



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 26, 2023

Heath Baldner, Director Licensing
NAC International
3930 East Jones Bridge Road,
Suite 200
Peachtree Corners, GA 30092

SUBJECT: NON-ACCEPTANCE OF APPLICATION FOR CERTIFICATE OF COMPLIANCE
NO. 9400 FOR THE MODEL NO. PALADIN PACKAGE (Enterprise Project
Identifier L-2023-NEW-0002)

Dear Heath Baldner:

By letter dated March 7, 2023 (Agencywide Documents Access and Management System Package [ADAMS] Accession No. ML23066A249), NAC International submitted an application to the U.S. Nuclear Regulatory Commission (NRC) for approval of the PALADIN (Package for Large Dimensional Contents) radioactive material transport package.

The NRC staff conducted an acceptance review of your application and determined that the application did not incorporate all essential elements as noted below to proceed with a detailed safety review. Therefore, the NRC staff has not accepted your application. Our acceptance of your application would impact efforts to maintain an effective and timely licensing review because of the potential for multiple requests for additional information that would be needed for the NRC staff to adequately conduct its safety evaluation.

The following are examples of the information needed in the application:

- a. Title 10 of the *Code of Federal Regulations* (10 CFR) 71.73(a) requires: "Evaluation for hypothetical accident conditions is to be based on sequential application of the tests specified in this section, in the order indicated, to determine their cumulative effect on a package or array of packages. An undamaged specimen may be used for the water immersion tests..." However, the applicant evaluated separate packages independently for hypothetical accident conditions. Therefore, the applicant has not complied with this requirement.
- b. The 10 CFR 71.43(f) requires: "A package must be designed, constructed, and prepared for shipment so that under the tests specified in 10 CFR 71.71 ("Normal conditions of transport") there would be no loss or dispersal of radioactive contents, no significant increase in external surface radiation levels, and no substantial reduction in the effectiveness of the packaging." The staff believes the information, as presented in the application, shows plastic deformation under the normal conditions of transport Free Drop event; thus, compliance with 10 CFR 71.43(f) is not currently demonstrated.

- c. The staff is finding, in the current application, indications of permanent deformation to the containment boundary components (e.g., lid seal ring groove) during hypothetical accident conditions, thus affecting compliance with 10 CFR 71.51(a).
- d. While the justifications to the applicability, limitations, and conditions, of the design rules, were provided in some cases, they were found not to be acceptable by the staff.
- e. The submittal of material test results, to substantiate the stress-strain curves employed in the finite element analyses, is required by the staff to allow a complete and efficient review to be followed by the issuance of a certificate of compliance. Although an evaluation of the package based on preliminary material properties prior to completion of confirmatory material testing is permitted per appendices EE and FF of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, the staff must make a conclusion on the information presented in the application rather than conducting a second review after completion of testing.
- f. Radiolysis calculations are not included in the application, which is inconsistent with 10 CFR 71.33(b) and 71.35. The applicant mentioned during the March 30, 2023, post-submittal conference call the presence of non-negligible amounts of water within the package and the presence of a catalyst. The activity within the package would result in radiolysis of water and the formation of flammable gases. In addition, the staff notes that guidance documents (e.g., NUREG-2216) indicate that no credit should be taken for catalysts.

Please note that the items listed above should not be considered all-inclusive.

You may resubmit the application after addressing the deficiencies identified above. The NRC staff is available to discuss the methods for assuring that an application is adequate for NRC review and includes all analyses and references necessary to support the regulatory findings the staff must make. In that regard, please review the Division of Fuel Management, Division Instruction LIC-FM-2, Acceptance Review Process (ML22161B042) for further guidance.

If you have any questions regarding this matter, please contact Pierre Saverot, Project Manager at pierre.saverot@nrc.gov or at 301-415-7505. Please reference Docket Number 71-9400 and Enterprise Project Identifier (EPID) No. EPID L-2023-NEW-0002 in future correspondence related to this matter.

Sincerely,



Signed by Helton, Shana
on 07/26/23

Shana Helton, Director
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9400
EPID L-2023-NEW-0002

cc: 71sf9400all@listmgr.nrc.gov

Non Acceptance of Application for the Model No PALADIN package DATE July 26, 2023

DISTRIBUTION: Docket No. 71-9400

ADAMS Accession No.: Ltr ML23176A002

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DATE	Jun 27, 2023	Jun 27, 2023	Jun 29, 2023	Jun 29, 2023
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DATE	Jul 5, 2023	Jul 5, 2023	Jul 6, 2023	Jul 26, 2023

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