

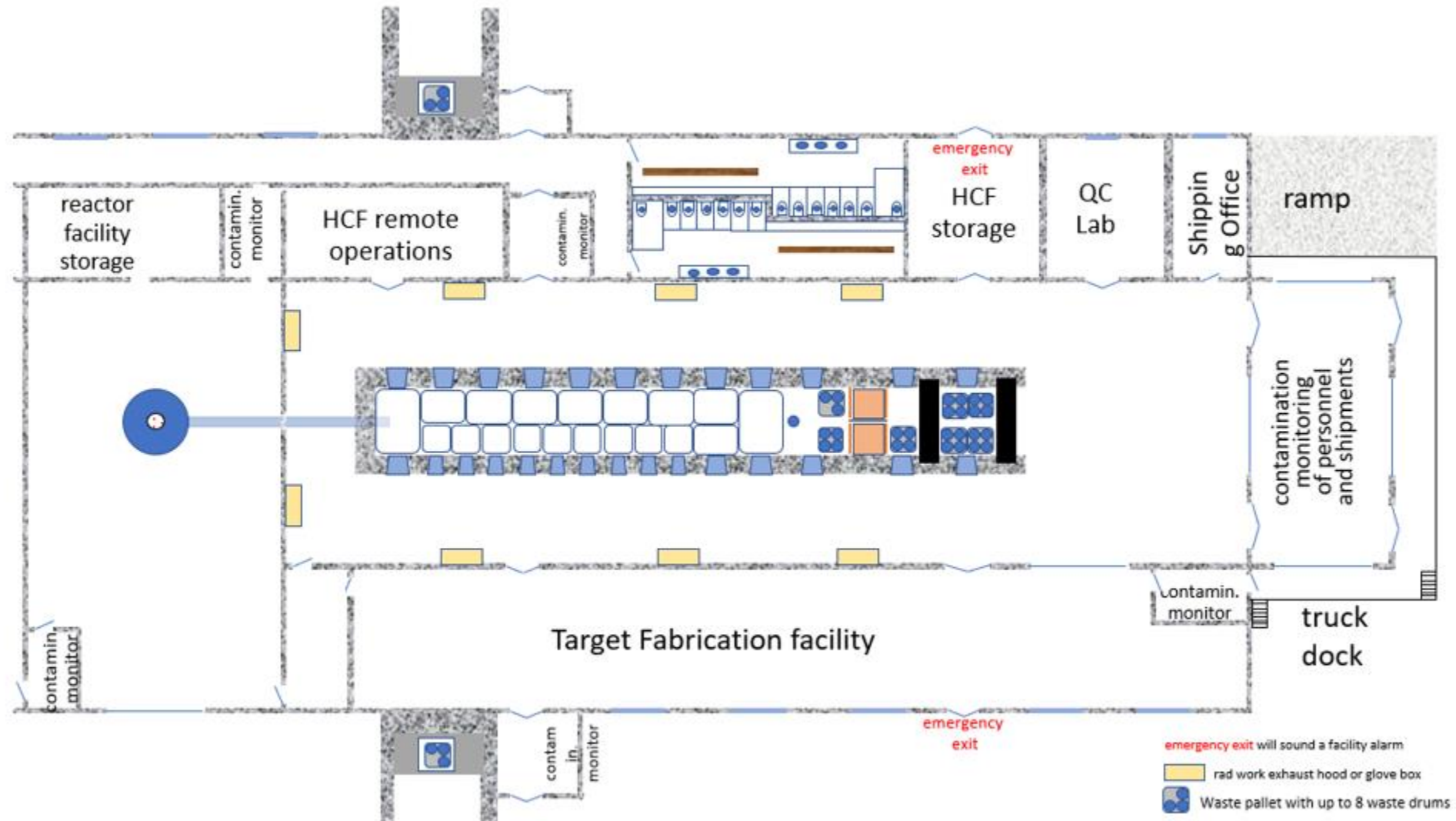


EDEN

RADIOISOTOPES

NRC Pre-application Meeting

Facility Layout



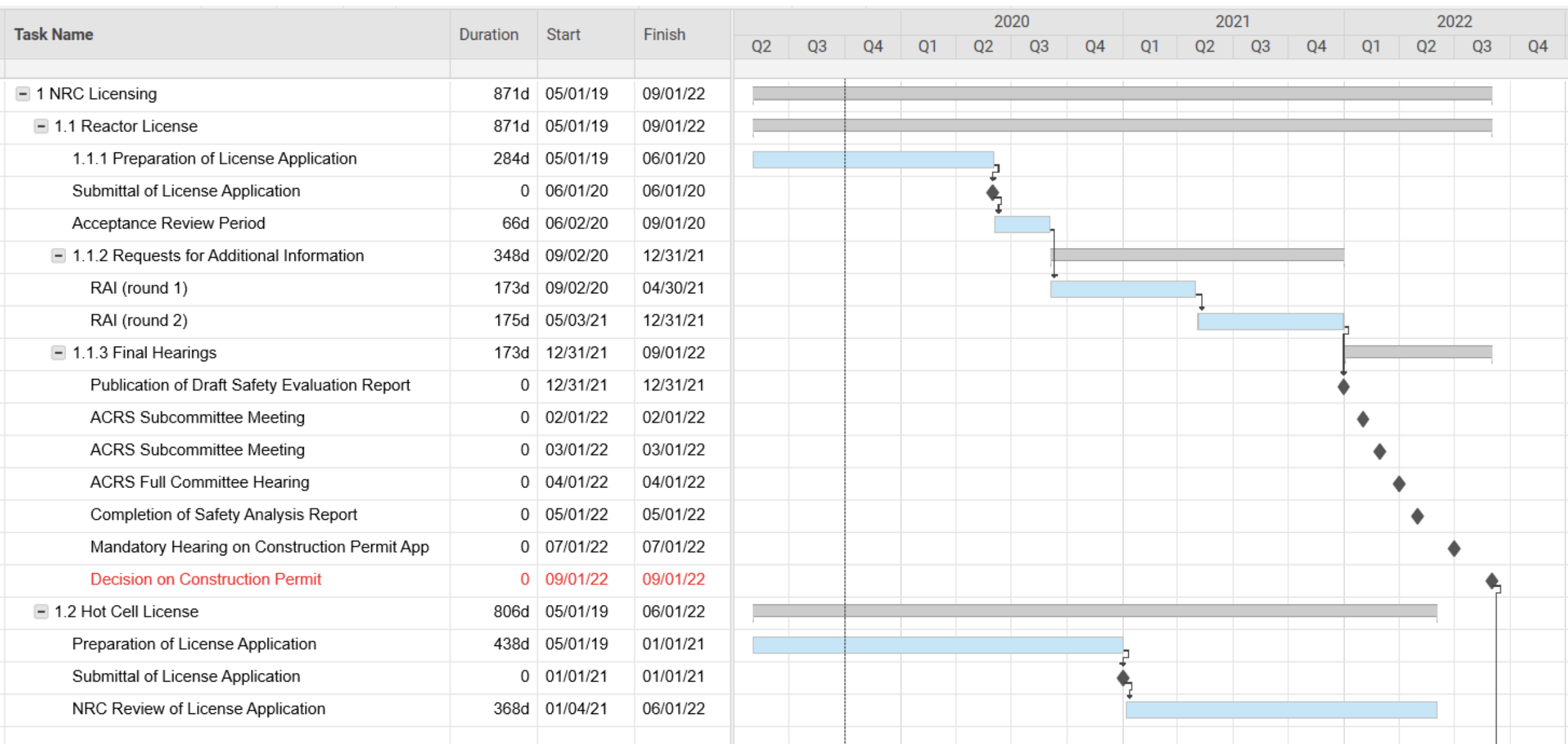
Eden IPF Proposed Licensing Path

10 CFR Part 50

- Reactor Facility
- Combined CP and OL
- Key activities:
 - Target irradiation
 - Target storage
 - Target transfer

10 CFR Part 70

- Hot Cell Facility
- Target Fabrication Facility
- Key Activities:
 - Chemical processing
 - Target handling
 - Waste storage and shipping
 - Target fabrication and storage



Task Name	Duration	Start	Finish		2022					2023					2024			
				Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
2 Construction	436d	01/01/22	09/01/23															
Pre-construction Activities (utilities, roads, etc...)	89d	01/01/22	05/04/22															
Facility Construction	262d	09/01/22	09/01/23															
3 Initial Operations	522d	09/01/22	09/01/24															
Plant Personnel Hiring/Training	262d	09/01/22	09/01/23															
Startup Testing and ORR	260d	09/04/23	08/30/24															
Start Production	0	09/01/24	09/01/24														◆	

Coordination of Two Licensing Paths

Environmental Report

- Will be submitted with Part 50 License
- Information will bound activities of all facilities and their activities

Facility Boundary

- Part 50 and 70 facilities will have a separating nuclear facility boundary
- Facilities will share a target transfer pool

Conduct of Operations

- Conduct of Operations will be submitted for each license application
- Procedures will coordinate and implement requirements of both

Key Additions for Part 50 Combined License Application

- Technical Specifications
- Emergency Plan, Physical Security, QAPD
- Need clarification on:
 - Cyber security
 - Procedures
 - Building drawings

Handling
Future Facility
Changes
(post-
operation)

Automated target
handling system

Activation targets

Target fabrication
improvements

Batch Clarification

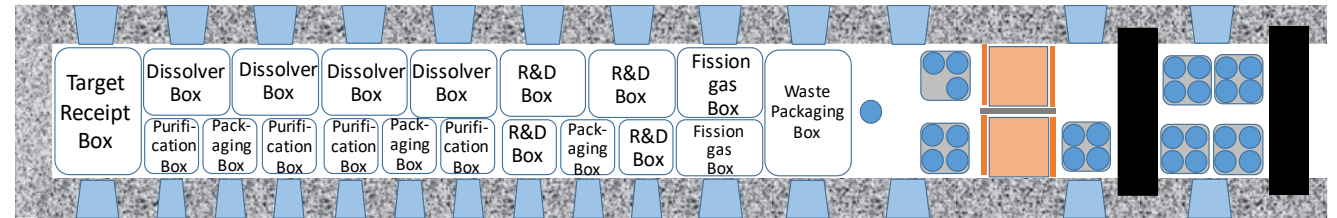
Eden will limit 100 g of U-235 per “batch” in the Hot Cell Facility

10 CFR 50.2 Production Facility Exception (iii):

“facilities in which processing is conducted pursuant to a license issued under parts 30 and 70 of this chapter, or equivalent regulations of an Agreement State, for the receipt, possession, use, and transfer of irradiated special nuclear material, which authorizes the processing of the irradiated material on a batch basis for the separation of selected fission products and limits the process batch to not more than 100 grams of uranium enriched in the isotope 235 and not more than 15 grams of any other special nuclear material.”

Process Line

- Each batch will correspond to a dissolution tank per line; may process multiple lines simultaneously
- “Process Batch” distinguished by independence of box and line, limit of U-235, and solution form while separating FP
- Uranium will only be in this solution form (<100 g U-235 per line) in the dissolution box
- There will be some redundancy in packaging boxes, but uranium will be in solid form.



Dissolution Box

Here, targets are dissolved in uranyl nitrate solution. Final products are U_3O_8 and Titania Moly column

Purification Box

Moly column is purified of fission products. U_3O_8 further purified of FP.

Packaging Box

Target Qualification

- Previous pre-application meeting brought up concerns over qualification of Eden driver targets
- Range of solutions:
 - Eliminate use of driver targets
 - Limit burnup of driver targets
 - Driver targets are only irradiated for <1 month on par with irradiation of other experiments
 - Driver targets may not be processed for Mo-99, but can be treated as “experiments” with low burnup/irradiation times. Driver targets may be useful in HCF operator training.



Thank You