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INTERNATIONAL ATOMIC ENERGY AGENCY
Technical Committee Meeting on Annual Workshop on ASSET Experience,
IAEA Vienna Headquarters
Conference room V, C07

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GENERAL OVERVIEW OF THE ASSET ACTIVITIES IN UKRAINE

25-27 June 1996, Vienna, Austria

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ABSRACT

Brief retrospective summary of the ASSET experience in Ukraine since first mission held in June 1992. Analysis of the positive influence of the ASSET approaches to the general safety culture status. Specific problems of the current situation. Difference in attitude to ASSET missions of plant managers and plant safety experts reveals global safety culture drawbacks on the organizational level. Analysis of the direct and root causes of the situation. Lessons learned. Ideas for corrective measures to be implemented.

1. SOME HISTORY

ASSET history in Ukraine was commenced with ASSET mission of the type "A," that took place 21-26 June 1996 at Chornobyl NPP. Mission conducted in-depth investigation of the turbine hall fire at the unit 2 of the CHNPP, using ASSET methodology. Due to outstanding cooperation of the plant management and openness of the assigned plant counterparts, mission succeeded to reveal the most principal deficiencies of the specific and generic nature. Success of the mission contributed to the positive attitude of the Ukrainian regulatory authority to the ASSET methodology and soon after comprehensive ASSET programme was requested by Ukraine from Agency. Report of the mission was translated and distributed between other Ukrainian NPP. It clearly shown to the plant management the difference between ASSET and OSART approach, and removed fears caused by the first OSART mission conducted at Rivne NPP in 1988. Further experience of the ASSET programme in Ukraine demonstrated an example of good cooperation between Agency, Regulatory Body and Ukrainian NPPs.

The first mission was folowed by the series of the coupled ASSET missions of the type S and R during the years of 1993-1995. Beside ASSET methodology seminars were used for highlighting of relevant IAEA safety practices and approaches, as IRS, INES, etc. In six missions there took part about 120 safety experts from NPP safety departments, regulatory body and utility Headquarters.

For the moment, seminars on the ASSET methodology were held at all Ukrainian NPPs. Table I gives chronology of the ASSET seminars since 1992.

Table I. ASSET missions type S conducted at Ukrainian NPP, 1992-1995:

NPP Name	Number, type of units	Date of the mission
Chmelnitsky NPP	1 VVER-1000	7-11 September 1992
Rivne NPP	1VVER-1000, 2 VVER-440	28 May - 2 June 1993
Zaporizha NPP	6 (5) VVER-1000	7-11 February 1994
South Ukraine NPP	3 VVER-1000	21-25 March 1994
Chornobyl NPP	3 (2) RBMK-1000	3-5 October 1995
Khmelnytsky NPP	1 VVER-1000	11-15 December 1995

Type S missions are designed as a preparatory tool before performing the analytical ASSET mission (type R, A).

Up to now missions of the R type, representing the comprehensive analysis of the operational experience of the NPP during whole operational history, have been completed at all Ukranian NPP.

Table II. ASSET missions type R conducted at Ukrainian NPP, 1993-1995:

Chmelnitsky NPP	1 VVER-1000	8-19 March 1993
Rivne NPP	1 VVER-1000, 2 VVER-440	22 Nov.- 3 Dec. 1993
Chornobyl NPP	3 (2) RBMK-1000	11-22 April 1994
Zaporizha NPP	6 (5) VVER-1000	13-24 June 1994
South Ukraine NPP	3 VVER-1000	16-27 January 1995

2. SOME GENERAL RESULTS

2.1. Chmelnytsky NPP.

Chmelnytsky NPP has one operating unit of the VVER-1000 type. There were analysed 212 operational events occured during 5 years of the NPP operation. Of this nomber 111 operational events were rated as a important to safety by INES scale:

Table III. Operational events important to safety at Chmelnytsky NPP analysed by ASSET mission.

INES Rating	Equipment	Personnel	Procedure
Level 0	67	12	5
Level 1	14	7	4
Level 2	-	1	1
Level 3	-	-	-
Total	81	20	10

2.2. Rivne NPP.

At Rivne NPP there are 3 units under operation - 2 of VVER-440 (V-213 model), and 1 of VVER-1000 (V-320 model). Asset mission type R took place in November 1993. General information on the operational events analysed is given in Table IV.

Table IV. Operational events important to safety at Rivne NPP analysed by ASSET mission

INES rating	Nomber of events						
	1988	1989	1990	1991	1992	1993	Total
Level 0	11	18	19	29	22	10	109
Level 1	1	1	-	1	1	2	6
Level 2	-	-	1	-	1	-	2
Level 3	-	-	-	-	-	-	-
Total	12	19	20	30	24	12	117

2.3. Chornobyl NPP.

Chornobyl NPP, is the oldest Ukrainian NPP (unit 1 was put into operation in 1977), and represents a special case with respect to the type of the reactor (RBMK-1000) and operational history which includes the first and hopefully last major nuclear accident in the history of the nuclear power. The specific conditions of the operation of NPP is clearly reflected by the operational history analysed by the ASSET mission in April 1994 (Table V). Mission considered 243 events with in-depth analysis of 110 events important to safety.

Table V. Operational events important to safety at Chornobyl NPP analysed by ASSET mission

INES rating	Nomber of Events					
	1989	1990	1991	1992	1993	Total
Out of scale	57	33	14	8	21	133
Level 0	17	2	11	24	21	96
Level 1		-	3	1	2	12
Level 2		-	2	-	-	2
Level 3	-	-	-	-	-	-
Total	19	27	16	25	23	110

2.4. Zaporizha NPP.

At the moment of conducting ASSET mission in June 1994 there were 5 operated units (now Zaporizha NPP has 6 units of VVER-1000 under operation). ASSET mission provided assessment of 709 events, 277 of them were confirmed to be important to safety. Table VI illustrates the general information about events important to safety.

Table VI. Operational events important to safety at Zaporizha NPP analysed by ASSET mission.

Year	Equipment	Personnel	Procedure	Total
1990	49	8	-	57
1991	60	11	1	72
1992	46	13	-	59
1993	65	8	2	75
1994	12	2	-	14
Total	232	42	3	277

2.5. South Ukraine NPP.

South Ukraine NPP has 3 operational units of the VVER-1000 type. ASSET mission worked there in January 1995. Of the total 178 events considered there were rated 98 as a safety important.

Table VII. Operational events important to safety at South Ukraine NPP analysed by ASSET mission

INES rating	Nomber of events						
	1989	1990	1991	1992	1993	1994	Total
Out of scale	8	22	6	12	11	21	80
Level 0	13	16	8	17	19	19	92
Level 1	-	-	1	1	2	2	6
Level 2	-	-	-	-	-	-	-
Level 3	-	-	-	-	-	-	-
Total	21	38	15	30	32	42	178

2. PROBLEMS, COMMENTS AND RECOMMENDATIONS

So, up to now ASSET analytical methodology was introduced to each of Ukranian NPP and each NPP had an experience in performing preparatory activities for the ASSET experts work, which means rather comprehensive practical involvement of the local safety experts into ASSET mission activity. It is important, that ASSET seminars conducted at each particular NPP always included representatives from other Ukrainian NPP, thus creating general similar approaches and integrated interpretation of the ASSET methodology and common safety language.

ASSET missions created special circle of safety experts both at operational part - NPPs (major portion), and regulatory body and it's supporting structures.

Specific feature in Ukraine was that from the very beginning Ukrainian regulatory body leaded the way in co-ordination of the ASSET activities, rather than utility side (State Committee for Nuclear Power Utilisation - "Derzhcomatom"). This fact was the result of the situation that existed for the moment of the ASSET introduction, the main characteristic feature of which was relative maturity of the regulatory body and organizational uncertainty of the utility side.

Nowdays the basic policy of the Ukrainian regulatory body (Ministry for Environmental Protection and Nuclear Safety) includes a gradual involvement of the Derzhcomatom into more active participation in planning and co-ordination of ASSET activities. Still, it is supposed that regulatory body will retain general control and oversight function determined by the nature of the regulatory body functions.

In general, Ukrainian practice has clearly demonstrated following advantages of the ASSET approach:

- ASSET has shown to be flexible and constantly developing safety assessment methodology to comply with current status of the knowledge, needs and capabilities of the accepting countries;

- it provides practical and relatively a simple tool for systematic assessment of the operational safety performance and implementation of immediate corrective actions within available resources;

- ASSET services are equipped with well-developed mechanism for transference of the ASSET approach and procedures to local plant safety experts;

- opportunity for direct contact of plant safety experts with their experienced counterparts from all over the world, thus giving a systematic way for exchange of specific safety experience and safety relevant information;

- for Ukraine (as well as for other FSU countries) - communicating a habit for establishing definite safety goals and detailed safety criteria, as well as for prioritizing of safety problems by their importance.

With respect to specific Ukrainian experience following issues could be shared with other countries - receptors of ASSET services:

- balanced and well-coordinated cooperation of the regulatory body with an operators and governmental agency responsible for nuclear power planning is of prime importance for the success of the ASSET program in the country.

Following recommendations could be proposed to Agency with respect to improvement of the ASSET practices:

- emphasize managerial implications of the ASSET assessment results (requirements to plant management should be more strict and comprehensive and avoid too much diplomacy); as standard ASSET seminars usually involve medium safety expert level, some appropriate events for familiarization with the essence of the ASSET approach for plant managers level (1-2 days, appropriate place and program). This is especially relevant to Ukraine with respect to the implementation of the pant self assessment stage of ASSET;

- Modernization of the INES scale is desirable to provide a tool for prioritization of Level 0 events, which represent the vast majority of the reported events;

- The Agency should never suspendAfor considerable period the ongoing process of ASSET activities (as it in fact is taking place in Ukraine now, where since January of the 1995 we have not got any assessment ASSET missions), because it causes interruption of the continuous learning process, breaks expert contacts and communication, affects consistency of the safety performance assessment practice.