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| **PROJECT ASSESSMENT REPORT** | |
| **Project:** | Traveller B(U)F Package Fissile Validation |
| **Title:** | Project Assessment Report for the Traveller B(U)F Package Fissile Validation – USA/9380/B(U)F-96 |
| **Dutyholder / Applicant:** | Westinghouse Electric Company LLC |
| **WIReD Record Ref.** | PERM-01058 |
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**EXECUTIVE SUMMARY**

**Project Assessment Report for the Traveller B(U)F Package Fissile Validation – USA/9380/B(U)F-96**

**Permission Requested**

Westinghouse Electric Company have requested that ONR validate the USA/9380/B(U)F-96 certificate for the package known as Traveller. The package is designed by WEC and was originally approved in 2022 by the USA competent authorities, this certificate was updated in 2023 to account for a minor error in the Package Design Safety Report.

The request is for transport by road, rail and sea.

**Background**

The Traveller package has two variants, STD and XL, and has been approved in the UK as a Type AF package since 2018. The extant certificate is GB/5124/AF-96 Rev. 2. The design has been upgraded to enable higher quantities of material to be transported which requires it to be a Type B(U)F package. The primary changes to the design include additional axial restraints to provide additional structural support during impact.

**Assessment and inspection work carried out by ONR in consideration of this request**

The request was for a fissile validation of the USA certificate for the Type B(U)F variants of the traveller package.

In accordance with the regulatory permissioning strategy ONR has carried out reviews of documentation in the following areas:

* Mechanical engineering
* Criticality
* Radiation shielding
* Safety Case Review

Credit has been taken from the USA assessment and regulatory oversight with regards to management arrangements compliance, as such no inspection or direct assessment of this aspect has been carried out. This is recorded in the safety case review assessment.

**Matters arising from ONR's work**

No significant matters were identified within the assessment, a number of areas of improvement have been raised which the dutyholder will be required to address prior to the next approval of this package. These areas of improvement do not impact the safety of the package but are related to the documentation and presentation of evidence and information to ONR as part of the PDSR.

Two regulatory issues have been raised to inform and record these recommendations.

**Conclusions**

All ONR assessments recommended approval of the validation. This report has concluded that the package is compliant with the regulations and as such the approval of a validation certificate is recommended.

**Recommendation**

This project assessment report recommends that ONR should issue a validation certificate for USA/9380/B(U)-96.

**LIST OF ABBREVIATIONS**

ADR Agreement concerning the International Carriage of Dangerous Goods by Road

IAEA The International Atomic Energy Agency

IMDG International Maritime Dangerous Goods

ONR Office for Nuclear Regulation

PDSR Package Design Safety Report

RID The Regulation concerning the International Carriage of Dangerous Goods by Rail

TAG Technical Assessment Guide (ONR)

UK United Kingdom

USA United States of America

WEC Westinghouse Electric Company

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1. PERMISSION REQUESTED
2. Westinghouse Electric Company (WEC) have requested [1] & [2] that the Office for Nuclear Regulation (ONR) validate the USA/9380/B(U)F-96 certificate for the package known as Traveller. The package is designed by WEC and was originally approved [3] in 2022 by the United States of America (USA) competent authorities, this certificate was updated in 2023 [4] to account for a minor error in the Package Design Safety Report (PDSR).
3. The request is for transport by road, rail and sea.
4. The assessments carried out as part of this project have used The Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) [5], The Regulation concerning the International Carriage of Dangerous Goods by Rail (RID) [6] and The International Maritime Dangerous Goods (IMDG) [7] codes as the regulatory basis for decisions.
5. BACKGROUND
6. The Traveller package has two variants, STD and XL. Both have been approved in the UK as a Type AF package since 2018. The extant certificate is GB/5124/AF-96 Rev. 2 [8]. WEC recently upgraded the package to enable a higher quantity of material to be transported which requires it to be a Type B(U)F package. The primary changes to the design include additional axial restraints to provide additional structural support during impact.
7. WEC updated the original Traveller Type AF package PDSR to include the Type B(U)F design and criteria and provided this as the primary supporting documentation [9]. This was updated further [10] to address a minor error during the assessment process, this version is approved by the USA competent authority in the current certificate.
8. ASSESSMENT AND INSPECTION WORK CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST
9. The request from WEC was for a fissile validation of the USA certificate for the Type B(U)F variants of the traveller package.
10. In accordance with the regulatory permissioning strategy ONR has carried out reviews of documentation in the following areas:

* Mechanical engineering [11]
* Criticality [12]
* Radiation shielding [13]
* Safety Case Review [14]

1. The criticality assessment was carried out as a routine assessment with the other assessments being reported as assessment notes as appropriate to the level of ONR assessment.
2. Credit has been taken from the USA assessment and regulatory oversight with regards to management arrangements compliance of WEC, as such no inspection or direct assessment of this aspect has been carried out, this is recorded in the safety case review assessment [14].
3. MATTERS ARISING FROM ONR’S WORK
4. The matters arising from the work carried out by ONR specialists are summarised as follows.
5. The safety case review assessment [14] identified that the operational and maintenance instructions identified within Section 7 and 8 of the PDSR [10] were limited in their detail and lacked appropriate supporting images. This aspect of designs is currently under review by ONR with guidance and expectations planned to be issued in the future. As such the safety case review assessment [14] recommended that the dutyholder be advised that future submissions for package approvals would require their operational and maintenance instructions to be enhanced from the current standard.
6. I recommend a level 4 regulatory issue be raised to inform WEC and record this information for the next renewal.
7. The engineering assessment [11] did not identify any areas of concern and had no objection to the design being approved from an engineering perspective.
8. The shielding assessment [13] did not identify any areas of concern and recommended that the package be approved.
9. The criticality assessment [12] did not identify any areas of concern and recommended that the package be approved. The assessment did identify two areas which were not safety significant but the PDSR would benefit from being strengthened in future applications, these were:

* ACT for PWR Group 4 fuel assemblies, and
* Temperature effects on reactivity in the PDSR and criticality safety assessment

1. Based on this I recommend a level 4 regulatory issue be raised to inform WEC and record this information for the next renewal.
2. CONCLUSIONS
3. Based on the work carried out by ONR, I am satisfied that the Traveller package has been demonstrated to meet the regulatory transport requirements for approval.
4. RECOMMENDATIONS
5. I recommend that ONR should issue a validation certificate for USA/9380/B(U)-96.
6. I also recommend that ONR should maintain regulatory oversight and routinely monitor progress against the assessment recommendations identified below via two level 4 regulatory issues.

* WEC should enhance their operational and maintenance instructions for the Traveller package prior to the next renewal application.
* WEC should enhance their PDSR and criticality assessment reports in the following areas:
* ACT for PWR Group 4 fuel assemblies, and
* Temperature effects on reactivity in the SAR and criticality safety assessment

1. **ISSUES**

**Issues Raised**

| **No** | **Issue Title** | **Category** | **Issue Level** | **Licensee/Dutyholder Role** |
| --- | --- | --- | --- | --- |
| RI-11315 | Update of Traveller Type B PDSR - Operating and maintenance procedures | Permissioning | 4 | Westinghouse Electric Company |
| RI-11316 | Update of Traveller Type B PDSR - Criticality aspects | Permissioning | 4 | Westinghouse Electric Company |

1. REFERENCES

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| --- | --- |
| [1] | LTR-LCPT-22-13\_Trav-B ONR validation.pdf - ONRW-2019369590-354. |
| [2] | LTR-LCPT-23-05\_Trav-B ONR validation.pdf - ONRW-2019369590-1009. |
| [3] | (TCA000048) USA 9380 BUF-96 (Rev. 0) US DOT CAC.pdf - ONRW-2019369590-356. |
| [4] | *Enc 1-USA 9380 BUF-96 (Rev. 1) US DOT CAC.pdf - ONRW-2019369590-1010.* |
| [5] | *Agreement Concerning the International Carriage of Dangerous Goods by Road - 2021.* |
| [6] | *Convention concerning International Carriage by Rail (COTIF) Appendix C – Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) - 2021.* |
| [7] | *International Maritime Dangerous Goods (IMDG) Code 2020 Edition incorporating Amendment 40-20.* |
| [8] | GB/5124/AF-96 (TCA000009) USA/9297/AF-96 Certificate of Approval for Modifications April 2021 - CM9 2021/30341. |
| [9] | LTR-LCPT-22-03-P SAR Rev 2A-P.pdf - ONRW-2019369590-1143. |
| [10] | Enc 4-LTR-LCPT-23-01-P SAR Rev 3-P.pdf - ONRW-2019369590-1144. |
| [11] | *Assessment note - Mechanical Engineering.docx - ONRW-2019369590-94.* |
| [12] | *2022 60135 - USA9196 (TCA000049) - Technical Note - Criticality Assessment of USA9196-BUF.docx - ONRW-2019369590-255.* |
| [13] | *2022 60132 - USA9196 (TCA000049) - Technical Note - Shielding Assessment of USA9196-BUF.docx - ONRW-2019369590-259.* |
| [14] | AR-01093 - Safety Case Review - Traveller B(U)F USA/9380/B(U)-96. |