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RCC REPORT
ON PARTICIPATION IN EMERGENCY EXERCISE AT LOVIISA NPP

29 May 2018

Topic: EMERGENCY EXERCISE AT LOVIISA NPP (FINLAND)

Moscow 2018

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ABBREVIATION LIST

ftp	file transfer protocol – протокол передачи файлов
NPP	nuclear power plant
JSC «Consist-OS»	joint stock company "Consist – Telecoms operator"
WANO-MC	WANO Moscow Centre
VVER	water-cooled water-moderated power reactor
VCC	Video-conference
VNIIAES	joint stock company "All-Russian scientific and research institute for NPP operations"
CC	crisis center of JSC Rosenergoatom
NRC Kurchatov Institute	National Research Center ”Kurchatov Institute”
OKB "Gidropress"	Experimental Design Bureau “Gidropress”
SPC "Taifun"	scientific and production company "Taifun"
OPAS	NPP emergency support group
DG	Diesel Generator
EDG	Emergency Diesel Generator
EE	emergency exercise
RCC	regional crisis center
RF	reactor facility
SCC Rosatom	Situational and crisis center of Rosatom
CC&OPAS FG	functional group ensuring CC and OPAS functioning
RCC FG	functional group ensuring RCC functioning
TSC	technical support center
UT	utility (operator), nuclear power plants

Introduction

Pursuant to the Regional Crisis Center working plan for 2018, the RCC took part in the emergency exercise at Loviisa NPP (Finland) on 29 May 2018, from 9:00 till 13:00 Moscow time.

The main EE objective was to practice Regulations on functioning and Regulations on information exchange between participants of the WANO-MC Regional Crisis Center while responding to a simulated accident at Loviisa NPP (Finland).

The RCC EE supervisor – V.A. Golubkin, the chief technologist of the CC and OPAS functioning unit of the Emergency preparedness and radiation protection department.

Objectives of the EE were:

- RCC – Loviisa NPP communication channels (phone, fax, e-mail) test in the frames of response to a simulated accident at Loviisa NPP;
- evaluation of Loviisa NPP personnel readiness and skills in terms of ability to send and transfer RCC formats;
- to practice provision of expert/advisory and logistical support to Loviisa NPP.

The simulated accident at Loviisa NPP occurs at unexpected moment of time.

Emergency Exercise participants

The OPAS group members (RCC FG, CC&OPAS FG), TSC (VNIIAES, SPC "Taifun". OKB "Gidropress", NRC Kurchatov Institute), fast-response dispatching department of technological branch JSC “Concern Rosenergoatom”, SCC Rosatom, JSC "Consist – OS" took part in the emergency exercise from Russian side.

Loviisa NPP (Fortum Company, Finland), Armenian NPP (Armenia), Mochovce NPP and Bohunice NPP (Slovenske Elektrarne, Slovakia), Dukovany NPP and Temelin NPP (CEZ Company, Czech Republic), NNEGC Energoatom (Ukraine), Kozloduy NPP (Bulgaria), Paks NPP (Hungary), Belorussian NPP (Republic of Belarus) took part in the emergency exercise as foreign organizations.

World Association of Nuclear Operators, Moscow Centre took part in the emergency exercise as an international organization.

1 Results analysis of the emergency exercise

1.1 In course of the emergency exercise the information exchange procedures had been practiced between the RCC and RCC member utilities/NPPs in accordance with the Regulations on information exchange between the participants of the WANO-MC Regional Crisis Center (hereafter – the Regulations on information exchange).

1.2 E-mail have been used as the main communication channel in frames of the exercise; in addition, all messages on the exercise shall be duplicated at the ftp-server of the Crisis Center. Videoconferencing, e-mail and phone were used for communication with the TSCs (NRC KI, OKB "Gidropress" and RPA "Typhoon").

1.3 During the exercise, the RCC received and transferred overall amount of 8 messages on simulated accident occurrence and development at Loviisa NPP. The chronological consequence of information exchange is provided in tables 1.1 and 1.2.

Table 1.1 – Chronological sequence of information received by RCC from emergency exercise participants (Incoming messages)

Msg. No	Reg. No	Sender	Data transmission channel	Message	Sending time (MOW)
1	-	Loviisa NPP (E. Vainonen)	e-mail-fax	RCC-2 format Information on safety significant events at NPP	10:55
2	2	Loviisa NPP (E. Vainonen)	e-mail/fax	RCC-3a-VVER format Data on accident evolution within plant site/general accident	11:47
3	3	Loviisa NPP (E. Vainonen)	e-mail/fax	RCC-3a-VVER format Data on accident evolution within plant site/general accident	12:47
4	4	Loviisa NPP (E. Vainonen)	e-mail/fax	RCC-4 format Request for expert/consultative and engineering support - End of the exercise	12:45
	Messages received in total			4	

Table 1.2 - Chronological sequence of information sent from RCC to emergency exercise participants (Outgoing messages)

Msg. No	Reg. No	Addressee	Data transmission channel	Message	Sending time (MOW)
1	1	TSC, OO/NPP – RCC members	e-mail/fax, ftp	RCC-2 format Information on safety significant events at NPP	11:25
2	2	TSC, OO/NPP – RCC members	e-mail/fax, ftp	RCC-3a-VVER format Data on accident evolution within plant site/general accident	12:20

Msg. No	Reg. No	Addressee	Data transmission channel	Message	Sending time (MOW)
3	3	TSC, OO/NPP – RCC members	e-mail/fax, ftp	RCC-3a-VVER format Data on accident evolution within plant site/general accident	13:35
4	4	TSC, OO/NPP – RCC members	e-mail/fax, ftp	End of the exercise	12:45
	Messages forwarded in total			4	

Having analyzed the tables 1.1 and 1.2 it should be concluded that the information submission timeframes in accordance with the Regulations on information exchange have been mainly observed.

A number of remarks were related to adequacy of information exchange formats completion, such as:

– The first message was not numbered as Message No1 at Lovvisa NPP;

– Format RCC-4 “Request for expert/advisory and engineering support” was wrongly used to announce the exercise termination;

– Not updated information exchange formats were used, in particular two formats RCC-3a with no “PWR” index;

– Format RCC-3 “Notification of on-site emergency” was not sent by Loviisa NPP, thus ruining messages order, and as a result the RCC participants remained unaware of conditional accident on site of Loviisa NPP;

– RCC-3a format (message No 2) describes the condition of two power units (Loviisa-1 and Loviisa-2). It is recommended to complete a format per unit (separately) in case of conditional emergency occurring at few units simultaneously;

– In the event of loss of containment integrity, it is recommended to specify the cause of particular violations, and then to describe how the violations were corrected;

– Neither incoming nor outgoing messages were back-up on FTP-server of CC;

– RCC did not acknowledge receipt of messages sent by Loviisa NPP (Fortum).

2 Evaluation of the emergency exercise

The results of comprehensive evaluation show good convergence of the EE assessment conducted by RCC and Loviisa NPP.

There were no requests for TSCs expert/consultative support from the plant.

Conclusion

During the EE the RCC participants practiced use of procedures to exchange information between RCC and member utilities/plants in accordance with Regulations for information exchange between the RCC participants. During the EE RCC has received 4 messages about occurrence and progression of a conditional accident at Loviisa NPP, which were processed and further sent to RCC member utilities/NPPs.

Accomplishments of this EE are as follows:

– Timing of messages was in general in accordance with the information exchange Regulation;

– Comprehensive analysis showed rather good correlation.

A few deficiencies were revealed in completion and precession of information exchange formats, and it is recommended to:

– Conduct a refresher training in completion of information exchange formats;

– Arrange a process to acknowledge receipt of messages (information exchange formats) from NPP with a conditional accident.

Due to lack of any activity demonstrated by JNPC, Tianwan NPP (China), and NPPD, Bushehr NPP (Iran), during information exchange in frames of this EE with Loviisa NPP, the above listed members were expelled from the EE participants.

Based on the analysis results of the EE at Loviisa NPP on 29.05.2018, it should be concluded that the main EE objective has been achieved. The RCC shift on duty and the contact person responsible for Loviisa NPP interaction with the RCC have practiced the actions according to the Regulations of information exchange between participants of the WANO-MC Regional Crisis Center.

Attachment 1 – Evaluation of emergency exercise at Loviisa NPP on 29.05.2018

No.	Evaluation criteria	RCC evaluation	Loviisa NPP evaluation	Summative evaluation	Remarks
1	Adherence to the timeframes of messages sending to the RCC according to the Information Exchange Regulations.	SAT	SAT	SAT	The information submission timeframes in accordance with the Regulations on information exchange have been mainly observed.
2	Correctness of forms filling out and sequence of information exchange	NOF	SAT	NOF	Remarks regarding fulfilling of this criteria are given in the report, namely in section "results analysis of the emergency exercise"
3	Number of received by RCC and forwarded forms	SAT	SAT	SAT	Number of messages sent by the plant does correspond with the number of massages forwarded by RCC to the RCC participants.
4	Sufficiency of data to understand situation at the plant.	SAT	SAT	SAT	Technical information provided by Loviisa NPP was sufficient to understand the situation.
5	Correctness of the initiating event description in accordance with the EE scenario.	SAT	SAT	SAT	A technological scenario was not provided by Loviisa NPP
6	Use of proper forms	NOF	SAT	NOF	Not up-to-date forms of information exchange were used
7	Organization of interaction within emergency drills and exercises (audio/video conference communication).	SAT	SAT	SAT	Communication channels used during the exercise were functioning properly
8	Availability of backup communication channels	SAT	SAT	SAT	Backup communication channels were available for use
9	Provision of expert / advisory support to the utility / NPP.	NOT	NOT	NOT	Loviisa NPP had not requested expert/advisory support from the RCC

No.	Evaluation criteria	RCC evaluation	Loviisa NPP evaluation	Summative evaluation	Remarks
10	List of the forces and means engaged into the emergency exercise.	SAT	SAT	SAT	Loviisa NPP had not requested technical support from the RCC
11	Acknowledge receipts by the RCC	NOF	NOF	NOF	RCC did not acknowledge receipt of messages sent by Loviisa NPP, at that other EE participants did.

***SCORE:**

SAT: Satisfactory fulfillment of the criterion. Minor deficiencies could exist that do not impact the overall fulfillment of the criterion.

NOF: Criterion is not fully fulfilled. Efforts are needed to resolve deficiencies.

UNSAT: Unsatisfactory fulfillment of the criterion. Performance criterion is not fulfilled.

NOT: Not applicable to the RCC member (depends on the participation level).

AGREEMENT SHEET

On behalf of the JSC "Concern Rosenergoatom"

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