONTROL OF OCCUPATIONAL RADIATION EXPOSURES

•the personnel involved in the maintenance activities must be provided with radiation monitoring means (electronic digital radiation monitors, if possible);

•after completing the maintenance activities overall decontamination of rooms with subsequent radiation monitoring shall be performed.

THE FORM OF PLANNING THE WORKS ACCORDING ALARA

Work place:					
Description of work:					
ALARA arrangements	Yes	No		Protective actions	Yes	No
1. Depressurization of system	☐	☐		Decontamination of work area	☐	☐
2. Equipment movement possibility to less contaminated premises	☐	☐				
3. Availability of approved program/ procedures	☐	☐		Decontamination of equipments	☐	☐
4. Availability of special marked tools list	☐	☐		Temporary shillings	☐	☐
5. Is Monitored the working area	☐	☐				
6. Is it needed the special tools? If yes, specify!	☐	☐		Ventilations	☐	☐
7.Accurance of Radwaste	☐	☐		Air for special protective clothes	☐	☐
8.Designated place for Radwaste	☐	☐		Drainage of system	☐	☐
9.Written order for access to working area	☐	☐		Washout of system	☐	☐
10.Training of personnel	☐	☐			☐	☐
11.Other requirements if needed					☐	☐
What kind of other special ALARA arrangements are included?						
The Controller of the works				Date:		

Equipment /safety system:						
Description of work:						
The planning manpower allocation, man/hour	In fact man/hour	Differences, %	The planning dose, man*Sv	In fact dose, man*Sv	Differences, %	In fact dose rate, μSv/h
Designate the works which could be impact on manpower allocation or in dose:						
The volume of work (man/h) has changed:				Increase on … … … .% Decrease on… … … .%		
The radiation situation has changed in relation to planned:				Improved… … Worsened… ..		

If the radiation situation has worsened, mention the causes:

a) Insufficient of shielding… … ☐

b) Inconsistence of shielding to radiation situation… … ☐

c) Incorrect definition of radiation situation… … . ☐

d) Insufficient ventilation… … … ☐

e) Accordance a new un planned situation (mention what situation)… … … … … … … … … … … … . ☐

Other causes… …

Insufficient knowledge's of personnel on Radiation Safety ☐

Incompliance with rules of Radiation protection ☐

If the radiation situation turned out to be more severe than planned one, mention the causes… … … …

The chairman of ALARA Committee (signature)… … … … … … ..

Date… … …

However, some managerial and financial problems still are exist for the improvement of occupational radiation protection:

1.Organizational and technical challenges

•Lack of proper control from supervisor site
•Lack of up to date remote equipments

Commitment of managers and workers

• Training for better understanding of the role and functions at all levels from the top up to bottoms
•**Safety culture implementation**
•Following of QA program

Some data:
2008 at ANPP were planed and performed a general repair and maintenance activities (chemical cleaning of reactor vessel, non destructive testing of reactor vessel and eddy current control of SG tubes with cutting damaged tubes) .
The planned collective dose (as well as dose constraint for different type of works) before outage for 2008 was **1.58 Sv*man**. The real collective doses during the outage were **0.78 Sv*man.**

Distribution of main doses within different departments of ANPP was as follows:

- For the repair works – 61.8%
- For the decontamination work – 16.1%
- For the works for non destructive testing – 6.2%

The rest of percentages are distributed within other departments of ANPP.

THANK YOU FOR YOUR ATTENTION