

Guide YVL A.9, Regular reporting on the operation of the nuclear facility

1 Scope of application

Guide YVL A.9 presents the requirements concerning reports to be drawn up regularly and submitted to STUK. All requirements laid down in this Guide apply to nuclear facilities, including operating nuclear power plants and nuclear waste management facilities located in the same site area. In addition, the annual reporting requirements of this Guide apply to research reactors, where applicable. Guide YVL A.5 "Construction and commissioning of a nuclear facility" applies to nuclear facilities under construction.

2 Justifications of the requirements

The Guide sets out requirements for the regular reporting at a nuclear power plant, and it specifies the requirements set forth in the Radiation and Nuclear Safety Authority Regulations STUK Y/1/2018 (Section 20) and STUK Y/4/2018 (Section 29):

- According to Section 20 of the Radiation and Nuclear Safety Authority Regulation STUK Y/1/2018, *Operational measures concerning the nuclear facility, as well as events having an impact on safety, shall be documented so that they can be verified and assessed afterwards.*
- According to Section 29 of the Radiation and Nuclear Safety Authority Regulation STUK Y/4/2018, *The licensee shall maintain a record of the disposed waste that includes waste package specific data on the waste type, radioactive substances, location within the emplacement rooms and other information deemed necessary by the authority. The waste records shall be submitted to the Radiation and Nuclear Safety Authority (STUK) in a format approved by it. The Radiation and Nuclear Safety Authority arranges the permanent keeping of records of information concerning the disposal facility and disposed waste.*

Reporting is a form of regulatory control, and it supplements the other procedures, such as the supervision visits and inspections performed at the plant site. When inspecting the reports, STUK verifies that the following conditions are met: the nuclear power plant is being operated in line with legislation and official regulations, and the operation of the nuclear power plant, as well as events having an impact on safety, are sufficiently documented so that they can be analysed afterwards.

2.1 Grounds for the reporting frequency

International guidelines do not present detailed requirements for the reporting frequency; the matter can be defined nationally. STUK once chose that daily reporting, quarterly reporting and annual reporting are required of the licensee. This is still a good reporting method based on the following grounds:

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Daily reporting:

- The licensee's task is to ensure nuclear and radiation safety. The daily report is an indication that the licensee continuously monitors and documents matters significant to safety and processes any deviations quickly and sufficiently. For its part, the daily report also ensures that, if necessary, the authorities have the opportunity to quickly address matters that are significant in terms of safety. Grounds "IAEA GRS Part 1, 4.64 and 4.65".

Annual report:

- In the annual report, the licensee presents a summary of the year in question. The annual report is a clear way of archiving information that can also be utilised afterwards (IAEA SSR-2/2, requirement 15, 4.52).
- STUK uses the licensee's annual report, for example,
 - for overall assessment of plant safety
 - as source material in the preparation of the annual regulatory control report
 - in connection with the inspection work and statement relating to the renewal of the operating licence/periodic safety review

Quarterly report:

- In addition to the daily and annual reports, a quarterly report is required. It gives a broader view of the state of the plant than the daily reports alone, and the situation can be viewed more regularly and quickly than based on the annual report alone.

2.2 **Justifications of the requirements by topic**

The following presents grounds for the requirements by topic. For individual requirements, grounds are presented only to the extent that is necessary in STUK's view.

2.2.1 **Scope of the Guide – para. 201–203**

The Guide does not apply to the encapsulation and final disposal facility for spent fuel because the issue is not yet relevant. The facility is estimated to be commissioned in 2022. The issue will be considered during the next update of the Guide (the validity of YVL Guides must be assessed every five years). Reporting during construction is addressed in Guide YVL A.5.

2.2.2 **General requirements for reports – para. 301–305**

The general reporting requirements are based on STUK's need to receive the information on the operation of nuclear facilities needed for its supervision work. The requirements comply with established operating methods. Para. 305 on the documentation of measurement results is based on "IAEA SSR-2/2" requirement 15 (4.52).

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2.2.3 Operational reports – para. 306–328**Daily report (para. 305–308)**

The intention has been to keep the daily report as brief as possible. Its aim is to receive information officially and quickly, especially on abnormal matters important to safety. The unavailability of the systems and components subject to the OLC and any valid OLC operational restrictions are important information for STUK's regulatory activities. Daily reporting is also required during annual outage and other outages. The daily reporting of a plant unit under construction shall be started from the first fuel loading (based on YVL A.5, para. 391).

Quarterly report (para. 309–316)

As regards the quarterly report, the licensee has the right to choose how often to submit the report (monthly or quarterly). If the report is submitted monthly, it suffices that the summaries for the quarter are published in the last report of each quarter.

The idea is that the quarterly report should not be just a collection of different things formed by gathering together texts or reports prepared by different responsible units. The total assessment is an indication that the licensee has an overall picture of the state and safety of the plant. The content requirements for the quarterly report are based on STUK's opinion on matters that are important to follow in terms of the supervision of the safe operation of the plant.

It is also possible to submit unavailability information to STUK on systems and equipment under para. 314, subject to the OLC, in an applicable electronic format. This way, the same information does not have to be included in the quarterly report.

Annual report (para. 309–328)

The content of the annual report should not be just a collection of different things formed by gathering together texts or reports prepared by different responsible units. The total assessment is an indication that the licensee has an overall picture of the state and safety of the plant.

Safety-significant events under para. 320 are assembled into the annual report, giving an overall idea of the events of the whole year. When applicable, references to other reports to be submitted to STUK can be used (for example, to operational event reports concerning individual events based on the requirements of Chapters 7.3 and 7.4 of Guide YVL A.10 "Operating experience feedback of a nuclear facility").

The basis for para. 328 is that in terms STUK's regulatory control, it is important to receive information on significant, safety-improving modifications and other projects planned to be implemented in the coming years. This information gives STUK a view of the licensee's actions to maintain the safety of the plant at a high level. Item b concerning the reporting of annual investments is specified in the 2018 update of the YVL Guide so that the requirement only concerns safety improvements under item a. Therefore, investments on normal maintenance or power increases of the plant, for example, are not included in the investment amount to be reported.

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2.2.4 Outage reports (para. 329–333)

Annual outage includes a lot of work (for example, most of the plant modifications for the year and the fuel exchange work), and most of the annual radiation dose accumulates then. The outage report is a record of an implemented outage (overall picture).

An outage report under para. 330 shall be prepared for annual outages and extensive planned outages. The report shall be submitted no later than three months after the end of the outage. If two or more plant units of the same licensee have annual outages temporally close to each other (within a few months), the licensee may prepare a joint report for the outages of all plant units instead of plant unit-specific summary reports. In this case, the delivery time of the report is calculated from the plant unit outage that ended last.

Unexpected outages under para. 331 are situations that cannot have been prepared for in advance. An unexpected outage is often caused by a disturbance or fault at the plant the analysis or repair of which requires shutting down the plant. In the 2018 update of the Guide, the reporting time for unexpected outages is changed to match that of an event report for disturbances, i.e. two months instead of one month.

Like the outage report, the summary report concerning radiation protection during an outage (para. 332–333) shall be submitted no later than three months after the end of the outage. The report may be submitted as part of the outage report or as a separate report.

2.2.5 Environment radiation safety radiation safety reports (para. 334–348)

Para. 334–348 concerning environmental radiation safety reporting are primarily from Guide YVL C.7 “Radiological monitoring of the environment of a nuclear facility”.

2.2.6 Nuclear waste management reports (para. 349–353)

All reporting requirements concerning nuclear waste management (para 349–353) have been compiled under a separate chapter in Guide YVL A.9. Para. 351 and 352 are connected to the requirements of Guide YVL D.5 “Disposal of nuclear waste”. Information on low or medium active waste may be submitted in the annual report or as a separate report. The delivery date is the same as for the annual report. The follow-up reports of the VLJ repository are independent reports, but a time limit was specified for them as well so the reports can be reviewed at STUK before the KTO inspections. The international basis is “IAEA GSR Part 5”.

2.2.7 The Radiation and Nuclear Safety Authority’s control procedures (para. 401–403)

STUK uses the reports of the licensee, for example, as source material for its own regulatory control reports (quarterly reports and annual reports). STUK also has international reporting obligations. Information relating to events is reported in the INES and IRS systems (see also Guide YVL A.10), and information concerning environmental monitoring is reported to the IAEA (International Atomic Energy

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Agency), the European Commission and UNSCEAR (United Nations Scientific Committee on the Effects of Atomic Radiation).

3 International provisions concerning the scope of the Guide

IAEA's regulations do not include detailed requirements concerning reporting scope or the content of reports; national authorities are free to specify them. The general basis for this is "IAEA General Safety Requirements No. GSR Part 1, Governmental, Legal and Regulatory Framework for Safety". Some of the requirements are summarised below:

- The authority shall review and assess relevant information to determine whether facilities and activities comply with regulatory requirements. This applies to the entire lifetime of the facility or the duration of the activity (GRS Part 1, Requirement 25).
- The authority shall establish guides to specify the requirements (GRS Part 1, Requirement 32).
- The licensee shall be responsible for maintaining its own records necessary for the safe operation of facilities. This includes maintaining an inventory of radioactive sources and inventories of radioactive waste and of spent fuel, as well as records of doses from occupational exposure. The requirement for the authority to maintain records cannot diminish the responsibility of the licensee to keep its own records (GRS Part 1, 4.64).
- The licensee shall be responsible for the recording of information and analysing it for the purposes of demonstrating safety. The authority shall use such records in support of its regulatory functions (GRS Part 1, 4.65).

More detailed grounds for the requirements concerning the content of the reports can be found in the following IAEA Safety Standards:

- Operation reporting: Specific Safety Requirements No. SSR-2/2, Safety of Nuclear Power Plants: Commissioning and Operation
- Reporting of radiation doses to workers and environmental radiation safety: General Safety Requirements No. GSR Part 3, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards
- Nuclear waste management reporting: General Safety Requirements No. GSR Part 5, Predisposal Management of Radioactive Waste

4 Impacts of the Tepco Fukushima Dai-ichi accident

Due to the Fukushima accident, no development targets have been recognised that should be taken into account in the preparation of this Guide.

5 Needs for changes taken into account in the update

The needs for changes due to changes made to international and national laws/regulations and the change proposals made in connection with the preparation of the YVL Guide implementation decisions (SYLVI) together with others recorded in STUK's change proposal database have been considered when updating the requirements. In addition, the possibilities to reduce the so-called administrative burden have been considered.

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In the guide update, a total of 32 items of Guide YVL A.9 have been changed. The changes are primarily updates of regulation references as well as minor changes and clarifications. A significant change has been made to one requirement, and one requirement has been removed.

5.1 Significant content change

Para. 328: Item b concerning the reporting of the amount of annual investments is specified so that it is limited to concern safety improvements under item a of the requirement.

5.2 Requirement removed

Para. 313: The requirement for submitting information in the quarterly report concerning reactor operation and the use of fuel is removed. STUK does not utilise the information in question in its regulatory control efforts. STUK receives the information on abnormal incidents relating to reactor operation and the use of fuel, such as the exceeding of limiting values, from daily reports, based on which STUK can request for additional information at its discretion. Situations in violation of the OLC concerning reactor operation and the use of fuel are reported in accordance with Guide YVL A.10.

5.3 Changes to regulation references

The references to Government Decrees 717/2013 and 736/2008 were updated to concern STUK regulations STUK Y/1/2018 and STUK/4/2018. The references to the IAEA regulations were brought up to date.

5.4 Clarifications or minor content changes

The items with content changes are presented below. Changes involving only corrections of typing errors or stylistic improvements are not presented.

Para. 102 and 102a: Para. 102 is divided into para. 102 and 102a. The specification “also” is added to para. 102: “This Guide *a/so* describes the regulatory control of reporting.”

The notion that, according to Section 24 of Regulation STUK Y/1/2018, releases of radioactive materials from the plant shall be monitored and concentrations in the environment controlled, is added to para. 102. According to paragraph 4 of the Section in question, the radiation doses and the releases and concentrations of radioactive substances in the environment shall be reported to the Radiation and Nuclear Safety Authority. The change is based on the new paragraph 4 in Section 24 of Regulation STUK Y/1/2018 on the reporting of the radiation doses and the releases and concentrations of radioactive substances in the environment to the Radiation and Nuclear Safety Authority.

Para. 310: The requirement is clarified by replacing the term “overall assessment” with “summary”. The purpose of the change is to avoid any misunderstandings. STUK considers it sufficient that a so-called overall safety assessment is made on an annual level.

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Para. 314: In the future, it is possible to submit unavailability information on systems and equipment subject to the OLC in an applicable electronic format instead of in the quarterly report.

Para. 323: The requirement for a five-year graphical diagram is removed from item a. In the new phrasing, the licensee can specify a suitable time period for the graphical diagram. The objective of the change is to improve the readability of the graphical diagram. The previously required five-year reporting period was not considered practical for the readability of the data.

In item d, the mention of “activity concentrations” is changed into “concentrations”. In the future, concentrations may be given as chemical concentrations as well as activity concentrations. The requirement for reporting the number of leaking fuel assemblies is specified so that instead of an exact number, an estimation shall be presented. The exact number of leaking assemblies is discovered only when the reactor is opened and leak detection is carried out.

In item e, the reporting period for the graphical diagram is changed similarly to item a. In the new phrasing, the licensee can specify a suitable time period for the graphical diagram. Previously, a reporting period of at least ten years was required, which, as in item a, was considered poorly readable.

Para. 324: Item d is specified so that it refers to the number of working hours spent on performing the work, not the entire duration of the work.

The reference to Guide YVL C.2 is removed from item e concerning the recording of internal doses. In STUK’s view, the reference is not necessary. A new requirement on the recording of any neutron doses is added to item e. The requirement of recording the neutron doses is based on Guide YVL C.2.

Para. 331: The time limit for reporting unexpected outages is extended from one month to two months. Unexpected outages are almost always caused by plant disturbances for which an event report is prepared in accordance with Guide YVL A.10. On this basis, it is appropriate to apply the same two-month reporting period for unexpected outages as for event reports.

Para. 336: Items a and b are specified so that item a only refers to “gamma-radiating particulate matter” and item b “gamma-radiating fission and activation products”. The requirement for presenting the results in graphical trends at least for a three-year period is added to item b. Trends enable observing any slow changes more clearly than numerical values and reacting to them in a timely manner.

Para. 341: A new item f concerning the consideration of para. 503 of Guide YVL C.7 is added to the requirement. Moving requirements from Guide YVL C.7 to Guide YVL A.9 is not possible because Guide YVL C.7 has a different update cycle (not updated in 2018). In the next YVL Guide update, the idea is to move the reporting requirements of Guide YVL C.7 to Guide YVL A.9.

Para. 342: The requirement for presenting the results in graphical trends at least for a three-year period (equivalent to item 336 b) is added to item b. As regards the

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elements tritium and carbon-14, the linguistic form is updated to be uniform with other YVL Guides.

Para. 349 and title 3.5.2: For clarity, the mention of “transports of radioactive material” is changed into “transports of radioactive waste”. The requirement specifically refers to transports relating to nuclear waste management, not all transports of radioactive material.