Oklo Inc. Licensing Project Plan: 1Q 2020 Update

October 2019

Oklo Inc.,

Oklo Licensing Project Plan Executive Summary

Introduction

The Oklo Licensing Project Plan is a layout for Oklo engagements with the NRC leading up to and, as it approaches, the Oklo application. It is based on Oklo internal planning combined with conversations with NRC staff and managers. It is to be expected that the further out from the present date discussed in the plan, the less certainty there may be in engagement type and details as well as timeline. The dates of submissions are not intended to be binding but as best guess efforts on a timeline. Some items may be decided against, and new items might arise. Oklo will also make its best effort to update the staff between LPP quarterly update submissions as necessary if major changes to timeline or to effort is expected. The LPP terms and abbreviation are being used because it is the more common NRC term for such a plan and because the Oklo plan was begun prior to discussions around different types of plans. It is worth mentioning that for both the NRC and the applicant, it is optimal to pursue the minimal amount of pre-application time and effort needed to get from pre-application activities into application space. Likewise, it is optimal for both NRC and applicant resources to minimize the resources required in application space to review the application. This licensing project plan currently reflects that goal, but should not be considered limiting should other important topics arise. Other assumptions inherent in the plan are outlined below.

Oklo Introduction

Oklo is developing a compact fast reactor designed to bring distributed, clean, affordable and reliable nuclear power to high cost power areas of the United States. It is expected by both Oklo and NRC staff that engagement through a Licensing Project Plan (LPP) will result in a greater degree of regulatory certainty and will ensure that the next steps in the licensing process can proceed in an efficient and timely manner.

The Oklo reactor is a single digit megawatt power reactor designed to be as simple as possible with as much inherent safety as possible. The core is a solid metallic uranium-zirconium fuel, and heat is transported using heat pipes, which function as thermal superconductors. There are no pumps or valves that interact with the core, and no flowing coolant into and out of the core. It is designed to have very low burnup. The size of the reactor is similar to that of a research reactor. Because of this small size, the reactor decay heat power at 24 hours after shutdown is very small and manageable in comparison with larger reactors, being on the order of tens of kilowatts, or on the order of a single running motorcycle engine. The materials used in the reactor have been designed to use materials with significant historical databases of testing data at appropriate temperatures and irradiation.

Licensing Project Plan Introduction

In general, the LPP touches on the inputs for licensing where Oklo finds that feedback is needed from NRC staff to develop the application (inputs graphically represented by INL's flow chart, Figure 1), or where Oklo anticipates that information would be useful for the NRC to prepare for the Oklo application.

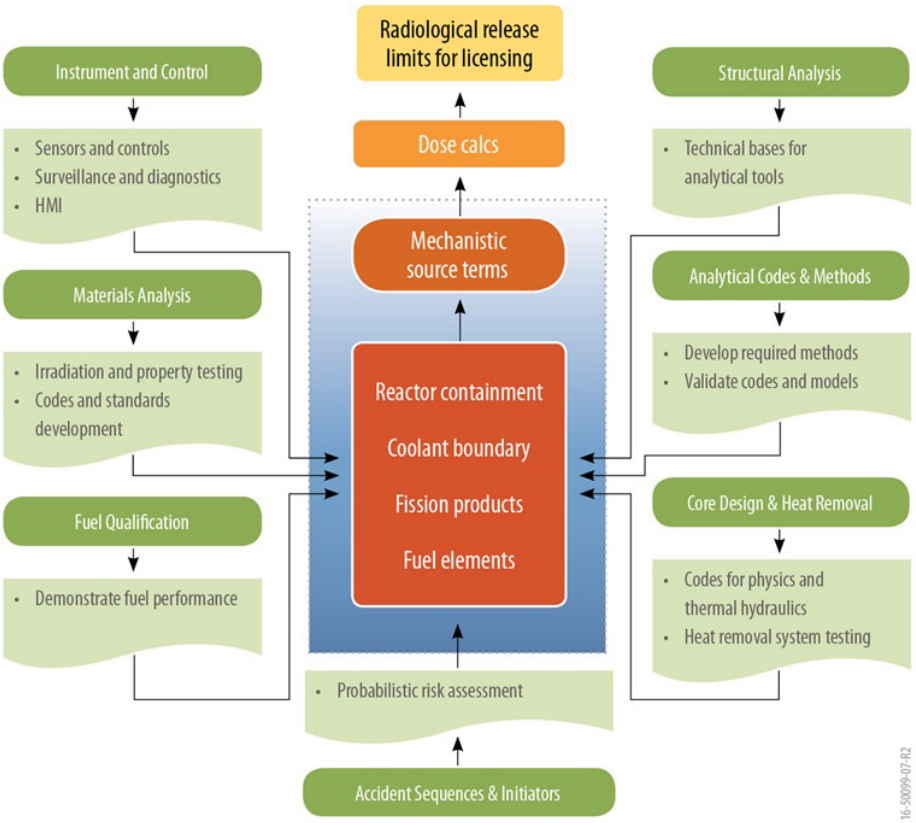

Figure 1: Key Inputs for Licensing (Source: INL, Advanced Reactor Technology. Online: art.inl.gov)

Licensing Project Plan Assumptions

- Assumptions for cost and hourly estimates: core team of 9 people. This includes one project manager (PM), but does not include counsel due to counsel having different billing.
- Assumptions for hourly cost utilize the current staff hourly fee of $278/hour, with the understanding that this may change in the course of the timeline outlined in the plan.
- All quarters are based on the NRC fiscal year basis beginning in October unless otherwise noted.
- These numbers are considered an estimate and not necessarily a goal. In other words, it may be optimal to spend more or less time, and as the plan is updated, the

estimates will hopefully iterate closer to a goal amount of time optimized both by NRC and Oklo.

Key Updates to the LPP Since the Last Submitted LPP (4Q 2019)

- The "Possible" Report: Environmental Topics Report and follow-up meeting originally scheduled for 1Q 2019 has been removed. It was delayed in anticipation of a new Interim Staff Guidance (ISG) on environmental reviews but following continued delays of the ISG, it has been decided that discussions of the environmental report are better suited when in application. The environmental report will build on what was submitted in 2018 in the DG-1353 pilot.
- A Draft Regulatory Crosswalk was provided via the electronic reading room and it was decided based on discussion with NRC staff that the crosswalk is best provided for information rather than requiring a follow-up meeting.
- The Seismic and External Hazards Report has been removed, in part due to contractor delays, in the interest of not delaying the meeting on the topic.

Activities Since the Last Submitted LPP (4Q 2019)

- Meeting with security staff and regarding emergency preparedness.
- Meeting on safety case, radiation protection, and controls.
- Continued Oklo drop-ins with Commissioners.
- Continued regular calls with management, and with new management following NRC merger.
- NRC acceptance and approval of the Oklo Safeguards Handling and Protection Plan.
- NRC acceptance of the Oklo Quality Assurance Program Document for review.

Other Items of Note Since the Last Submitted LPP (4Q 2019)

- Supported Chairman Svinicki trip to California.
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1Q 2020

Reports:

1. Certain: Licensing Project Plan (LPP) update

   The licensing project plan is a document expected to be valuable to both the NRC and the applicant both in pre-licensing and in licensing, to plan for both effort and cost and to agree to general bounds on each.
   - Quarterly update
   - Expected result: drop-in meetings with each update
   - Expected timeline for result: within one month of each update submitted
   - Expected cost: N/A
   - Rationale for expected timeline and cost: programmatic management review and drop-ins typically not billed because it does not involve technical staff review.

Meetings:

1. Meeting with staff on external hazards and continued discussion on safety case

   This meeting will allow for interaction on Oklo external events analysis methodology and discussion on how these interface with the maximum credible accidents and the overall safety case previously discussed
   - Date: November or December 2019
   - Expected result: NRC interaction, allow for questions between NRC staff and Oklo staff
   - Expected timeline: N/A
   - Expected cost: $26,966 or 97 staff hours
   - Rationale for expected timeline and cost: Core team meeting for 5 hours, plus multiple additional staff (estimated 10 additional staff) for 5 hours, plus 2 hours of management preparation. Hours of prep time included in estimate for relevant technical report line items.

Application

Oklo has internally estimated an application timeline based on conversations with staff members and NRC managers and former staff and managers. Given the small nature of the reactor and the wide safety margins, that estimate is approximately 24 months including ACRS review. For the last several quarters, the Oklo LPP has estimated a total number of man-hours in licensing of 35,000 man-hours or a total licensing cost of approximately $9M in direct fees to the NRC.

To support this, Oklo is hiring substantively in the near term as well as developing relationships with respected engineering contractor firms and maintaining relationships with multiple national labs.

Fuel transportation license timelines are being evaluated. In addition to ongoing work to demonstrate recycling existing nuclear waste at DoE to energy, relationships are being developed with fuel enrichers and fabricators to ensure that the fuel supply keeps up with the NRC schedule. This may further ensure the timeline laid out by Oklo and the NRC remains on track even if there are delays with any one potential fuel source.

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Altogether, the partnerships Oklo is establishing may accelerate or will at least support the time schedule that has been set out.