Oklo Responses to NRC Request for Additional Information 2: Aurora Step 1 - QA

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Oklo Inc.

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Please identify in the FSAR all the equipment and services which fall under the requirements outlined under Part II of the QAPD. Please identify if the fuel procurment [sic] will fall under Part II or Part III of the QAPD, and what specific aspects of the fuel will fall under the QAPD, and how the specific characteristics will be treated under the QAPD.

1.1 Oklo response

As described in the response to Aurora Step 1 – QA - 2, in Section 2.1, functions and inherent features described by the design basis summaries (i.e., gray boxes) fall under Part III of the QAPD, while a specific subset of these functions and inherent features that are deemed safety-related must additionally meet the requirements of Part II of the QAPD. Further, although no functions and inherent features are identified as safety-related, Part II of the QAPD may nevertheless be applied to specific functions and inherent features.

As stated in the design basis summary for DB.RXS.01 in Section 2.2.2.6 of the FSAR: "the fuel in the reactor system is procured according to 10 CFR Part 50 Appendix B, with a critical characteristic of thermal conductivity." This means that the thermal conductivity of the fuel is treated under Part II of the QAPD, and the wording of the design commitment (DC.RXS.01.A) will be updated to explicitly state this. Further, it will be updated to clarify that other characteristics of the fuel will fall under Part III of the QAPD.

This is the only item that falls under Part II of the QAPD, as the safety analysis did not identify any safety-related functions or inherent features. It is expected that the NRC staff will evaluate the safety analysis presented in the Oklo application and that once it has been reviewed, the most useful tools for the NRC staff to assure adequate protection will involve various programmatic controls, of which QA is one, but which includes a variety of testing to prove all design commitments prior to startup and during startup, such as pre-operational tests and startup tests, in addition to ITAAC, as well as the ongoing use of technical specifications during operation. Oklo looks forward to more discussion of these items in Step 2 of the application review.

1.2 Associated changes to the FSAR

The design basis summary box for DB.RXS.01 in in Section 2.2.2.6 of the FSAR will be revised as described in the response above and shown in the markup provided below:

> **DC.RXS.01.A** The fuel in the reactor system is procured according to Part II of the Oklo Quality Assurance Program Description (QAPD) (under 10 CFR Part 50 Appendix B), with a critical characteristic of thermal conductivity. Other characteristics of the fuel fall under Part III of the QAPD.
>
> ~~(see Oklo Quality Assurance Program Description)~~

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Please provide a listing in the FSAR of those SSCs, if any, which fall under the requirements outlined under Part III of the QAPD.

2.1 Oklo response

As described in Section 2.1.1 of the FSAR, the design bases are the characteristics of a system that ensure the safe operation of the reactor. As such, they require a higher level of quality assurance than those systems that have no implications on the safety of the plant. The functions and inherent features described by the design basis summaries in the NRC application fall under Part III of the QAPD. More specifically, the functions and inherent features that are committed to as design commitments, and verified by programmatic controls, are the characteristics that fall under the requirements in Part III of the QAPD.

The key dimensions described in Section 2.1.3.1 of the FSAR are those dimensions that are fundamental in the description and analysis of systems and their design bases. As such, they are treated as inherently part of the design bases and have the same QA treatment as the other functions and inherent features ensured by design bases (i.e., they also fall under Part III of the QAPD).

A subset of the functions or inherent features ensured by design bases (that at a minimum fall under Part III of the QAPD) may be determined through the safety analysis to be safety-related and must then meet Part II of the QAPD. Although no functions or inherent features were determined to be safety-related, functions or inherent features may nevertheless be treated under Part II of the QAPD. In that case the design basis summaries will explicitly indicate they must meet Part II of the QAPD rather than Part III. As described in the response to Aurora Step 1 – QA - 1 in Section 1.1, the fuel is the one example of this in the FSAR.

The design basis summaries and the key dimensions therefore already provide the listing in the FSAR of the functions and inherent features that fall under the requirements of Part III of the QAPD. The FSAR will be updated to explicitly state the connection between the design bases and key dimensions, and the QAPD to make this clearer.

2.2 Associated changes to the FSAR

The following changes will be made to the FSAR in Section 2.1 to further clarify the applicability of each part of the Oklo QAPD as described in the response above:

- A sub-section (Section 2.1.4 “Applicability of QAPD”) will be added.
- An existing sub-section will be renumbered (Section 2.1.4 “Chapter structure” becomes Section 2.1.5 “Chapter structure”).

The changes are shown in the markup provided below:

2.1.4 Applicability of QAPD

As described in Section 2.1.1, the design bases are the characteristics of a system that ensure the safe operation of the reactor. The functions and inherent features described

by the design basis summaries (i.e., gray boxes) in this chapter fall under Part III of the Oklo Quality Assurance Program Description (QAPD). More specifically, the functions and inherent features that are committed to as design commitments, and verified by programmatic controls, are the characteristics that fall under Part III of the QAPD. Key dimensions are also considered to inherently be part of the design bases and fall under Part III of the QAPD. A subset of functions and inherent features described in the design basis summaries that would fall under Part III of the QAPD may be determined through the safety analysis to be safety-related, and in that case would instead fall under the requirements of Part II of the QAPD. Further, functions or inherent features that are not determined to be safety-related my nevertheless be treated under Part II of the QAPD. In each of these cases, the treatment under Part II of the QAPD will be explicitly stated in the relevant design commitment in the design basis summary.

2.1.5 ~~2.1.4~~ Chapter structure