



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

January 10, 2020

MEMORANDUM TO: Benjamin G. Beasley, Chief
Advanced Reactor Licensing Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

FROM: Jan M. Mazza, Project Manager */RA/*
Advanced Reactor Licensing Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF DECEMBER 17-18, 2019, MEETING BETWEEN
THE U.S. NUCLEAR REGULATORY COMMISSION STAFF AND
OKLO, INC., TO DISCUSS SAFETY CASE AND EXTERNAL
HAZARDS (EPID LRM-0011)

A meeting was held on December 17-18, 2019, between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives from Oklo, Inc. (Oklo) at the NRC offices at One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852, Rooms 11-B04 and 14-D03. The meeting was a combination of a public Category 2 meeting and non-public meeting. The purpose of the meeting was to discuss Oklo's safety case and plans for addressing external hazards.

The public portion of the meeting commenced with an introduction to Oklo and its Aurora reactor. Oklo provided information on the Aurora design, including key design features, size, fuel, and safety case. Oklo also discussed the impact of the safety case on the external hazards methodology. A summary of the discussion in each area is provided in the paragraphs below.

Safety Case

Oklo's safety case is based on a maximum credible accident (MCA) which assumes the single most challenging failure. To accomplish this, Oklo plans to rely on a deterministic analysis and utilize insights from a probabilistic risk analysis. The MCA for the Oklo Aurora design is a complete loss of heat sink. Because of the small size of the Aurora reactor, Oklo asserts that the MCA is mitigated by the inherent features of the design (i.e., small source term, low power density, and negative thermal reactivity coefficients). The NRC staff noted that it would examine the Oklo safety analysis and supporting data in detail during the review of the application.

CONTACT: Jan M. Mazza, NRR/DANU/UARL
(301) 415-0498

External Hazards

Oklo noted that due to the small size of the Aurora reactor, and the simple safety case, it plans to evaluate or bound the design against the most extreme external hazards across the U.S. for most event types that the reactor could be exposed to. The Oklo external hazards methodology relies on deterministic analyses to show the behavior of the facility against extreme external events. Oklo noted that this methodology obviates the need for further analysis typically done using the PRA. The NRC staff noted that its review of the Oklo application would determine whether this methodology is sufficient for addressing external hazards.

The meeting agenda and list of meeting attendees are included in Enclosures 1 and 2, respectively. The meeting notice and non-proprietary version of the meeting slides are located in the NRC's Agencywide Documents Access and Management System (ADAMS) at accession numbers ML19334B312, and ML19344A003 respectively.

Project No.: 99902046

Enclosures:

1. Agenda
2. List of Attendees

SUBJECT: SUMMARY OF DECEMBER 17-18, 2019, MEETING BETWEEN THE U.S.
NUCLEAR REGULATORY COMMISSION STAFF AND OKLO, INC., TO DISCUSS
SAFETY CASE AND EXTERNAL HAZARDS (EPID LRM-0011)
DATED: JANUARY 10, 2020

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BBeasley, NRR
JMazza, NRR

ADAMS Accession No.: ML20003D837**NRO-002**

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|--------|---------------|---------------|
| OFFICE | NRR/DANU/UARL | NRR/DANU/UARL |
| NAME | JMazza | BBeasley |
| DATE | 1/6/2020 | 1/10/2020 |

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AGENDA

Oklo, Inc. Open and Closed Meeting with the U.S. Nuclear Regulatory Commission (NRC)

Safety Case and External Hazards

Tuesday December 17 – Wednesday December 18, 2019

One White Flint North 11-B04 and 14-D03

| Time | Topic | Lead |
|--|--|-------------|
| Tuesday December 17, 2019 – OWFN 11-B04 | | |
| 1:00 p.m. – 1:15 p.m. | Introductions and Opening Remarks - Open to the Public | NRC/Oklo |
| 1:15 p.m. – 2:30 p.m. | Safety Case and External Hazards – Open to the Public | Oklo |
| 2:30 p.m. – 2:45 p.m. | Opportunity for Public Questions for the NRC | NRC |
| 2:45 p.m. – 3:00 p.m. | Break | N/A |
| 3:00 p.m. – 4:30 p.m. | Safety Case – Closed to the Public | Oklo |
| Wednesday December 18, 2019 – OWFN 14-D03 | | |
| 10:00 a.m. – 11:30 a.m. | Safety Case continued – Closed to the Public | Oklo |
| 11:30 a.m. – 12:30 p.m. | Lunch | N/A |
| 12:30 p.m. – 2:45 p.m. | External Hazards – Closed to the Public | Oklo |
| 2:45 p.m. – 3:00 p.m. | Wrap up and Adjourn | NRC/Oklo |

ATTENDANCE LIST

Oklo, Inc. Open and Closed Meeting with the U.S. Nuclear Regulatory Commission (NRC)

Safety Case and External Hazards

Tuesday December 17, 2019

One White Flint North 11-B04

| Name | Affiliation |
|--------------------|--------------------|
| Istar, Ata | NRC/NRR |
| Renner, Alex | Oklo, Inc. |
| Cochran, Caroline | Oklo, Inc. |
| Everett, Pat | Oklo, Inc. |
| Redfoot, Emma | Oklo, Inc. |
| DeWitte, Jacob | Oklo, Inc. |
| Carpentier, Marcia | NRC/OGC |
| Ezell, Julie | NRC/OGC |
| Segala, John | NRC/NRR |
| Mazza, Jan | NRC/NRR |
| Beasley, Ben | NRC/NRR |
| Reckley, Bill | NRC/NRR |
| Stutzke, Martin | NRC/NRR |
| Schaaf, Robert | NRC/NMSS |
| White, Jason | NRC/NRR |
| Orders, William | NRC/OCM/AXC |
| Kresk, Robert | NRC/OCM/JMB |
| Yeshnik, Andrew | NRC/NRR |
| Monninger, John | NRC/NRR |
| Schaperow, Jason | NRC/NRR |
| Lupold, Tim | NRC/NRR |
| Travis, Boyce | NRC/NRR |
| Vechioli, Lucieann | NRC/NRR |
| Drzewiecki, Tim | NRC/NRR |

| Name | Affiliation |
|-----------------|--------------------------|
| Hayes, Michelle | NRC./NRR |
| Jung, Ian | NRC/NRR |
| Heeszel, David | NRC/NRR (phone) |
| Lyman, Ed | UCS (phone) |
| Bergman, Jana | Curtis Wright (phone) |
| Consani, Keith | Public (phone) |
| Lalain, Terri | NRC/NRR (phone) |
| Palmrose, Don | NRC/NRR (phone) |
| Richard, Joshua | Oklo (phone) |
| Locklear, Gary | Kinetrics (phone) |
| Hawn, David | Oklo (phone) |
| Graff, McKay | Oklo (phone) |
| Corwin, Bill | DOE (phone) |
| Walker, Jessica | Jensen Hughes (phone) |

Oklo, Inc. Open and Closed Meeting with the U.S. Nuclear Regulatory Commission (NRC)

Safety Case and External Hazards

Wednesday December 18, 2019

One White Flint North 14-D03

| Name | Affiliation |
|--------------------|--------------------|
| Istar, Ata | NRC/NRR |
| Renner, Alex | Oklo, Inc. |
| Cochran, Caroline | Oklo, Inc. |
| Everett, Pat | Oklo, Inc. |
| Redfoot, Emma | Oklo, Inc. |
| DeWitte, Jacob | Oklo, Inc. |
| Segala, John | NRC/NRR |
| Reckley, William | NRC/NRR |
| Mazza, Jan | NRC/NRR |
| Beasley, Ben | NRC/NRR |
| Stutzke, Martin | NRC/NRR |
| Schaaf, Robert | NRC/NMSS |
| White, Jason | NRC/NRR |
| Kresk, Robert | NRC/OCM/JMB |
| Yeshnik, Andrew | NRC/NRR |
| Monninger, John | NRC/NRR |
| Schaperow, Jason | NRC/NRR |
| Lupold, Tim | NRC/NRR |
| Travis, Boyce | NRC/NRR |
| Vechioli, Lucieann | NRC/NRR |
| Drzewiecki, Tim | NRC/NRR |
| Reckley, Bill | NRC/NRR |
| Hayes, Michelle | NRC./NRR |
| Jung, Ian | NRC/NRR |
| Heeszel, Dave | NRC/NRR (phone) |
| Moreno, Dan | Jensen Hughes |