



March 11, 2020

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Rockville, MD 20852-2738

Subject: Oklo Inc., Project 99902046
Oklo Power Combined Operating License Application for the Aurora at INL

Oklo Power, a subsidiary of Oklo Inc., is submitting to the NRC its Combined Operating License Application for the Aurora at INL pursuant to this letter.

This application provides a holistic application in a layout based directly on regulatory requirements for a combined operating license application (COLA), as discussed with the NRC staff since early 2018, and piloted with a limited scope in late 2018. These requirements are outlined in Title 10 of the *Code of Federal Regulations* (10 CFR). For a combined license (COL) application, rules for contents of applications are given in 10 CFR 52.77, 10 CFR 52.79, and 10 CFR 52.80.

The Aurora was designed iteratively with safety goals in mind. The safety case for the Aurora is presented in the application based on the historical standard of a systematic search for a maximum credible accident (MCA), analyzing and utilizing precedent for similar advanced fission designs and for historical plant methodology as well as in-depth internal and external event analyses, to identify the maximum credible accident based on the most challenging credible single failure or common cause of failures. The maximum credible accident is then analyzed with added defense in depth from risk analysis. The analysis of the MCA with a defense-in-depth philosophy is presented to show that the Aurora is safe, even in events beyond any previously licensed against. Then, inherent safety features or inherent design parameters which are assumptions in these safety analyses are codified into the design bases, assured by design commitments, and tied to programmatic controls. The result is a robust and integrated system for assuring safety in the as-built and operated plant. The inherent safety characteristics of the Aurora – such as its very small size and inventory, very low power density, low burnup, robust fuel, and not requiring water for cooling – not only affect the safety analysis but also other portions of the application such as the environmental analysis and security analysis.

The NRC has indicated that it is ready to receive and review applications for advanced fission plants. The existing application structure which has been used for prior operating commercial reactors, that is, conventional large light water reactors (LWRs), was developed after several LWRs had been designed, approved by the regulatory body, and built and operated. Therefore, the existing application guidance is based on large LWRs and is generally only appropriate to these plants. The NRC does not require applicants to follow a certain structure for applications. It is in the interest of the NRC that applicants for advanced fission plants not follow the existing voluntary guidance for LWRs, since it could lead to inappropriate content, but that applicants meet existing regulatory requirements, or their intent, given in the relevant sections of the code of federal regulations.

Content

This application takes the form as laid out in the regulations for requirements for combined license applications (10 CFR 52.77, 10 CFR 52.79, and 10 CFR 52.80). These regulations have relatively few LWR-specific requirements, as opposed to the related guidance for applicants and the regulator: Regulatory Guide 1.206, “Combined License Applications for Nuclear Power Plants (LWR Edition),” and NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” respectively.



Following 10 CFR 52.77, 10 CFR 52.79, and 10 CFR 52.80 effectively gives four primary parts to the COLA, including the final safety analysis report. These four primary parts are:

- **Part I: Company information and financial requirements**, which are 10 CFR 50.33 requirements (from 10 CFR 52.77: “Contents of applications; general information”),
- **Part II: Final safety analysis report** (from 10 CFR 52.79: “Contents of applications; technical information in final safety analysis report”),
- Proposed inspection, tests, analysis, and acceptance criteria (ITAAC) (from 10 CFR 52.80: “Contents of applications; additional technical information,” paragraph a), which was put into a broader category, **Part VI: Proposed license conditions**, and
- **Part III: Aurora Environmental Report – Combined License Stage** (from 10 CFR 52.80: “Contents of Applications; additional technical information,” paragraph b).

Three other parts are added to this structure or separated out from the FSAR requirements section to mimic past application structures:

- **Part IV: Technical Specifications** (which is separated out into its own part of the application from a regulatory subsection for the FSAR, 10 CFR 52.79(a)(30)),
- **Part V: Non-applicabilities and requested exemptions**, and
- **Part VII: Enclosures**. Enclosures include certain plans referenced in, and required for the application, as well as other key supporting documents.

By using this format, tying the submittal to the regulations for each part is clear. In general, the order of the FSAR chapters follow the order of the regulation, with the exception of sections that are not applicable to non-LWRs or the Aurora as noted in Part V. Each major part of the application and each chapter of the FSAR begin with a section on the purpose as given in the regulation, in order to make the tie to the regulation clear.

For NRC staff review, there is also guidance in 10 CFR 52.81, “Standards for review of applications.” While 10 CFR 52.81 refers to 10 CFR Parts 20, 50, 51, 54, 55, 73, and 100, it provides a non-guidance standard for review of applications and is fundamental to the review of applications regardless of structure.

Information Types and Acceptance Review Timing

Oklo endeavored to allow for as much of the application and enclosures as possible to be publicly available. Some portions are requested to be withheld due to export-controlled information, per 10 CFR Part 810, and some portions contain security-related information or other information to be withheld, per 10 CFR 2.390(b) or (d). All information is marked accordingly, and affidavits regarding the information requested to be withheld, per 10 CFR 2.390(b), is submitted with this application.

It is expected by Oklo and agreed upon with the NRC staff that the acceptance review timeline may be increased to 90 days, in order to allow for adequate review of this new structure as well as provide a sound foundation for the beginning of the application review once accepted.

If you have any questions or need any additional information, please contact us at regulatory@oklo.com.

Sincerely,


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Enclosures:

- (1) **Part I: Company information and financial requirements**
- (2) **Part II: Final safety analysis report**
- (3) **Part III: Aurora Environmental Report – Combined License Stage**
- (4) **Part IV: Technical Specifications**
- (5) **Part V: Non-applicabilities and requested exemptions**
- (6) **Part VI: Proposed license conditions**
- (7) **Part VII: Enclosures:**
 - (8) **Enclosure 1:** Idaho Emergency Operations Plan (2017)
 - (9) **Enclosure 2:** Idaho National Laboratory Fixed Nuclear Facility Emergency Plan
 - (10) **Enclosure 3:** Emergency Plan
 - (11) **Enclosure 4:** Radiation Protection Program
 - (12) **Enclosure 5:** Physical Security Plan
- (13) **Affidavit regarding request for withholding for Part I**
- (14) **Affidavit regarding request for withholding for Part II**
- (15) **Affidavit regarding request for withholding for Part IV**

Cc:

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