



October 5, 2021

U.S. Nuclear Regulatory Commission  
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Subject: Oklo Inc.  
Maximum Credible Accident Methodology Topical Report

Oklo Inc. (Oklo) submitted to the U.S. Nuclear Regulatory Commission (NRC) a Maximum Credible Accident (MCA) Methodology Topical Report and Performance-Based Licensing Methodology Topical Report on July 2, 2021. These reports outline the key methodological approaches that Oklo used for designing and preparing the license application for Oklo's Aurora at Idaho National Laboratory (Aurora-INL) Combined License Application (COLA) which was ultimately accepted for review. NRC staff's completeness determination reviews<sup>1</sup>, documented certain supplemental information the staff determined should be included in each topical report prior to beginning staff review. Following a review of the comments provided by the NRC staff, an assessment of the regulatory basis for each comment, and a series of public meetings between Oklo and NRC staff, Oklo is providing an updated version of the MCA Methodology Topical Report, as Enclosure 1 to this letter, to address the supplemental information being requested.

In preparation for the Aurora-INL COLA, Oklo extensively reviewed existing guidance documents that support implementation of licensing requirements for nuclear power plants. While substantial guidance exists to support licensing and regulation of existing operating nuclear technologies and their corresponding safety functions, it is generally not suitable to be used for advanced fission technologies, which take far greater advantage of inherent design features<sup>2</sup>. Even recently developed technology-neutral guidance does not fully incorporate means of assessing the inherent features of new and advanced fission technology. And while regulatory guidance is an important tool for demonstrating previous implementations of the requirements, it is the requirements themselves that have assured adequate protection of the public health and safety over the past several decades. With this in mind, Oklo created these methodologies as a new form of guidance, that showcases a simpler approach to addressing the regulations directly, while offering an approach to accounting for important functions and features, without relying on existing guidance.

The purpose of the MCA Methodology Topical Report is to provide a guide for steering event analyses broadly, with the intent of identifying a credible bounding event in a clear systematic way. This methodology is applicable to many reactor types, while also recognizing that each reactor type might need to implement this methodology in different ways. The MCA methodology therefore does not prescribe the specific details of its implementation, rather expects that the NRC applicant must appropriately justify and document their implementation in the NRC license application and during the review process. The topical report was updated to clarify the purpose and scope of this methodology, as it was intended to be applied.

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<sup>1</sup> Forms 898, U.S. NRC staff completeness determinations for the topical report Oklo-2021-R19-NP, Rev. 2, "Maximum Credible Accident Methodology" (ML21184A002) and Oklo-2021-R20-NP, Rev. 0, "Performance-Based Licensing Methodology" (ML21187A001)

<sup>2</sup> When used in these methodologies, "functions" are usually passive or active (e.g., valve actuation, shutdown rod insertion) and "features" are typically inherent or intrinsic system characteristics (e.g., reactivity feedback, heat transfer properties, structural configurations).



Oklo's review of the NRC staff's comments in the completeness determination forms resulted in the following supplements or edits:

1. Comment I – Oklo supplemented Section 1, “Purpose and scope” with a new Subsection 1.2, “Regulatory requirements,” to include an explicit discussion of the specific regulatory requirements for which this methodology is intended to satisfy.
2. Comment II – Oklo supplemented Section 3, “Identification of possible events” to include a discussion of specific tools that can be used to support justification of the identification and assessment of events. Language was also included to state that each NRC applicant that uses this approach, regardless of the tools selected, must provide proper justification and documentation to support their final assessment. As previously mentioned in this letter, the purpose of this methodology is to guide event identification more broadly, and therefore it is not intended for this methodology to also prescribe the tools necessary to implement this approach. Oklo supplemented Section 1, “Purpose and scope” to clarify this expectation.
3. Comment III – Oklo supplemented Section 1, “Purpose and scope,” with a new Subsection 1.1, “Interfaces,” that explains how this methodological approach is intended to work in tandem with other licensing strategies, including the Performance-based Licensing Methodology. Included in that supplement, is the importance of assuring that potential uncertainties associated with the use of new and novel features should be appropriately considered in the identification of possible events in the MCA Methodology. In developing the supplement to this comment, Oklo reviewed the all referenced materials in Notes 1 and 2, as well as the specific information communicated during the public meetings and through direct correspondence, and updated the topical report throughout to address the relevant information provided.
4. Comment IV – Oklo supplemented Subsection 1.2, “Regulatory requirements,” with clarification that ties the need to account for design qualifications of the NRC applicant to specific NRC requirements. Specifically, 10 CFR Part 50, Appendix B, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants” provides high level requirements that assure the quality of the design of nuclear power plants. While 10 CFR Part 50, Appendix B, only provides high level requirements, it is recognized that each applicant using this methodology should either have an approved, or be in the process of gaining NRC approval, for their quality assurance program. This quality assurance program should include the necessary specificity that assures those high level requirements will be met.
5. Comment V – Oklo supplemented throughout the MCA Methodology Topical Report to clarify how this methodology may incorporate, but does not require, the use of probabilistic risk assessments to support the overall analysis.

Following this revision, Oklo is confident that the NRC staff can move forward with the review of the MCA Methodology Topical Report. Oklo intends to submit a revised Performance-based Licensing Methodology Topical Report on October 19, 2021. Oklo looks forward to continued discussions on both the MCA Methodology Topical Report and the Performance-based Licensing Methodology Topical Report.

If you have any questions or need any additional information, please contact us at [regulatory@oklo.com](mailto:regulatory@oklo.com) or (650) 550-0127.

Sincerely,

A handwritten signature in black ink, appearing to read "Ross Moore".

Ross Moore  
Director of Regulatory Affairs  
Oklo Inc.



Enclosures: (1) Oklo Maximum Credible Accident Methodology Topical Report, Revision 3

CC (with enclosure):

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