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| ONR Project Assessment Report  PR-01156 Fissile Validation for Transport of Unirradiated Pellets of Uranium Oxides (Package Model GP-01) - Transport Package Design Approval |



ONR Project Assessment Report

**Project Name**: PR-01156 Fissile Validation for Transport of Unirradiated Pellets of Uranium Oxides (Package Model GP-01)

**Report Title**: Transport Package Design Approval

**Dutyholder/ Applicant**: Orano NPS

**Authored by**:

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# Executive Summary

Orano Nuclear Packages and Services (NPS) (the applicant) has requested for fissile validation of the Japanese certificate of approval J/2009/AF for a transport package design (model GP-01) that is valid until 31 July 2102. The GP-01 (Type A fissile) package is designed to transport unirradiated pellets of uranium oxides.

The Office for Nuclear Regulation (ONR) previously assessed this package under the relevant transport safety regulations in 2022 and granted a certificate of approval (CoA) valid until 8 September 2023. Despite the Japanese CoA for J/2009/AF being valid for approximately 80 years, ONR has agreed with Orano NPS that ONR would approve the package design and issue a CoA (identification mark: GB/5132/AF) for five years only.

ONR specialist assessors have assessed the applicant’s claims, arguments and evidence by sampling submitted information, considering operational conditions and judging them against applicable standards and guidance, in accordance with the regulatory permissioning strategy of the ONR. Due to the nature of the package, the assessment was guided by a criticality assessor and supported by engineering, shielding and safety case requirements assessors. The assessment included undertaking online meetings to sample the adequacy of the designer’s management system.

It is concluded that the applicant has provided adequate arguments and evidence to support the safety case claims and demonstrated the package design GP-01 is compliant with the safety requirements specified in the relevant transport regulations.

It is recommended that the Great Britain competent authority issues a five years CoA (identification mark: GB/5132/AF) for the package design (model GP-01) until 30 November 2028 for transport by road, rail and sea.

Table 2: List of abbreviations

|  |  |
| --- | --- |
| Term/Acronym | Description |
| BMS | Business Management System |
| CA | Competent Authority |
| CoA | Certificate of Approval |
| GB | Great Britain |
| HOW2 | Office for Nuclear Regulation Business Management System |
| IAEA | The International Atomic Energy Agency |
| NPS | Nuclear Packages and Services |
| ONR | Office for Nuclear Regulation |
| PDSR | Package Design Safety report |
| SCR | Safety Case Requirements |
| UK | United Kingdom |
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# Permission Requested

1. Orano NPS, the applicant, has applied for approval of fissile validation of a transport package design for unirradiated pellets of uranium oxides J/2009/AF (model GP-01).

# Background

1. The GP-01 package is a Type A Fissile package designed to transport unirradiated pellets of uranium oxides which is currently used in Japan. This package is approved by the Japanese competent authority (identification mark: J/2009/AF) until 31 July 2102.
2. ONR previously assessed this package under the relevant transport safety regulations in 2022 and granted a certificate of approval (CoA) valid until 8 September 2023 (ref. [1]). Despite the Japanese CoA for J/2009/AF being valid for approximately 80 years, ONR has agreed with Orano NPS that ONR would approve the package design and issue a five years CoA for transport by road, rail and sea.
3. The applicant clarified that they are currently seeking approval from other European countries and plan to transport the package to the UK when the package design is approved by the Great Britain (GB) competent authority.

# Assessment and Inspection Work Carried out by ONR in Consideration of this Request

1. The application letter (ref. [2]) stated that the main modifications included assessing the ageing effects on the package materials (arising from the 2018 edition of SSR-6), which were summarised in the safety analysis report, appendix 1 (ref. [3]). Other modifications were limited to an update of the analysis, taking into account the recommendations of the Japanese competent authority.
2. As stated in the ONR transport permissioning assessment guide (ref. [4]), the validation of overseas fissile package designs is guided by the criticality assessor, and the depth of assessment is based on the complexity of application and confidence in the applicant.
3. During the pre-job brief, the assessment team agreed that a proportionate sampled assessment would be carried out by the relevant specialist assessors against the safety submissions’ claims, arguments and evidence for the following reasons:

* this is a renewal application, which ONR has previously assessed and granted a CoA;
* at the time of the last assessment, the criticality assessor completed a major assessment report (ref. [5]) and the shielding assessor concluded that there were large safety margins (ref. [6]) in the previous validation; and,
* the applicant confirmed that there is no major change to the package design and the relevant safety submissions (ref. [2]) and (ref. [3]).

1. All assessments were undertaken in line with the relevant requirements of the ONR How2 Business Management System (BMS) and its associated guidance.

## Criticality and Shielding Assessment

1. The specialist assessor focused the criticality and shielding assessments on the minor areas that have changed since the last safety submission.
2. After reviewing the safety case and the applicant’s responses to the assessor’s queries, the specialist assessor concluded the below:

* the wording changes to the criticality and shielding sections are minor and have no bearing on criticality or shielding safety; and,
* the applicant has sufficiently addressed the assessor’s queries by confirming that the changes since the last renewal amount to corrections to transcription errors that existed only in the package design safety report (PDSR) document, which weren’t perpetuated in the calculations.

1. Based on the areas sampled, the specialist assessor was satisfied that this package meets the safety requirements specified in the transport regulations from a criticality and radiation shielding perspective, and recommended that the package design model GP-01 is approved by the GB competent authority for a further five years (ref. [7]) for transport by road, rail and sea.

## Engineering Assessment

1. As guided by the ONR transport permissioning assessment guide (ref. [4]), the specialist assessor carried out a proportionate sampled engineering assessment as the criticality assessor did not request for additional validation support from the engineering assessment.
2. The specialist assessor focused on reviewing the effect on safety submission changes of certain external factors, including the relevant good practice and criteria listed in the ONR applicants guide (ref. [8]), and sampled the effect of ageing that has been recently introduced in SSR-6 (ref. [9]), particularly since the Japanese competent authority has given the package design (identification mark: J/2009/AF) an 80-year approval (ref. [10]).
3. The specialist assessor reviewed the safety submission (ref. [3]) and concluded that the effect of ageing is negligible for the relevant components and would therefore have no impact on the package being able to continue to meet the safety requirements specified in the transport regulations, and judged that the safety submission (ref. [3]) conclusion is adequately supported.
4. Based on the areas sampled, the specialist assessor has no objection for the GP-01 package design being approved for a further five years for transport by road, rail and sea from an engineering perspective (ref. [11]).

## Safety Case Requirements (SCR) Assessment

1. The specialist assessor has undertaken a proportionate and targeted sampling assessment strategy, focusing on areas recommended in the ONR guide “safety case requirements assessment” (ref. [12]).
2. In addition to regulatory queries, the specialist assessor examined the adequacy of the management system, control of changes, implementation of the management system and non-conformities through online meetings.
3. The specialist assessor considered the arguments and evidence provided and was content that it satisfied the safety requirements specified in the transport regulations and the ONR guide “safety case requirements assessment” (ref. [12]).
4. Based on the areas sampled, the specialist assessor recommended the package design GP-01 is approved for a further five years for transport by road, rail and sea from the safety case requirements perspective (ref. [13]).

# Matters Arising from ONRs Work

1. No significant matters were raised during ONR’s assessments.

# Conclusions

1. Based on the above assessments, I conclude that the applicant has provided adequate arguments and evidence to support the safety case claims and demonstrated that the package design (model GP-01) is compliant with the safety requirements specified in the relevant transport regulations.

# Recommendations

1. Based on the above conclusion, I recommend that the GB competent authority issues a separate GB CoA (identification mark: GB/5132/AF) for the package design (model GP-01) valid until 30 November 2028 for transport by road, rail and sea.

# References

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