OFFICIAL USE ONLY—PROPRIETARY INFORMATION



UNITED STATES NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

September 18, 2020

OKLO AURORA – STEP 1 TECHNICAL REVIEW AUDIT SUMMARY MAXIMUM CREDIBLE ACCIDENT HEAT TRANSFER IN REACTOR SYSTEM

APPLICANT INFORMATION

Applicant: Oklo Power LLC.

Applicant Address: 230 E Caribbean Dr. Sunnyvale, CA 94089

Plant Name: Aurora

Docket No.: 52-0049

Audit Location/Dates:

Audit was conducted via video conference.

Audit Entrance: August 27, 2020 Audit Exit: August 28, 2020

Audit Team Members

Tim Drzewiecki Reactor Systems Engineer, Audit Team Lead, NRR/DANU/UART

Boyce Travis Reactor Systems Engineer, NRR/DANU/UART
Joseph Kelly Senior Reactor Systems Engineer, RES/DSS/CRAB

Participating Applicant Staff

Patrick Everett John Hanson

Documents Audited

- MCA audit heat transfer Aug 27 2020.pdf
- ANSYS Mechanical Model:

Repository: oberon results archive

Filename: FINAL 7wm2k 7wmk 225c explicit contacts 102pct nodata.wbpz

Git commit: 0f3261e

Audit Activities

Oklo presented on the heat transfer modelling performed using the ANSYS mechanical code with a focus on the thermal bonding between (1) the reactor cell can and heat pipe, and (2) the heat pipe and heat exchanger. The NRC noted the following:

The key dimensions presented in Table 2-1 of the final safety analysis report (FSAR)
 [[]]. Hot dimensions are used in the ANSYS mechanical model. Hot dimensions are obtained by assuming the following:

OFFICIAL USE ONLY PROPRIETARY INFORMATION

OFFICIAL USE ONLY—PROPRIETARY INFORMATION

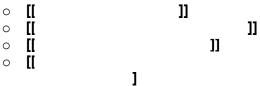
- 2 -

0	[[
0	[[
0	П

• Thermal bonding between the reactor cell cans and heat pipe |

Thermal bonding bety	ween the reactor cell	ii cans and neat pipe [1 is
modeled in ANSYS M	lechanical [[]] with the following parameters:
o [[]]]	11
0 [[11	11
o [[

)]].



Oklo opened the ANSYS Mechanical model and guided NRC staff through the inputs specific to the thermal bonding between (1) the reactor cell and heat pipe, and (2) the heat pipe and heat exchanger. During this process, NRC staff was able to verify that the ANSYS Mechanical model used input parameters for the thermal bonding that are consistent with the description above.

The NRC staff performed simple hand calculations using the input assumptions stated by Oklo during their presentation and obtained similar values to those presented in the FSAR.

Exit Briefing

An exit briefing was held on August 28, 2020. During this exit briefing, the audit team restated the purpose of the meeting, summarized the audit activities, recapped the key outcomes of the audit, and highlighted areas where additional information may be warranted.

RAIs or Potential RAIs

The NRC staff identified the following areas where requests for additional information (RAIs) will be requested:

- 1. An update to the FSAR to include information on the thermal bonding between (1) reactor cell can and heat pipe, and (2) heat pipe and heat exchanger will be needed to support the safety case of the Aurora.
- 2. Evidence to validate the thermal bonding design and modeling assumptions will be needed to support the use of an innovative means to transfer heat from the fuel.

OFFICIAL USE ONLY—PROPRIETARY INFORMATION

- 3 -

Open Items

The NRC staff identified information important to the safety case of the Aurora design during this audit. The NRC staff is seeking to (1) incorporate this information into appropriate licensing documentation, and (2) obtain additional information to support the thermal bonding design and modeling assumptions that support the Aurora safety case. The NRC staff plans to address these open items through the RAI process.

Deviations from Audit Plan

Due to efficient communication between Oklo and the NRC staff, the lengths of the audit meetings were significantly reduced from the estimates provided in the audit plan (ADAMS Accession No. ML20225A227).

Principal Contributor: Timothy Drzewiecki, NRR

Date: September 18, 2020

/RA/

Timothy Drzewiecki

Reactor Systems Engineer, Audit Team Lead

Advanced Reactor Technical Branch

Timothy O Drzewiecki

Division of Advanced Reactors and Non-Power

Production and Utilization Facilities
Office of Nuclear Reactor Regulation

cc (Redacted copy): Distribution via list serv

OFFICIAL USE ONLY PROPRIETARY INFORMATION

- 4 -

SUBJECT: OKLO AURORA – STEP 1 TECHNICAL REIVEW AUDIT SUMMARY MAXIMUM

CREDIBLE ACCIDENT HEAT TRANSFER IN REACTOR SYSTEM DATED

September 18, 2020

DISTRIBUTION:

PUBLIC (Redacted copy only)

UARL R/F

BBeasley, NRR

MHayes, NRR

TLupold, NRR

JMazza, NRR

TDrzewiecki, NRR

BTravis, NRR

JKelly, RES

RidsNrrDanu Resource

RidsNrrOklo Resource

RidsNrrDanuUarl Resource

RidsNrrDanuUart Resource

RidsNmssRefs Resource

RidsNrrLASLent Resource

RidsOgcMailCenter Resource

RidsACRS MailCTR Resource

ADAMS Accession Nos. Package ML20246G616; Audit Summary ML20246G641(non-Public) Audit Summary ML20262G985 (Public-Redacted) *via e-mail

OFFICE	NRR/DANU/UART*	NRR/DANU/UARL/PM*	NRR/DANU/UARL/LA*
NAME	TDrzewiecki	JMazza	SLent
DATE	8/31/2020	9/1/2020	9/1/2020
OFFICE	NRR/DANU/UART/BC*	NRR/DANU/UARL/BC*	NRR/DANU/UART*
NAME	MHayes	BBeasley	TDrzewiecki
DATE	8/28/2020	8/31/2020	9/18/2020

OFFICIAL RECORD COPY