ORPAS Database: An Introduction to the Management & Analysis Platform

Patrick Williams

Occupational Radiation Protection Unit
Radiation Safety & Monitoring Section, NSRW
Occupational Radiation Protection Appraisal Service (ORPAS)

- The current results of previous ORPAS missions are held at the Global Nuclear Safety and Security Network.
- Currently, 4 of the 24 completed ORPAS missions are made publicly available by the member states for download and review by others.
- This repository of prior ORPAS missions only serves to hold the reports generated as a result of these missions.
ORPAS Pre-Mission Planning

- ORPAS missions consist of coordinators from the IAEA Secretariat and reviewers from the Member States. These reviewers are experts in their selected areas and are from countries that have similarities to the local regions they are reviewing.
- 50% of these team members consist of reviewers from previous missions and 50% are new reviewers.
Over time, these ORPAS missions will develop an “Expert Roster” that keeps track of all the previous ORPAS reviewers and their information such as:

- Name
- Country
- Affiliation
- Languages spoken
- Roles in previous missions
- Previous ORPAS missions
- Personal History
Need for a new ORPAS Database and Analysis Tool

• Currently, prior ORPAS mission results are held as just PDFs in the central repository.

• If a member of the secretariat wants to look at the specific recommendations, suggestions, or observations surrounding a safety standard, it would require the member to go through hundreds of pages of results and look at every recommendation made.

• The new ORPAS database platform and analysis tool will allow users to more easily search through completed ORPAS missions for results using queries related to the topics they are looking for.
What data is collected in an ORPAS Mission?

- Country
- Date of Request
- Organization that sent request
- Date of IAEA Reply
- ORPAS mission date: From
- ORPAS mission date: To
- Observers
- National Coordinator
- National Counterpart
- Mission Agenda
- ToR
- ORPAS mission report
- Date of the report submission to the country
- Recommendations
- Suggestions
- Good Practices
What do ORPAS Reviews look like?

**Basis** – General refers to a component of GSR Part 3, GSR Part 1, or GSG-7 that describes what recommendation or requirement the ORPAS reviewers are benchmarking to.

**Observation** – This describes what was found by the ORPAS reviewers at the site in question.

**Recommendation/Suggestion/Good Practice** – Here the ORPAS reviewers will give their input in how to ensure what was observed complies with what was given as a basis of the observation.
How would we like to interact with this information?

• It would be most beneficial to break down this information into its smallest components.

• For example, for a recommendation, you would want to categorize:
  • the reviewer who made the recommendation,
  • the facility/organization being reviewed,
  • what mission they were a part of,
  • what the basis of the recommendation was,
  • what the observation was,
  • and what the recommendation was.

• Then, it would be beneficial to be able to search through all prior ORPAS missions along these criteria.
### New ORPAS Search Queries

<table>
<thead>
<tr>
<th>Country</th>
<th>Basis</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sri Lanka</td>
<td>GSR Part 3 Req 25</td>
<td>“SLAER needs to…”</td>
</tr>
<tr>
<td>Slovenia</td>
<td>GSR Part 3 Req 14</td>
<td>“..should modify..”</td>
</tr>
<tr>
<td>Chile</td>
<td>GSG-7 Paragraph 15</td>
<td>“Use of TLDs limited..”</td>
</tr>
<tr>
<td>Malaysia</td>
<td>GSR Part 3 Req 14</td>
<td>“Modify existing…”</td>
</tr>
<tr>
<td>China</td>
<td>GSR Part 3 Req 34</td>
<td>“Operator should…”</td>
</tr>
</tbody>
</table>

---

### Search by “Basis: GSR Part 3 Req 14”

<table>
<thead>
<tr>
<th>Country</th>
<th>Basis</th>
<th>Recommendation</th>
<th>Reviewer</th>
<th>Reviewed Facility/Org</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovenia</td>
<td>GSR Part 3 Req 14</td>
<td>(Full recommendation is displayed)</td>
<td>John Smith</td>
<td>Facility Name</td>
</tr>
<tr>
<td>Malaysia</td>
<td>GSR Part 3 Req 14</td>
<td>(Full Recommendation)</td>
<td>Maria Gomez</td>
<td>Facility Name</td>
</tr>
</tbody>
</table>
Example: OSMIR Database

OSMIR is a similar appraisal service offered by the IAEA and has a functional database that allows reviewers to view past missions and reports.

1. LEADERSHIP AND MANAGEMENT FOR SAFETY

1.1. Leadership for safety

Kashima 3 & 6, Japan
BWR 1100 MW
1-17 Nov, 2004
15-19 May, 2006

1.1(a) Good Practice

The OSART team visited the site in order to save valuable time for developmental initiatives that were threatened by an excessive workload and ongoing increasing overtime during recovery from the disclosure scandal and the subsequent increased regulation and external scrutiny. The approach used has been to initiate a “work-scrub” process with the mandate to remove unnecessary work and save time for improvement projects. The difference with the approach used by Kashima-3/4 NPP is the wider mandate and the high level of sponsorship and commitment. The implementation team, which has a formal mandate and process with essential criteria needs once per week and is sponsored by the Site Superintended and chaired by the Deputy Superintendent for Quality assurance and Nuclear safety. It contains high level representation from all areas of the site. In the first four months of operation 84 ideas have been received and 23 enacted.

As an example of the meeting process and structure was examined. It was found that there were 35 meeting per month for managers above group level. Of those 6 have been eliminated and 9 shortened saving a total of 5600 manager hours per year. The OSART team also observed that the efficiency of some meetings could be improved and that there may be opportunities to combine some. The site management is encouraged to continue to reduce meeting time. As well as “meeting” the Work-Scrub team has identified many other areas such as inefficient organizational aspects, which are only in existence because ‘that’s how we used to do it’ or there is a small team approach can save considerable time over the normal process with the high level sponsorship necessary changes are quickly enacted. An added side benefit is that the managers are working together in a cross functional mode, out of their normal area and creating group successes.

1.1(b) Good Practice

The process of plant improvements is well organized and displayed to the plant personnel and contractors. The plant has established a process in which anyone can suggest findings for the site for improvements. Proposals are regularly evaluated and unreasonable cases timely implemented. The bulletin boards of the entries to the plant units are used to display results of the evaluation or implementation of the improvements. These boards further promote the improvement process and encourage personnel to participate.
OSMIR Database Uses

- OSMIR developed its database in order to better analyze the reports and recommendations created during its appraisal process.
- This database allows its users to analyze its data based on the different types of recommendation criteria, the different review areas, the sites review, etc.
- Then the database will generate a report that returns all the different recommendations that fit the given input criteria.
- Our goal is similar to that of the OSMIR database except that ORPAS review missions are much simpler in terms of data complexity.
Example of OSMIR database analysis
ORPAS Database Use

Similar to that of the OSMIR database, the ORPAS database will be used to quickly sort through the existing ORPAS data reports based on the users desired input criteria.

This will allow users to more quickly understand what prior recommendations were based upon, what future recommendations should look like, and what overarching issues are facing the reviewed entities.

This should cut down the time needed to analyze the results from different ORPAS missions simultaneously.
ORPAS Database as an analysis tool

The goal of this database will be to allow users to analyze the results from prior missions quickly and to draw overarching conclusions about radiation protection across multiple different countries, industries, and regulatory bodies.

For example, the users of the new ORPAS database will be able to quickly check the compliance of multiple different reviewed countries regulatory bodies with specific IAEA standards. This may allow the reviewers to more easily see what areas of radiation protection still need more support and development.

Example: Simulated data showing how the users could quickly view multiple different ORPAS reports and check compliance status across multiple countries, regulatory bodies, and technical service providers.
ORPAS Database as a diagnostic tool?

The ORPAS database could also be used as a diagnostic tool for future ORPAS reviewers as they travel to countries on ORPAS missions.

This would mean that while reviewers were in-country, they could look up prior ORPAS mission reviews, GSR requirements, GSG-7 recommendations, what issues prior missions had in terms of standards compliance.

Ideally, this system would allow for reviewers to build their ORPAS review faster as the GSR requirements could be generated on demand, and the users would simply input their list of observation basis, observations, and then recommendations.

However, this may be outside the need/scope of the ORPAS database and is a potential development idea to be further studied before implementation.
ORPAS Future

• The ORPAS database should be in a position where it is robust enough that future reviewers can easily add, subtract, and interact with the database without needing to understand its fundamental programming.
• This means that the ORPAS database will be a fully functional application that can stand on its own and be easily used by future reviewers.
Summary and Plan Forward

The main benefit of organizing prior ORPAS missions into a database is being able to search through all ORPAS mission results based on:

- reviewer
- reviewee
- year
- country
- facility type
- requirement
- basis
- etc

This would ideally aide reviewers in analyzing the results from prior ORPAS missions and identify overarching trends among different ORPAS missions.

While this tool is being developed as a post-mission analysis tool, there may be some merit to developing it into a diagnostic tool to be used during missions.

This database is set to be completed by March 2022.
Questions, Thoughts, Inputs?