# FEDERAL ENVIRONMENTAL, INDUSTRIAL AND NUCLEAR SUPERVISON SERVICE

**ORDER**

**dated May 23, 2024 No. 159**

**ON THE APPROVAL
OF METHODOLOGICAL RECOMMENDATIONS ON EVALUATION OF THE CONDUCT OF EMERGENCY DRILLS BY OPERATORS OF SHIPS AND OTHER WATERCRAFT WITH NUCLEAR REACTORS**

In accordance with sub-clause 5.3.11 of clause 5.3 of the Regulations on the Federal Environmental, Industrial and Nuclear Supervision Service, approved by Resolution of the Government of the Russian Federation No. 401 of July 30, 2004, and in order to implement the fourth paragraph of clause 6 of the Regulations on the functional subsystem of control over nuclear and radiation hazardous facilities of the unified state system of prevention and elimination of emergency situations, approved by Order No. 236 of the Federal Environmental, Industrial and Nuclear Supervision Service of June 28, 2021, I order:

to approve the attached Methodological Recommendations on evaluation of the conduct of emergency drills by operators of ships and other watercraft with nuclear reactors.

Alexander TREMBITSKY

Chairman

Approved
by Order of the Federal Environmental, Industrial and Nuclear Supervision Service
No. 159 dated May 23, 2024

**METHODOLOGICAL RECOMMENDATIONS FOR EVALUATING THE CONDUCT OF EMERGENCY DRILLS BY ORGANIZATIONS OPERATING SHIPS AND OTHER WATERCRAFT WITH NUCLEAR REACTORS**

**Methodological recommendations on evaluation of the conduct of emergency drills by operators of ships and other watercraft with nuclear reactors**

**Federal Environmental, Industrial and Nuclear Supervision Service, Moscow, 2024**

On May 23, 2024, Methodological Recommendations on Evaluation of the Conduct of Emergency Drills by Operators of Ships and Other Watercraft with Nuclear Reactors were enacted.

These Methodological Recommendations have been prepared to provide practical assistance to specialists who are members of the working groups of the Information and Analytical Center of the Federal Environmental, Industrial and Nuclear Supervision Service involved in work in the event of accidents on ships and other watercraft with nuclear reactors when they evaluate emergency drills by organizations operating ships.

Order of the Federal Environmental, Industrial and Nuclear Supervision Service No. 159 dated May 23, 2024.

 1. These Methodological Recommendations have been prepared in order to provide practical assistance to specialists who are members of the working groups of the Information and Analytical Center of the Federal Environmental, Industrial and Nuclear Supervision Service (hereinafter referred to as IAC) involved in work in the event of accidents on ships and other watercraft with nuclear reactors <1> (hereinafter referred to as ships) when they evaluate emergency drills <2> by operators of ships.

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<1> Sub-clause “g” of clause 5, clause 10, sub-clause “c” of clause 14, clause 19 of the Regulations on the Information and Analytical Center of the Federal Environmental, Industrial and Nuclear Supervision Service, approved by Order of the Federal Environmental, Industrial and Nuclear Supervision Service No. 165 of April 18, 2013, as amended by Order of the Federal Environmental, Industrial and Nuclear Supervision Service No. 339 of August 25, 2017.

<2> Clause 149 of the Federal Rules and Regulations in the field of the use of atomic energy (hereinafter referred to as FRR) “General provisions for ensuring safety of ships and other watercraft with nuclear reactors” (NP-022-17), approved by Order of the Federal Environmental, Industrial and Nuclear Supervision Service dated September 4, 2017, No. 351 (registered by the Ministry of Justice of the Russian Federation on September 27, 2017, Registration No. 48344) (hereinafter referred to as NP-022-17), clause 22 of FRR “Requirements for planning measures for actions and protection of personnel in nuclear and radiation accidents on ships and other watercraft with nuclear reactors” (NP-079- 18), approved by Order of the Federal Environmental, Industrial and Nuclear Supervision Service of June 27, 2018, No. 278 (registered by the Ministry of Justice of the Russian Federation on September 3, 2018, Registration No. 52051) (hereinafter referred to as NP-079-18).

 2. The radiation situation assessment and forecasting group (hereinafter referred to as RSAF Group), as well as the technological condition assessment and forecasting group (hereinafter referred to as TCAF Group) are proposed to evaluate the conduct of emergency drills on ships for each of the recommended areas, types and criteria given in Annexes No. 1 and No. 2 to these Methodological Recommendations, respectively.

 3. It is suggested to evaluate the conduct of emergency drills by operators on ships in accordance with the recommendations given in Annex No. 3 to these Methodological Recommendations.

 4. Recommended types of overall all-area evaluation of emergency drills conducted by operators on ships and its criteria are given in Appendix No. 4 to these Methodological Recommendations.

 5. It is suggested that the results of evaluation of emergency drills conducted by operators on ships should be formalized in accordance with the recommended template given in Annex No. 5 to these Methodological Recommendations.

Appendix No. 1
to the Methodological Recommendations
 for evaluating the conduct of emergency drills
 by operators of ships and
 other watercraft with nuclear reactors,
 approved by Order of the Federal Environmental,
Industrial and Nuclear Supervision Service
 No. 159 dated May 23, 2024

# RECOMMENDED AREAS, TYPES AND CRITERIA FOR EVALUATION BY RSAF GROUP OF EMERGENCY DRILLS ON SHIPS CONDUCTED BY OPERATORS

Area No. 1. Timeliness of declaration of the states of “Emergency Preparedness” or “Emergency Situation” at floating nuclear power plants (hereinafter referred to as FNPP) operated in the power source mode, and enactment of the Action Plan for actions and protection of personnel in case of nuclear and/or radiation accidents on ships and other watercraft with nuclear reactors (hereinafter referred to as the Action Plan) <3>

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<3> NP-079-18, clause 48.

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| Types of evaluation | Criteria of evaluation |
| “Sufficient” | The states “Emergency Preparedness” or “Emergency Situation” are declared in a timely manner. The action plan is put into effect in a timely manner. |
| “Satisfactory” | The states “Emergency Preparedness” or “Emergency Situation” are not declared in a timely manner or the Action Plan is not put into effect in a timely manner. |
| “Insufficient” | The states “Emergency Preparedness” or “Emergency Situation” is not declared or an Action Plan is not put into effect. |

Area No. 2. Timeliness of activation of the local warning system at the FNPP operated in the power source mode <4>

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<4> Clause 2.7 of the Plant Shift Supervisor’s Action Plan for Threat and Occurrence of an Emergency at a Nuclear Plant, as set forth in Appendix No. 13 of the Annex to the FRR “Standard Content of the Personnel Protection Action Plan in the Event of an Accident at a Nuclear Plant” (NP-015-12), approved by Order of the Federal Environmental, Industrial and Nuclear Supervision Service No. 518 dated September 18, 2012 (registered by the Ministry of Justice of the Russian Federation on February 12, 2013, Registration No. 27011) (hereinafter referred to as NP-015-12), clause 17 of NP-079-18.

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| Types of evaluation | Criteria of evaluation |
| “Sufficient” | The local warning system is activated in a timely manner. |
| “Satisfactory” | The local warning system is not activated in a timely manner. |
| “Insufficient” | The state “Emergency situation” is declared, but the local warning system is not activated. |

Area No. 3. Timeliness and sufficiency of actions to organize evacuation of personnel from the FNPP operated in the power source mode <5>

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<5> Clauses 7.2.2, 7.2.3, 8.3, and 9.5.2 to the Annex to NP-015-12, clause 17 of NP-079-18.

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| Types of evaluation | Criteria of evaluation |
| “Sufficient” | The routes of evacuation and the conditions of its organization correspond to those established in the Action Plan. The evacuation route chosen during the emergency drill is correct (does not coincide with the direction of radioactive cloud). The personnel evacuation is performed in a timely manner. |
| “Satisfactory” | The personnel evacuation route selected during the drill is correct (does not coincide with the direction of radioactive cloud), but the evacuation is not performed in a timely manner. |
| “Insufficient” | The personnel evacuation route selected during the drill is incorrect (coincides with the direction of radioactive cloud). |

Area No. 4. The scope (presentation of information on the state of radiation situation on the ship (according to regular monitoring devices, portable devices or ship laboratory monitoring data); measures taken to eliminate the violation and its consequences; the need for additional technical means and organizational measures to assist in eliminating the accident, incident and their consequences), correctness (absence or presence of contradictions), and timeliness of transmitting an operational message about a violation in the ship’s operation <6>

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<6> Paragraphs seven, ten and eleven of clause 6 and clause 8 of the FRR “Regulations on the procedure for investigating and accounting for violations in the operation of ships with nuclear installations and radiation sources” (NP-088-11) approved by Order of the Federal Environmental, Technological and Nuclear Supervision Service No. 667 of November 29, 2011 (registered by the Ministry of Justice of the Russian Federation on April 13, 2012, Registration No. 23835) (hereinafter referred to as NP-088-11).

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| Types of evaluation | Criteria of evaluation |
| “Sufficient” | The operational message of the ship occurrence is transmitted in a timely manner, in full, and without contradictions. |
| “Satisfactory” | The operational message of the ship occurrence is transmitted in a timely manner, in full, but contains contradictions. |
| “Insufficient” | Operational message about the ship occurrence is transmitted untimely or not in full. |

Appendix No. 2
to the Methodological Recommendations
 for evaluating the conduct of emergency drills
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# RECOMMENDED AREAS, TYPES AND CRITERIA FOR EVALUATION BY TCAF GROUP OF EMERGENCY DRILLS ON SHIPS CONDUCTED BY OPERATORS

Area No. 1. Correctness (conformity or inconsistency, sequence) of actions taken by ship personnel to prevent initial events from escalating into design accidents, design accidents into beyond-design accidents, as well as to mitigate the consequences of accidents <7>

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<7> NP-022-17, clauses 53, 134, 139.

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| Types of evaluation | Criteria of evaluation |
| “Sufficient” | Personnel actions and their sequence are in accordance with the operating documentation. |
| “Satisfactory” | Personnel actions are in accordance with the operating documentation, but their sequence is not observed. |
| “Insufficient” | Personnel actions and their sequence are not in accordance with the operating documentation. |

Area No. 2. The scope (provision of information on the ship’s name; geographic coordinates of the ship’s location; time of occurrence or detection of the occurrence; state of the ship’s nuclear installation before the occurrence; state of the nuclear installation at the time of reporting; nature of the violation; suspected causes of the violation) and correctness (absence or presence of contradictions) of the transmission of the operational message on the operational occurrence <8>

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<8> NP-088-11, clause 6, paragraphs two, three through six, eight, and nine.

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| Types of evaluation | Criteria of evaluation |
| “Sufficient” | The operational message of the ship occurrence is transmitted in full and contains no contradictions. |
| “Satisfactory” | The operational message of the ship occurrence is transmitted in full, but contains contradictions. |
| “Insufficient” | The operational message of the ship occurrence is not transmitted in full. |

Appendix No. 3
to the Methodological Recommendations
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# RECOMMENDATIONS ON EVALUATION OF EMERGENCY DRILLS ON SHIPS

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| --- | --- |
| Types of evaluation | Parameter value range |
| “Sufficient” | C:\Users\kutumova\Downloads\Методические рекомендации по оценке проведения противоаварийных тренировок организациями, эксплуатирующими суда и другие плавсредства с ядерными реакторами\image002.png |
| “Satisfactory” | C:\Users\kutumova\Downloads\Методические рекомендации по оценке проведения противоаварийных тренировок организациями, эксплуатирующими суда и другие плавсредства с ядерными реакторами\image003.png |
| “Insufficient” | C:\Users\kutumova\Downloads\Методические рекомендации по оценке проведения противоаварийных тренировок организациями, эксплуатирующими суда и другие плавсредства с ядерными реакторами\image004.png |

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<\*> N is the number of areas, for which the evaluation of emergency drills conducted by operators on ships was performed.

The parameter *Ɛ* should be calculated by the formula:

*Ɛ = Ʃsuf + Ʃsat + Ʃnsuf*,

where:

*Ʃsuf* is the parameter, the value of which is proposed to be equal to the sum of points assigned to the evaluation areas of operators’ emergency drills applied by the RSAF Group and the TCAF Group, for which the rating “sufficient” is assigned (each area is assigned a point equal to one);

*Ʃsat* is the parameter, the value of which is proposed to be equal to the sum of points assigned to the evaluation areas of operators’ emergency drills applied by the RSAF Group and the TCAF Group, for which the rating “satisfactory” is assigned (each area is assigned a point equal to zero);

*Ʃnsuf* is the parameter, the value of which is proposed to be equal to the sum of points assigned to the evaluation areas of operators’ emergency drills applied by the RSAF Group and the TCAF Group, for which the rating “insufficient” is assigned (each area is assigned a point equal to minus one).

Appendix No. 4
to the Methodological Recommendations
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# RECOMMENDED TYPES OF OVERALL ALL-AREA EVALUATION OF THE CONDUCT OF EMERGENCY DRILLS BY OPERATORS ON SHIPS AND ITS CRITERIA

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| --- | --- |
| Types of overall evaluation | Criteria |
| “Sufficient” | The measures implemented during emergency drills are sufficient to ensure protection of personnel. |
| “Satisfactory” | There are some shortcomings in personnel protection measures implemented during emergency drills. |
| “Insufficient” | Personnel protection measures implemented during emergency drills are insufficient and should be improved. |

Appendix No. 4
to the Methodological Recommendations
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 No. 159 dated May 23, 2024

APPROVED BY

managing team representative

(signature, full name)

date

Evaluation of Emergency Drills on

(name of ship)

(date of drills)

|  |  |  |
| --- | --- | --- |
| No. | Name of emergency drill evaluation area for which rating “satisfactory” or “insufficient” is assigned | Description of identified deficiencies |
| 1. |  |  |
| 2. |  |  |
| 3. |  |  |

Overall evaluation of emergency response drills on the ship

(in accordance with Annex No. 4 to these Methodological Recommendations)

RSAF Group Manager

(signature, full name)

TCAF Group Manager

 (signature, full name)