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| ONR Project Assessment Report  PR-01197 - Renewal of GB/3746B/B(U) Package Design for Transport of Special Form Radiography Capsule |



ONR Project Assessment Report

**Project Name**: [Renewal of GB/3746B/B(U) Package Design]

**Report Title**: PR-01197 - Renewal of GB/3746B/B(U) Package Design for Transport of Special Form Radiography Capsule

**Dutyholder/ Applicant**: QSA Global Inc

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# Executive Summary

The applicant, QSA Global Inc, has applied to the Office for Nuclear Regulation (ONR) as Great Britain (GB) Competent Authority (CA) for the transport of Class 7 (radioactive material) dangerous goods, to approve a five-year renewal of the GB/3746B/B(U)-96 package design.

This package design was originally created by Amersham International plc and known as the 0666W. The design has been in service since the late 1970s and was licensed under the IAEA 1973 Transport Regulations. The design number changed to GB/3605B for the IAEA 1985 Regulations. In 2003 the packaging and design rights were transferred to AEA Technology plc who re-designated it the GB/3746B. QSA Global Inc. has subsequently acquired the package design rights. The package is used to transport radiography special form capsules.

ONR last approved the package design in 2018. There were no major concerns raised in the 2018 assessment that required to be addressed in the current safety submission.

ONR carried out a programme of assessment of the transport safety case contained in the applicant’s package design safety report (PDSR), its claims, arguments, supporting documentation and evidence.

ONR has considered the engineering, shielding and dose rate, and safety case requirements (SCR) aspects of the safety submission in respect of compliance with the IAEA Transport Regulations, currently SSR-6 (2018 edition), supported by advisory material in SSG-26 (2018 edition).

All three ONR assessments of the transport safety case recommended approval of the five-year renewal of the GB/3746B/B(U) package design for transport by road, rail, sea, and air.

It is concluded that the safety submission from the applicant, together with supporting documentation provided to ONR, is adequate to meet applicable regulatory requirements and the package design is judged to be safe.

It is recommended that ONR grants Approval of the five-year renewal of the GB/3746B/B(U) package design for transport by road, rail, sea, and air.

Table : List of abbreviations

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| Term/Acronym | Description |
| ADR | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| CA | Competent Authority |
| GB | Great Britain |
| HOW2 | (Office for Nuclear Regulation) Business Management System |
| IAEA | The International Atomic Energy Agency |
| ICAO TI | International Civil Aviation Organisation’s Technical Instructions for the Safe Transport of Dangerous Goods by Air |
| IMDG | International Maritime Dangerous Goods Code |
| PAR  PDSR | Project Assessment Report  Package Design Safety Report |
| RID | Regulations concerning the International Carriage of Dangerous Goods by Rail |
| SCR | Safety Case Requirements (Assessment) |
| SSG-26 | (IAEA) Specific Safety Guide |
| SSR-6 | (IAEA) Specific Safety Requirements |
| UK | United Kingdom |
| UNECE | United Nations Economic Commission for Europe |

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# Permission Requested

1. The applicant, QSA Global Inc, has written [1] to ONR to request a GB Competent Authority approval of the package design for transport by road, rail, sea, and air. The request is made under The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 which are nuclear regulations under The Energy Act 2013 for Class 7 dangerous goods.
2. These regulations transpose into GB law the United Nations Economic Commission for Europe (UNECE) modal requirements ADR and RID (published by the Intergovernmental Organisation for International Carriage by Rail (OTIF)) for transport of hazardous goods by road and rail respectively. The modal regulations are, in turn, based on the International Atomic Energy Agency (IAEA) Regulations for the Safe Transport of Radioactive Material, currently SSR-6 (2018 edition) [2], supported by advisory material in SSG-26 (2018 edition) [3].
3. There are also international requirements based on SSR-6 applicable to sea and air transport namely the International Maritime Dangerous Goods Code (IMDG) and the International Civil Aviation Organisation’s Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO TI).

# Background

1. This package design was originally created by Amersham International plc and known as the 0666W. The design has been in service since the late 1970s and was licensed under the IAEA 1973 Transport Regulations. The design number changed to GB/3605B for the IAEA 1985 Regulations. In 2003 the packaging and design rights were transferred to AEA Technology plc who re-designated it the GB/3746B. QSA Global Inc. has subsequently acquired the package design rights.
2. ONR last approved the package design in 2018. There were no major concerns raised in the 2018 assessment that required to be addressed in the current safety submission.
3. The current safety submission to ONR [1] includes the package design safety report (PDSR) and, in particular, a package design review report ([PDRR](https://prodonrgov.sharepoint.com/can_permissioning/PR-01197_Internal_Only/Design%20Review%20Report%20for%20RS%200139%20issue%206%20%28GB3746B%29.pdf)), in compliance with Section 4 of the Applicants Guide, TRA-PER-GD-014 [4].

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

## Assessment Strategy & Scope

1. In accordance with the regulatory permissioning strategy ONR has carried out a programme of assessment of the transport safety case contained in the applicant’s package design safety report (PDSR), its claims, arguments, supporting documentation and evidence.
2. ONR has considered the engineering, shielding and safety case requirements (SCR) aspects of the safety submission in respect of compliance with the IAEA Transport Regulations, currently SSR-6 (2018 edition), supported by advisory material in SSG-26 (2018 edition). The SCR assessment addresses the non-engineering means of achieving that compliance, such as in the use, operation, and maintenance of the approved package design. An SCR assessment also complements the engineering assessment of the package design by reviewing the manufacturing processes to ascertain that the manufactured package conforms to the design intent.
3. ONR has not undertaken any criticality assessment because the package contents are non-fissile.
4. ONR has not considered it necessary to undertake any inspection of the applicant specifically in support of this application.
5. As detailed below all three ONR assessments of the transport safety case recommended approval of the five-year renewal of the GB/3746B/B(U) package design for transport by road, rail, sea, and air.

## Assessment

### Assessment Strategy & Scope

1. In accordance with Appendix 1 of the ONR Transport Permissioning Guide, TRA-PER-GD-001 [5], the PDRR is the first point of call for assessing renewal submissions. The PDRR also guides both the scope and focus of the assessment.

### Engineering Assessment ([AR-01251](https://prodonrgov.sharepoint.com/can_assessment/AR-01251_Internal_Only/GB%203746B%20%28PR-01197%29-FN-QSA%20Global%20-%20Renewal%20of%20GB%203746%20B%28U%29-96%20Package%20Design%20-%20Engineering%20Assessment%20Note.docx))

1. The ONR engineering assessor considered the fatigue analysis that the applicant has used to justify extending the design life of the package by 10 years to 50 years to be reasonable, as it is based on TCSC 1006 which is industry relevant good practice. Despite this extension, the ONR approval will still only be for 5 years.
2. The assessor was also satisfied that the applicant has made an adequate case to conclude that the effect of ageing would have no impact on the package being able to continue to meet the safety requirements specified in the transport regulations.
3. The assessor had no objection to the renewal application for the GB/3746B/B(U)-96 package design being approved from an engineering perspective.

### Shielding and Dose Rate Assessment ([AR-01239](https://wired.crm11.dynamics.com/main.aspx?appid=58b7bb57-c806-ec11-b6e5-00224841dad4&pagetype=entityrecord&etn=can_assessment&id=5c16f750-0f14-4253-b3cb-c9644aecfd00))

1. The ONR shielding assessor has judged that the change to applicant’s shielding case since the 2018 approval was insignificant, as the change only corresponds to updating the references from the 2012 edition to the 2018 edition of the SSR-6 transport regulations.
2. The assessor had no objection to the renewal application for the GB/3746B/B(U) package design being approved from a shielding and dose rate perspective.

### Safety Case Requirements (SCR) Assessment ([AR-01252](https://prodonrgov.sharepoint.com/can_assessment/AR-01252_Internal_Only/GB%203746%20%28PR-01197%29%20-%20GB%203746B%20renewal%20-%20QSA%20Global%20Inc%20-%20Safety%20Case%20Requirements%20%28SCR%29%20Assessment%20-%20August%202023.docx))

1. The SCR assessment was completed in accordance with ONR guidance, and no safety significant issues have been identified.
2. The assessor had no objection to the renewal application for the GB/3746B/B(U)-96 package design being approved from an SCR perspective.

# Matters Arising from ONRs Work

1. None

# Conclusions

1. Based on the work carried out by ONR, I am satisfied that the safety submission from the applicant, together with supporting documentation provided to ONR, is adequate to meet applicable regulatory requirements and the package design is judged to be safe.

# Recommendations

1. I recommend that ONR should approve the five-year renewal of the GB/3746B/B(U) package design for transport by road, rail, sea, and air.

References

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| [1] | Submission for renewal of GB/3746B, WiReD ONRW-2019369590-2174. |
| [2] | IAEA Safety Standards: SSR 6, ‘Regulations for the Safe Transport of Radioactive Material (2018 Edition)’, IAEA, Vienna, 2018. www.iaea.org. |
| [3] | IAEA Safety Standards: SSG 26, ‘Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2018 Edition)’, IAEA, Vienna, 2018. www.iaea.org. |
| [4] | TRA-PER-GD-014 Guidance for Applications for UK Competent Authority Approval, (HOW 2 or www.onr.org.uk). |
| [5] | ONR Process Guides: TRA-PER-GD-001 Revision 3: ‘Transport Permissioning Assessment’. ONR Process Guides on How2. |