QUESTIONNAIRE FOR PREPARING THE REGULATORY BODY MEETING in conjunction to the ISOE-Symposium in Cambridge 2010

INVITATION

In conjunction with the 2010 ISOE Symposium, 17-19 November 2010, we are preparing a 4rd Senior Regulatory Body Representatives meeting, to be held 16. November 2010 in Cambridge (UK). We hope to encourage your participation in this meeting which follows on from the very successful Regulatory Body representatives meetings in 2004 (Lyon), 2006 (Essen) and 2008 (Turku). The purpose of the meeting is to provide a forum for open exchange and discussion within specialised regulatory audience concerned with occupational radiation protection. Subsequent to the ISOE-Symposium 2009 in Vienna several representatives of regulatory bodies expressed their interest on the exchange of information about: "How **Lessons Learned from Radiological Events** are drawn up, reported and distributed among RP-responsibles in NPP, training facilities, companies and countries".

MOTIVATION

The feedback from events is highly valuable, because the lessons learned show necessary improvements on actual weak points in the Radiation Protection Program. Lessons learned from events may show aspects, which are not considered either in legal regulations, company rules, RP-planning nor in RP training courses. These weak points may exist also in other units, plants, companies or countries. Therefore lessons learned have to reach all persons who may be concerned, so the repetition of similar events will be prevented.

About the distribution of information about radiological events on an international level, see the instructive presentation from Helena Janzekovic "Use of IRS and OSMIR Database – Lessons Learned" at the last ISOE 2009 Symposium. It is shown that both databases can be successfully used complementary to the ISODATA. These international reporting systems shall not be the main topic of this RB information exchange.

OBJECTIVES OF THE MEETING

The main objectives of the meeting are:

- To meet with regulators from other organisations to exchange information regarding regulatory standards and rules on
  - the criteria defined for nomination a deviation or departures from standard operational parameters, faults, defects, finding, malfunction, incident or accident as a radiological event of interest,
  - the company procedure on reporting internal, analysing the direct causes, the root causes, the increasing or decreasing factors, the radiological consequences, determining the lessons learned and package of measures (the common expression for this procedure is "Operational Experience Feedback" OEF, see for example NEA Committee on Nuclear Regulatory Activities/ Working Group on Operating Experience)
  - the criteria and the way for reporting the information about event to the regulatory body
  - the way how the information are distributed among RP-responsibles in other NPP, training facilities, companies and countries
- The focus should be on events, which have or may have radiological consequences on the staff or which occurred in the area of responsibility of the NPP Radiation Protection Organisation (this may include also uncontrolled releases inside and outside the NPP)

- This meeting will not deal with aspects of events in other fields of nuclear safety (loss of control on criticality, loss control on fuel cooling, deviation from transportation rules, …) will not be considered.
- To help to improve national regulatory effectiveness on occupational radiation protection by comparing national reality versus international context

AGENDA OF THE REGULATORY BODY MEETING

- Introduction of the different representatives
- Brief presentation on national requirements to support feedback from radiological events. Additional some interesting examples of lessons learned may be shown (around 15 min)
- Discussion of terms, differences, special approaches and innovative ideas to support the feedback
- Conclusions: Collection of exemplary approaches to get and distribute lessons learned

OBJECTIVES OF THE QUESTIONNAIRE

In order to introduce the Regulatory Body representatives meeting it is expected to draw an overview of **regulatory control on feedback from radiological events in NPPs from an occupational perspective** in the different ISOE member countries with their similarities and differences.

Therefore we would like you to answer, briefly, the following questionnaire to stimulate information exchange and discussions. Only one response per country is necessary.

Please do not go into the details, just describe a few “objective data”.

Even in case you will not be able to attend the meeting the information you can provide is precious. If you agree, questionnaires filled in by national authorities will be sent to all contacts participating in ISOE.

Yes, I agree

No, the information should be sent only sent only to the RB participating in ISOE

No, the information should be used only in the RB-meeting

COUNTRY AND REPRESENTATIVE IDENTIFICATION

- **Country**: *Slovenia*
- **Name of the Regulatory Body:** ***Slovenian Radiation Protection Administration***
- **Name and post of the person(s) who fill in the questionnaire:** ***Nina Jug, undersecretary***

REGULATORY RIQUIREMENTS ABOUT REPORTING RADIOLOGICAL EVENTS

In the following questionnaire some possible answers are marked in blue color. Please cut of, change or complete (also if there are quantitative levels specified in the legislation)

GENERAL OVERVIEW:

Radiological events, measures taken, criteria, reporting and follow up are specified at different levels:

1. legislation defines dose limits and reporting (regular and extraordinarily).

Dosimetry service is obligated to report any dose above 1,6 mSv immediately to SRPA, if the dose was not planned. NPP is obligated to submit regular reports and extraordinarily reports in case of diminished radiation or nuclear safety.

2. Dose constraints and radiation protection measures are defined in a document called "assessment of radiation protection" (ARP). The document covers all the radiation protection issues and it is confirmed by SRPA within the scope of licensing procedure.

ARP should be reviewed immediately after every emergency event and amendments made should be confirmed by SRPA.

3. NPP internal documents define specific dose constraints, reference levels, reporting procedures and follow up in case of radiological events.

Events important form radiation protection point of view which have to be investigated and documented are defined in the NPP's official operating procedure (radiation protection manual-RPM). Effluent reference levels, remedial measures and reporting are specified in Radiological Effluent Technical Specifications (RETS).

In addition an independent radiation protection expert surveys the radiological conditions in NPP every six months. The report is send to regulatory authorities (RA: Slovenian Radiation Protection Administration-SRPA and Slovenian Nuclear Safety Administration-SNSA). NPP reports to RAs monthly on personal doses, radioactive releases and radioactivity in the environment.

- **Criteria**

  - Does your legislation specify criteria for nomination a near miss event, a minor damage, a deviation, a finding, an incident or an accident as a radiological event of interest
    No.
  - If no, does some official document of the licensee specify these criteria?

  Possible radiological events are described in

  - *assessment of radiation protection (ARP). This is an official document that describes the radiation protection measures in general. ARP has to be confirmed by SRPA and it is a licensing condition.*
  - *radiation protection manual (RPM).This is a NPP internal document. In practice it is confirmed by SRPA as a part of ARP.*

  - What are the most important radiological criteria?
    a) Exceeding the annual exposure limit or any other dose constraints of persons (dose limits may be different depending on the category of persons, organs and tissues)

  Yes.

  Personal doses are checked at several levels:

  - *NPP: whenever the dose exceeded the planned dose set in the work permit for specific job event has to be investigated and documented internally*
  - *RA: whenever monthly dose exceeded 1,6 mSv and the dose was not planed this has to be reported to RA immediately*
  - *annual doses - NPP reports all personal doses monthly*

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b) Investigation of an unexpected incorporation of activity above the minimum detectable level
Yes.
Action level is internal contamination that corresponds to internal dose 0,02 mSv - WBC analyses have to be recorded separately
Measurements above 10 times action level - event has to be investigated, documented and reported to NPP management. Corrective measures have to be applied.
c) Investigation of a fixed contamination of skin or wound
Yes.
Skin contamination above 400 Bq - event have to be investigated and documented.
d) Exceeding the maximum permitted activity of a facility, room, storage or compartment
e) Not expected increase of coolant activity, air contamination or surface contamination showing a leakage of fuel cladding, of transport cask, of waste container, of sealed source, of glove box or of hot cell
Yes.
Fuel reliability indicator is one of the general safety indicators.
f) Not expected increase of coolant activity or dose rate at primary circuit showing unintended activation of impurities
Yes. Origin (cause) of the activated impurities has to be investigated.
g) Loss of a radioactive source
Yes. NPP has inventory of sealed sources and internal procedure regarding sealed sources (work procedures and leak testing)
h) Unexpected exceeding the maximum permitted level for fixed (= not easily decontaminable) contamination or maximum permitted dose rate inside controlled zones (levels may be different depending on the category of zone)
Yes.
Any sudden increase of dose rate has to be investigated and documented.
i) Exceeding the maximum permitted contamination or dose rate outside of controlled zone inside the supervised plant area
Yes.
Removable contamination above 40 Bq/100cm2 or above 400 Bq has to be investigated and documented.
j) Exceeding the maximum permitted activity released via the controlled exaust air stack or waste water
Yes.
RETS defines the operational limits and reporting (regular and in the case of non- complacence with the controls) to RAs.
k) Uncontrolled release of activity
Yes.
RETS defines the operational limits and reporting (regular and in the case of non- complacence with the controls) to RAs.
l) Exceeding the maximum permitted contamination or dose rate outside of the supervised plant area in the environment
Yes.
RETS defines the environmental monitoring programme and for reporting (regular and in the case of non- complacence with the dose constraints) to RAs.
m) Exceeding the clearance levels (activity, dose rate, contamination) for material transported out of supervised plant area declared to be free of radioactivity or below levels for qualified disposal
Yes.
All transport to and out the NPP site is through portal monitor.
n) *Personal decontamination had to be carried out - event has to be investigated and documented.*
o) *High radiation zone was not properly marked, physically protected or locked - event has to be investigated and documented.*

- Does your legislation specify criteria for reporting
  a) only to company internal: *Criteria for internal reporting are specified in the RPM*
  b) to the regulatory body:
  - *If monthly dose exceeded 1,6 mSv and the dose was not planed this has to be reported to RA immediately*
  - *ARP has to be reviewed immediately after each emergency event i.e. an event at which radiation safety or nuclear safety is reduced. Report has to be sent to RAs and any changes in ARP has to be confirmed by SRPA*

  c) to international information platforms as INES, IRS and so on*: There are no explicit provisions in the legislation but in practice Krško NPP cooperates with international platforms.*

- If yes, do the criteria for nomination (for NPP internal analysis and feedback) differ from those criteria for reporting to the regulatory body?

Yes.
NPP has its own internal criteria for investigation, but if any of the events could reduce radiation or nuclear safety (including near miss) it has to be reported to RAs.

❑ **Differentiation of types/categories of radiological events?**

- Do the legislation/company rule define different types/category of radiological events?

Yes.
Rescue and Protection Plan in case of Nuclear or Radiological Emergency
Only events that could have wider consequences are categorised.

- If yes, for which purpose do you use different types of radiological events?
  a) to decide whether to start up the emergency organisation and which parts: *Yes.*
  Do the legislation use another categorisation instead of INES? *Yes.*

- Which categories are defined in your legislation?
  - *Level 0 - unusual event*
    Event could potentially (in the case of non-adequate measures) affect the NPP safety and could potentially lead to events of higher category.
  - *Level 1 - alert*
    Event that has or could have an effect on NPP safety. Minor release of radioactive substances is possible, but no risk to environment is anticipated.
  - *Level 2 - site emergency*
    Event that leads or could lead to brake-down of NPP safety functions and could endanger NPP personnel and population in the vicinity of NPP. Event involves or could involve release of radioactive substances which requires protective measures to be taken at the NPP site including evacuation of the NPP site.
  - *Level 3 - general emergency*
    Possible or actual core meltdown and possible containment failure. Event involves or could involve release of radioactive substances which requires protective measures to be taken outside the NPP site.

❑ **Legislation concerning different aspects or steps for management of radiological events**

- Does your legislation specify different aspects or steps for management of radiological events?
  ARP has to be reviewed immediately after each emergency event i.e. an event at which radiation safety or nuclear safety is reduced. Causes have to be investigated in cooperation with an independent RPE. Report has to be sent to RAs and any changes in the ARP have to be confirmed by SRPA. For major changes an expert opinion of an independent RPE is required.
- If so, which aspects or steps are specified in the legal framework?
  Please cut of, change or complete:
  a) Ways to commit events company internal or to inform the responsible persons: *Not specified in the legislation but in company internal documents.*
  b) Analyse the direct cause, root causes, increasing and decreasing factors: *Direct and root causes have to be investigated as a part of ARP review and described in the report to RA*
  c) Analyse the radiological consequences (really happened or probably could happened): *Radiological consequences have to be investigated as a part of ARP review and described in the report to RA*
  d) Analyse the lessons learned*: Lessons learned have to be described in the report and included in the proposed ARP changes.*
  e) Determination of measures to improve the RP: *Appropriate measures have to be proposed by licensee and independent RPE and confirmed by SRPA.*

❑ **Legal framework on experience feedback from radiological events**

- Does your legal framework have requirements on the operational experience feedback (OEF) from radiological events?
  Yes.
- If so, give a short description of the content of references:
  As described above OWF is an internal NPP procedure. If the event in question has or could have reduced the radiation or nuclear safety ARP has to be reviewed and corrective measures have to be suggested in cooperation with an independent RPE and confirmed by SRPA.

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- Does your legislation specify different aspects or steps of operational experience feedback?
  No.
- If so, which aspects or steps of OEF are specified in the legal framework?
  Please cut of, change or complete:
  a) Distribution of lessons learned company internal: *Specified in the NPP internal procedures.*
  b) Reporting of information about event to regulatory body

Whenever monthly dose exceeded 1,6 mSv and the dose was not planed this has to be reported to RA immediately. NPP has to report on any unplanned release of radionuclides or any release above the operational limits, on any event that has or could have reduced the radiation or nuclear safety.
NPP reports regularly (monthly) on:

- *all personal doses*
- *discharges*
- *radioactivity in the environment.*

In addition radiological conditions in the NPP are checked every six months by an independent RPE and the report is sent to RAs.

c) Spreading information about lessons learned to RP training facilities: *Yes. Training facility is obligated to prepare the training programme in cooperation with NPP.*
d) Spreading information about lessons learned to other organisations as INES, IRS, ISOE
Only information to the public and international community in the case of nuclear accident is required by legislation (Slovenia ratified a Convention on early notification of a nuclear accident). In practice Krško NPP and both RAs have good cooperation with international organisations and regularly exchange information.
e) *Krško NPP pays attention to foreign operational experience. After incident in Beznau 2 NPP in July 2009, Krško NPP revised their procedures regarding access to high radiation zones. Procedures were found to be adequate.*
Similarly, in 2006 Krško NPP prepared presentation to inform the workers about unplanned radiation exposures in foreign NPPs.
f) others…
g) others …

❑ **Ways and tools to support the operational experience feedback OEF from radiological events?**

- Which ways or tools exist or are described in the legislation, guidelines or company instruction to support the OEF from radiological events within companies, among other NPP or country wide?

Due to specific situation of only one reactor in the country spreading information to other reactors or training facilities is not relevant.

Do you have some additional topics, which you would like to discuss during this or on the next RB meeting:

Conservative/realistic approach in ALARA planning.

I will try to illustrate the issue with an example:

Suppose NPP conservatively planned that a job will take 10 man mSv. The workers have done their job pretty much close to optimum and the job took 5 man mSv, so the management is pleased. But they would be quite pleased also if the job took 7,5 man mSv, not knowing that they have exceeded the optimum for 50%. In my opinion in such case they should investigate what went wrong on the planning stage and find out which assumptions were over-conservative. The example is hypothetical, but not so seldom one can read reports where the actual collective dose is several times less than the planned one.

On the other side, when certain assumptions have to be made afterwards (e.g. to assess the actual doses that has already been received by workers) one should be at least as conservative as in the planning stage.

In general I believe that in planning the normal operation we should strive for realism and set the criteria according to which the discrepancy to both sides between actual and planned situation is investigated.

Question for discussion: *Does RB meeting members deem that collective doses well bellow the plan have to be investigated?*

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