

Approved
ORNL WORK PLAN
 Operations, Maintenance and Services
 Work Plan Name / Rev: MWP059955 / 0
 Expiration Date: 10/23/2025



WORK SCOPE/DESCRIPTION				
Requester (Name/Badge/Division):	Dukes, Sergio / 00709118 / X195			
Location of work (Bldg/Rm/Other):	3525 / /			
Work Plan Title:	Lighting Upgrades at Building 3525 Glove Maintenance Room (GMR)			
Description of Service/Work Needed: This Work Plan covers the hazards and controls to perform lighting upgrades at the Glove Maintenance Room (GMR) at Building 3525. The existing lighting is ballast-driven with possible PCBs. The new lighting will be LED driven in turn will provide better lighting. The Glove Maintenance Room is a High Contamination/Airborne Area that requires respiratory protection for entry. During this task craft personnel will make multiple entries into GMR until all new lighting is in place. Lock/Tag/Verify will be used to control multiple lighting circuits and Second Level crane system during the performance of this task. Consult with Building Supervision and Electrical Task Leader when suspension of lighting circuits.				
Charge Number, if required:				
Work Plan Grade/Worktype:	1 / A			
Author (Name/Badge):	Moore, Andrew / 03022839			
File Attachments:	Badge	Name	Attachment Desc	File Name
	00709118	Dukes, Sergio	USQD	USQDSCREEN-3525-23-019 R0 (GMR Light Upgrade WP).pdf
	03100183	Dean, Ian	QEA	QEA MWP059955 Light upgrade 3525 FMR.pdf
	00909951	Neal, Mark A	USQD	EUSQD-3525-23-037 R0 (GMR Lights BOPM).pdf
	03049533	Webb, Aaron	3525-BOPM-185 Glove Maintenance Room Lighting Upgrades	3525-BOPM-185 Glove Maintenance Room Lighting Upgrades.pdf
	00909951	Neal, Mark A	BOPM	3525-BOPM-185 Glove Maintenance Room Lighting Upgrades.pdf

INSTRUCTIONS

Prerequisites/Precautions:

- Does this work apply to a Harzard Category 1, 2, or 3 nuclear facility? If yes, do any of the following apply (as determined by a USQ-qualified person)?

1. Is it a physical change? Yes.
2. Is it a change to a procedure or program described in the documented safety analysis? No.
3. Is it a new or revised operation? No.

- All work perfomed in, or in support of, a Hazard Category 1, 2, or 3 nuclear facility must be conducted in compliance with the nuclear facility Safety Analysis Report (SAR) and Technical Safety Requirements (TSR).
 - Plan/Schedule work with Facility Management.
 - Inform Waste Services prior to starting work.

Directions:

- Assure applicable/appropriate access and training requirements are identified and adhered to.
- Manage PCB waste/Universal Waste in accordance with subject area.

Post Work Testing:

- Determine post-work testing requirements and acceptance criteria.

Closeout:

- Perform cleanup of work area following completion of task.

JOB HAZARD EVALUATION

HAZARDS	PERMITS / CONTROLS
Deenergized Hazardous Energy Sources	1. ORNL-213, ORNL Lock/Tag/Verify Permit form OR ORNL-

(LTV): LTV will be used multiple times during lighting upgrade. This could involve multiple entries in and out of the GMR.	<p>214, ORNL Lock/Tag/Verify Permit Continuation form OR ORNL-215, ORNL Lock/Tag/Verify Permit Temporary Suspension form</p> <ul style="list-style-type: none"> Authorized employee performs Simple LTV actions: <ul style="list-style-type: none"> Identify hazardous energy source Identify energy isolation device Isolate equipment from energy source Install a personal lock Confirm isolation of hazardous energy source Perform Complex Lock/Tag/Verify - PERMIT - OR Equipment-Specific Hazardous Energy Control Procedure
Hoisting and Rigging: Movement of GMR crane for access of lighting fixtures. Ensure LTV is reestablished after crane movement.	<ul style="list-style-type: none"> Movement of cranes will be needed for access to GMR lighting.
Radiological Work: Work will occur in Glove Maintenance Room.	<ul style="list-style-type: none"> Radiological Work Permit (Enter RWP no.) Dosimetry Monitoring Requirements: per RCT and RWP Follow radiological posting, entry control & egress requirements Respond to Abnormal Radiological Conditions and Alarms. Radiological alarms include: Continuous Air Monitor (CAM), Area Radiation Monitor (ARM), Electronic Pocket Dosimeter (EPD), Personnel Contamination Monitor (PCM).
Electrical Equipment and Tools: Use of various electric powered tools will be used during this work	<ul style="list-style-type: none"> Listed by a nationally recognized testing laboratory (NRTL)
Elevated Work: Ladders and/or scaffolding will be used for removal/installation of ballast and lighting fixtures.	<ul style="list-style-type: none"> Inspecting Ladders Guide [Step & Fixed] Scaffolding - Scaffold Competent Person Evaluates Work Scope: Scaffolding is currently set up in GMR and approved for use pending crane movement and LTV's are established first. Inspect Scaffold (Scaffold Tagging and Inspection exhibit): Inspect scaffolding prior to use. Buddy System (best management practice only, must select additional controls)
Ergonomic Conditions (Contact Stress, Vibration, Posture, Force, Repetitive Motion): installing lighting systems will involve reaching overhead to work.	<ul style="list-style-type: none"> Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM) Diversify activities: Implement as needed Special Tools (Lifts, etc.): Ensure adequate ladders/scaffolds are used to eliminate ergonomic issues as much as possible. Stretch breaks/exercises: Implement as needed Worker rotation: Implement as required
Heat/Cold Stress	<ul style="list-style-type: none"> Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM) Worker rotation Frequent breaks
Mechanical Material Handling: Possible Removal/Installation of fixtures.	<ul style="list-style-type: none"> Apply Guideline: Assess Hazards
Obstructed Access/Egress: Entry/egress to GMR may be difficult due to ladders/scaffolding, PPE, RCT requirements. Ensure access/egress is discussed during PJB	<ul style="list-style-type: none"> Maintain egress routes clear and at least 36 inches width
Hazardous Waste: If removed use caution	<ul style="list-style-type: none"> Consult with Waste Management personnel with

because used ballast may contains PCB's.	disposition of Hazardous Waste items.		
Sharp edges,broken glass	<input type="checkbox"/> Use caution when handling used light bulbs, wear leather gloves.		
DOCUMENTATION REVIEW AUTHORIZATION (Approvals are certification of hazards assessment)			
Reviewer/Approver Roles	Signature	Date	
Accountable Management (Service Provider, Line, Equipment Owner, or Facility Management)	Keeton, Wesley	10/23/2023	
Accountable Management (Service Provider, Line, Equipment Owner, or Facility Management)	Woody, Bryan	10/20/2023	
Author	Moore, Andrew	10/20/2023	
IS/IH	Dean, Ian	10/20/2023	
Nuclear or Facility Engineer	Webb, Aaron	10/20/2023	
Other Subject Matter Experts (SMEs)	Smith, Russ Michael	10/20/2023	
Radiation Protection	Walls, Mark	10/23/2023	
Safety Basis Engineer	Bailey, Brian	10/20/2023	
Task Leader	King, Blake	10/20/2023	
Work Package Concurrence			
Facility Manager			
Operations Supervisor			
Facility Manager Approval To Start Work			
Facility Manager			
Work Start Authorization			
Task Leader			
Work Acknowledged Complete			
Task Leader			
Worker Feedback:			
WORK DETAILS - Prerequisites/Precautions			
Hazards	Permits/Controls	Resources	Dur
1) - Ensure the following task performed using this work package have an associated "ready to work" work order assigned and the task is included on or added to the facility POD prior to work start each day.			
		<input type="checkbox"/> Supervisor <input type="checkbox"/> Project Leader <input type="checkbox"/> Work Team Leader	1
2) - If any of the following engineering documents such as USQD, BOPM, etc. are needed, ensure documentation is approved and attached to this work package prior to beginning work.			
		<input type="checkbox"/> Supervisor <input type="checkbox"/> Project Leader <input type="checkbox"/> Work Team Leader	2
3) - During Lock/Tag/Verify, The proper PPE SHALL BE worn. The following PPE is as follows: Long Sleeve shirt, pants, and undergarments of untreated fibers(NF) safety glasses, and closed toe shoes.			
		<input type="checkbox"/> Electrician	3
WORK DETAILS - Directions			

Hazards	Permits/Controls	Resources	Dur
1) - Conduct pre-job brief using NNFD-FRM-058 "PRE-JOB BRIEF" to identify scope of work, hazards, controls, etc. Include input from all personnel involved in performance of task as appropriate crafts and facility personnel.	The following additional items shall be discussed during pre-job brief. **Programmed and corrective maintenance SHALL NOT be performed without approval by the Building 3525 Operations Supervisor. ** Overview of what components will be serviced and the associated hazards and controls necessary to perform work safely. **Impacts the work will have on Building 3525 operational status. **Ensure Building 3525 Operations Supervisor/Designee are briefed on status of work performed. **If unacceptable results are found, immediately place equipment/work area in a safe condition and notify Building 3525 Operations Supervisor/Designee of problem and what actions are necessary to return equipment to acceptable condition.		
		<ul style="list-style-type: none"> Radiological Control Technician Waste Services Representative Waste Management Task Lead Supervisor Electrician Project Leader Planner Work Team Leader 	1
2) - As necessary, stage waste container in GM Room Airlock for receipt of waste items.		<ul style="list-style-type: none"> Waste Services Representative Waste Management Task Lead Supervisor Power Equipment Operator Work Team Leader 	2
3) - Ensure all replacement items and material needed to perform task are staged at work area. For ease of installation and safety purposes, replacement/installation of light bulbs, ballast, wiring (if necessary), etc. may be performed out of sequence at the discretion of Task Leader.		<ul style="list-style-type: none"> Supervisor Electrician Work Team Leader 	3
4) - Details for placing Complex LTV The GM Room is posted as a High Radiation Area, Airborne Radioactivity Area, and a High Contamination Area. The work to replace the lighting will be performed in the GMR on scaffolding in full dress-out and respirator. For these reasons, the complex LTV will be applied to the Lighting Panel LF circuits 14 and 16 and on the 2nd Level Crane System disconnect prior to entry. The zero-energy verification will be performed at the secondary of the breakers in the panel and 2nd Level Crane Disconnect prior to entry with an additional verification performed by the QEWS in the GMR before starting work. Zero Voltage Verifications will be performed by QEWS following SBMS – Verify Absence of Hazardous Electrical Energy for Lock/Tag/Verify (LTV). QEWS will establish the limited approach boundary and Arc Flash Hazard Boundary when preparing for zero energy			

verification at the Lighting Panel LF and Crane Disconnect. Table 1 lists the Shock Approach Boundaries for 208-Volt Systems with the Limited Approach Boundary as 3'-6", the Restricted Approach Boundary is to 'Avoid Contact' and the Arc Flash Boundary is listed on the label with the PPE level required for performing this work.

Note: The Lighting Panel LF circuits 14 and 16 are included to control the electrical energy on the lighting fixtures and the 2nd Level Crane Disconnect is included to control the mechanical energy from potential movement of the crane while working on the lights.

The pre-work verification will be performed by turning on the light switch in the GMR to ensure lighting does not come on and then performing an absence of voltage check at the fixture. The pre-work verification can be performed for the second-level crane by using the crane pendant and demonstrating the crane does not move when you attempt to operate it.

		<ul style="list-style-type: none"> <input type="checkbox"/> Chemical Operator <input type="checkbox"/> Electrician <input type="checkbox"/> Power Equipment Operator 	4
--	--	---	---

5) -

Steps for Modifying the GMR Lighting Fixtures

- 1.) The initial positioning of the equipment required before placing the Complex LTV shall be as follows. The Red and Blue Monorail Cranes will be driven out of the GMR into the Decontamination Cell and the sliding door will be closed. The GMR crane bridge will then be positioned at the north wall of the GMR.
- 2.) Place the Complex LTV and perform modifications for lighting fixtures that are accessible.
- 3.) The next step will require QEWs working under the Complex LTV to come out of the GMR and suspend the LTV for the 2nd Level Crane System Disconnect.
- 4.) Once the LTV is suspended the GMR Crane Bridge will be re-positioned to the South end of the GMR so the remainder of the lighting fixture will be accessible for upgrade.
- 5.) Re-apply the LTV and perform modifications for the remainder of the lighting fixtures in the GMR.

Upon completion of lighting fixture modifications ensure all lighting fixtures function as desired. If necessary, re-apply Complex LTV, re-enter GMR and troubleshoot the lighting system until system operation is acceptable.

		<ul style="list-style-type: none"> <input type="checkbox"/> Chemical Operator <input type="checkbox"/> Electrician <input type="checkbox"/> Power Equipment Operator 	5
--	--	---	---

6) - RCT Checks and Disposal of Waste

Allow RCT personnel to perform a survey of lighting fixtures and bulbs prior to removal. Remove light bulbs from lighting fixtures. Place light bulbs in the approved waste bag, container, etc. Bulbs shall be disposed of in accordance with established ORNL procedures.

While the complex LTV is in place remove ballast from each fixture and make required wiring modifications. Place ballast in a waste bag and/or specified waste container for disposal.

Note: If hazardous energy is present during the voltage check at the lighting fixture, stop work and notify the Electrical Task Leader.

Install new bulbs and associated wiring (if necessary) and re-assemble lighting fixtures.

		<ul style="list-style-type: none"> <input type="checkbox"/> Chemical Operator <input type="checkbox"/> Electrician <input type="checkbox"/> Power Equipment Operator 	6
--	--	---	---

7) - For removal/installation of ceiling tile GMR airlock perform the following:

Ensure scaffolding and/or ladders are available. Ensure replacement ceiling tile is in hand prior to entry into work area.

Identify the ceiling that will be replaced.

With RCT personnel present, remove old ceiling from ceiling area. Wrap/bag ceiling tile and discard in the provided waste container.

Install new ceiling tile at ceiling.

Perform cleanup of work area as needed once new ceiling tile has been installed.

		<input type="checkbox"/> Radiological Control Technician <input type="checkbox"/> Carpenter <input type="checkbox"/> Work Team Leader	7
--	--	---	---

8) - Perform cleanup of work area following the completion of lighting installation. Consult with Supervision and RCT personnel during cleanup as it pertains to any decon efforts, waste packaging, etc.

		<input type="checkbox"/> Radiological Control Technician <input type="checkbox"/> Supervisor <input type="checkbox"/> Electrician <input type="checkbox"/> Work Team Leader	7
--	--	--	---

WORK DETAILS - Post Work Testing

Hazards	Permits/Controls	Resources	Dur
---------	------------------	-----------	-----

1) - Ensure all new lighting are working properly.

If lights are not working properly, then trouble shoot problem and repair. Consult with Electrical Task Leader as necessary.

		<input type="checkbox"/> Supervisor <input type="checkbox"/> Electrician <input type="checkbox"/> Work Team Leader	1
--	--	--	---

WORK DETAILS - Closeout

Hazards	Permits/Controls	Resources	Dur
---------	------------------	-----------	-----

1) - Notify Building 3525 Operations Supervisor when work is complete.

		<input type="checkbox"/> Supervisor <input type="checkbox"/> Electrician <input type="checkbox"/> Work Team Leader	1
--	--	--	---

2) - Ensure work area is clean and free of hazards prior to leaving work area.

		<input type="checkbox"/> Supervisor <input type="checkbox"/> Electrician <input type="checkbox"/> Work Team Leader	1
--	--	--	---

Approved
ORNL WORK PLAN
 Operations, Maintenance and Services
 Work Plan Name / Rev: MWP059955 / 0
 Expiration Date: 10/23/2025



PRE-JOB SAFETY REVIEW GUIDE

ID: 59955

Scope of Work: Review work package/plan to ensure all participants understand the work activity.

Hazards: Review the hazards identified in Job Hazard Evaluation (JHE) / work plan (IOP).

- ↳ Since the work package / plan was written: 1) Have conditions changed? 2) Are there new hazards? Refer to Field Notes and Focus Areas.

Hazard Controls / Permits: Review:

- ↳ Written permits for the work activity.
- ↳ Precautions, step warnings, Hold Points ...
- ↳ Personal Protective Equipment (PPE)

- ↳ Work instructions for information - e.g., steps where hazards are introduced.
- ↳ ORNL subject area requirements - e.g., non-permit hazard controls.

Performing Work:

- ↳ Discuss group/individual responsibilities for safe & effective work.
- ↳ Follow work instructions & safety procedures.
- ↳ Availability/location of materials, tools, etc.
- ↳ Any previous experiences / lessons learned?
- ↳ Response if work cannot be performed as planned.
- ↳ What is the worst thing that could happen?
- ↳ Are there Potential error traps with the job? → →
- ↳ Take a minute before: work start & leaving work area.
- ↳ Work Hand-off / Turnover - workers & Task Leader

→ **Potential Error Traps:**

- ↳ Time pressures
- ↳ Distractive environment
- ↳ High workload
- ↳ First time evolution
- ↳ First day back
- ↳ Vague guidance
- ↳ Over confidence
- ↳ Imprecise communications
- ↳ Work stress

Abnormal Situation Response:

- ↳ Stop Work: Observe an unsafe act, activity or condition that creates an imminent danger.
- ↳ Emergency Response: Discuss egress paths or other responses if problems are encountered.

Field Notes and Focus Areas: (Use this area as a work space to record notes related to new hazards identified in the field or changed conditions. Record feedback in work package/plan information systems.)

By signing below, I am indicating that I have been briefed on the potential hazards associated with completing this job.

Signature / Badge	Date	Signature / Badge	Date



UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) SCREENING WORKSHEET



Part I - Introduction

1. Screening Number: Revision Number: Facility/Activity:

USQDSCREEN-3525-23-019

0

3525 Facility

2. Subject of Evaluation:

Work Plan MWP059955, *Lighting Upgrades at Building 3525 Glove Maintenance Room (GMR)*

3. Description of the change:

This USQD evaluates Revision 0 of Work Plan MWP059955, *Lighting Upgrades at Building 3525 Glove Maintenance Room (GMR)*. This work plan covers the activities, hazards, and controls to perform lighting upgrades in the Glove Maintenance Room (GMR) at Building 3525. The existing lighting are ballast driven with possible PCB's. The new lighting fixtures are LED driven and will provide better lighting. The GMR is a High Contamination/Airborne Area which requires respiratory protection for entry. During this task, craft personnel will make multiple entries into GMR until all new lighting fixtures are properly installed. Lock/Tag/Verify will be used to suspend multiple lighting and second level crane circuits during the performance of this task.

4. Primary safety basis documents:

- 1) ORNL/3525/SAR, Rev. 10, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525*
- 2) ORNL/3525/TSR, Rev. 12D, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525*
- 3) ORNL/3525/SBS/2018-001, Rev. 1, *Safety Basis Supplement Irradiated Fuel Examination Laboratory, Building 3525, Functional Testing of the K-15 System Ventilation Upgrade Project*
- 4) ORNL/3525/SBS/2020-001, Rev. 0B, *Safety Basis Supplement for the Operation of the Upgraded K-15 System in Building 3525* (approved but not implemented)
- 5) ORNL/3525/TSR, Rev. 12C, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525* (approved but not implemented)
- 6) ORNL/NNFD/3525/SAR, Rev. 0, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 7) ORNL/NNFD/3525/SAR, Rev. 0A, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 8) ORNL/NNFD/3525/TSR, Rev. 0, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 9) ORNL/NNFD/SSAR, Rev. 19, *Oak Ridge National Laboratory Standardized Safety Analysis Report for Nonreactor Nuclear Facilities*.



UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) SCREENING WORKSHEET

5. Safety Analysis:

The SAR acknowledges that facility systems, including light fixtures, will need to be periodically replaced. Aside from steps needed to address possible radiological contamination, the methodology for removing the old light fixtures and installing the new ones is a common practice being made throughout many industrial settings that wish to improve lighting in work areas as well as take advantage of energy cost savings, improved reliability, and decreased maintenance associated with LED lighting fixtures.

Facility lighting is not a credited item in the SAR for preventing or mitigating accident events. The lights are being updated with more energy efficient fixtures which supply brighter lights at a low energy rate. The new lights operate in the same basic way as the existing lights. For the safety basis, the operation of the new fixtures is not considered to result in any new or elevated hazard levels beyond those already evaluated in the current SAR. The SAR descriptions of the facility do not include detail such that this change will require text changes in the SAR itself.

The work will involve hand and power tools. Drills, saws, and other such tools may be used to complete the light fixture work. The hazards associated with their use (electrical, thermal, kinetic, and potential) as well as movement of the facility crane(s) are included in the hazard identification and screening (SAR Appendix A tables) and the Unmitigated Hazard Evaluations (UHEs) for the various facility areas. The work will also involve working from elevated surfaces such as ladders, scaffolding, and stools. This equipment is typical of those used in the facility for maintenance and repair activities. The work will be completed by trained craftsmen familiar with the facility, equipment, and work methods. The work is governed by existing facility programs and protocols (e.g., Radiation Work Permits) and the applicable Standards-Based Management System (SBMS) procedures and protocols. There is nothing unique or unusual about their application in this effort that would invalidate the SAR assumptions or conclusions.

Aside from the light fixtures, circuit components, and hardware, no other facility structure, systems, or components (SSCs) will be affected. When electrical circuits are to be de-energized, checks will be made to identify any safety-related SSCs will be impacted. All lockout/tagout and other activities will be coordinated with the facility before beginning work. The facility has existing procedures and protocols for loss of electrical power events.

NNFD-3525-AP-003 limits the total amount of radioactive materials permitted in the evaluated areas and the total facility to quantities (or to levels slightly less than) already evaluated in the current SAR. Before radiological materials are brought onto the facility footprint or transferred between areas, they are screened and approved to ensure the quantities approved by the SAR analyses are not exceeded. There are no new radiological materials (outside of sealed check sources for testing) associated with the new work plan. Thus, the material forms and quantities evaluated in the SAR are not increased.

Some hazardous materials may also be needed to install and/or remove the lighting fixtures and related components. Cleaners, lubricants, and decontamination solutions are materials commonly used to support operations in the 3525 Facility and across the ORNL complex. Existing facility procedures limit the amounts of hazardous materials. The amounts of these materials involved with installing, repairing, and maintaining these units are present in commercially available quantities and are below any threshold limits in the hazardous material program. Thus, the revised work plan activities do not introduce any elevated hazardous material quantities above those evaluated in the SAR.



UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) SCREENING WORKSHEET

Conclusion

The change will not introduce any new hazards or energy sources nor affect the quantity, form, or dispersibility of radiological materials in the 3525 Facility. Moreover, existing energy sources are not increased, no new energy sources are introduced, and the consequences of analyzed accidents will not change from those documented in the SAR. No new accident scenarios are possible. The change will not impact any identified initiating event in any of the SAR accident scenarios. Thus, the frequencies stated in the SAR are not affected. Equipment will operate, malfunction, and fail as evaluated in the SAR. The change will not result in any new or altered equipment interactions.

6. Does the proposed change require revision of TSR or affect a DOE Condition of Approval? Yes No

If Yes, then DOE approval is required

7. Does the change make any non-editorial change to the DSA? Yes No

If yes, specify changes or attach. +Add'l Page for comments

Part II – USQD

1. USQD Primary Screening Criteria: Is the proposed change:

a. A temporary or permanent modification to a structure, system, or component explicitly or implicitly described in the documented safety analysis? Yes No

b. A completely new structure, system, or component that is of the type that would be described in the documented safety analysis? Yes No

c. A temporary or permanent change in a procedure described in the documented safety analysis? Yes No

d. A completely new procedure that is of the type that would be described in the documented safety analysis? Yes No

e. A test, experiment, new operation, or new activity not described in the documented safety analysis? Yes No

If the responses to questions 1.a. through 1.e. in Part II are all "No", then no further screening is necessary, a USQD is not required, and proceed to Part III. If any responses 1.a. through 1.e. are "Yes", then a USQD is required unless excluded by the additional screening criteria in item 2.

2. USQD Secondary Screening Criteria: Is the proposed change:

a. Fully within the scope of a DOE-approved categorical exclusion? If "yes", identify the categorical exclusion: Yes No

b. Of an editorial nature and not a technical change? Yes No



UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) SCREENING WORKSHEET



c. Fully within the scope of a previous USQD? If "yes", identify the USQD: Yes No

d. A common commercial practice? (e.g., office type change) Yes No

e. Limited to directly implementing a DOE-approved change? Yes No

If any answer to questions 2.a. through 2.e. is "Yes", then no USQD is required. Otherwise, a USQD is required if not screened out by question 1.

Part III – Conclusion and Approval

USQD is NOT required

USQD IS required

This document has been electronically approved for use. Documentation of electronic concurrence and approval of this document is maintained in EDRM.

Approver Name	Role	Approval Status	Approval S
Bailey, Brian (00744255)	Safety Basis Engineer	Approved	06/26/2023
Keeton, Wesley (00740916)	Final Approver	Approved	07/10/2023

QEA 1 of 1		Qualitative Exposure Assessment – Multiple Hazard Form						
<input type="checkbox"/>		No QEA is required based upon a review of the types(s) of hazards associated with this activity/task						
<input type="checkbox"/>		QEA could not be conducted at the time the RSS/Workplan was reviewed/approved due to inadequate information provided by the PI, Work Planner/Package author on some or all agent(s)/hazard(s).						
List the agent(s) for which a QEA could not be conducted:			Heat Stress					
Discuss controls incorporated into Work control to assure EA is conducted in the future:			Contact QHSP for an evaluation if temperature extremes exist or impermeable cloting is required.					
Process/Task:	Light upgrades in 3525 GMR		Facility #:	3525		Room/Lab/Shop #:		GMR
Work Description	Light upgrades in 3525 GMR		Organization:	NNFD		RSS/Work Plan #:		MWP059955
Agents and Control Information								
	Process/Task	REC ID	Hazardous Agent	Quantity Magnitude	Primary Exposure Forms	Exposure Duration	Eng. & Adm. Controls	OEL
1	Radiological work	N/A	Radiation	Variable	Particle	1/2-2 hours	GB, GV, Hood, I/E, LH, S, T, L/P, P, LT/ MS	Variable Dependant
2	Manual Material Handling	N/A	Ergonomic Strain	Variable	Other	Variable	T, P, W/R	Task Dependant
3	Ergonomics	N/A	Muscle Strain	Variable	Other	Variable	T, P, W/R	Task Dependant
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	<u>Health Severity Rating</u>	<u>Exposure Rating 1-4</u>	<u>Certainty Rating 1-4</u>	<u>QEA Rating</u>	<u>Exposure Decision</u>
1	4	2	1	6	6
2	2	2	1	4	4
3	2	1	1	3	3
4	N/A	N/A	N/A	#VALUE!	#VALUE!
5	N/A	N/A	N/A	#VALUE!	#VALUE!
6	N/A	N/A	N/A	#VALUE!	#VALUE!
7	N/A	N/A	N/A	#VALUE!	#VALUE!

QEA Rating= (Health Severity Rating + Exposure Rating) x Certainty Rating
 Exposure Decision: Acceptable (2-7) Uncertain (8-15) Unacceptable (16-24)

QHSP Approver:

Ian Dean

Date:

9/14/2023

Exposure Decision and Follow-up

	<u>Was Risk Acceptable?</u>	<u>Describe justification for classification</u>	<u>Uncertain & Unacceptable Exposures</u>		
			<u>Follow-up Priority</u>	<u>Monitoring Required?</u>	<u>Reccomendations</u>
1	Yes	Ensure 4 bullets are checked for JHE under Rad work: 1. Dosimetry Monitoring Requirements 2. Follow radiological posting, entry control, and egress requirements. 3. Respond to abnormal radiological conditions and alarms 4. Radiological Work Permit. *Also may need if applicable: 5. Approved HEPA Vacuum Cleaner	Low	No	N/A
2	Yes	Personnel will apply 30-50-30 criteria for non-repetitive lifting tasks and will use proper lifting techniques. For awkward loads or those exceeding 50 lbs., lifting aids (overhead crane or fork lift) or two-person lifts will be used, where feasible. There is no intended repetitive or production-type two-handed mono-lifting task associated with the work activities, therefore, the ACGIH Threshold Limit Values do not apply.	Low	No	N/A
3	Yes	Personnel will be cautioned to minimize awkward or static postures, overreaching, or use of excessive force. They will be encouraged to take stretch breaks and diversify activities, as needed, or to alternate personnel performing the work. Appropriate tools and equipment will be used as intended for the work activities. Knee pads or equivalent will be used for work in the kneeling position. Leather/anti-vibration gloves will be used, if needed, to minimize hand vibration from use of tools/equipment, unless the use of gloves could increase other hazards. IH/IS will be contacted for evaluation of any activities that could result in excessive hand/arm vibration.	Low	No	N/A
4	#VALUE!	N/A	N/A	N/A	N/A
5	#VALUE!	N/A	N/A	N/A	N/A
6	#VALUE!	N/A	N/A	N/A	N/A
7	#VALUE!	N/A	N/A	N/A	N/A



EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

Part I - Introduction

1. EUSQD#: EUSQD-3525-23-037 Revision #: 0 Facility/Activity: 3525 Facility

2. Subject of Evaluation:

Balance of Plant Modification Form 3525-BOPM-185, *Glove Maintenance Room Lighting Upgrades*

3. Description of the change:

The subject of this evaluation is Balance of Plant Modification Form 3525-BOPM-185, *Glove Maintenance Room Lighting Upgrades*. This task covers the repair and upgrading of the lighting fixtures in the Glove Maintenance Room (GMR), Room 207, in the 3525 Facility. This work will be accomplished by bypassing the ballast in the old fixtures and installing new LED bulbs as well as completing any repairs required to get the lighting fixtures back in working order. Complete replacement of the lighting fixtures may be required with an engineering-approved replacement. The scope also allows installing/upgrading/replacing the electric circuitry from the applicable panelboard breakers, wiring, conduit, switches, lighting fixtures, and other associated equipment to ensure a complete, professional installation meeting the current electrical code requirements.

Care should be taken during the demolition of older lights to ensure any issues with the older ballasts, contamination, or asbestos wiring are addressed and that they are handled and disposed of properly.

All work shall be performed in accordance with NFPA-70 and NFPA-70E.

All electrical components may be substituted with an engineering-approved equal part.

The scope of this task is limited to the replacement of building lighting only and does not include specialized equipment lighting or in-cell lighting. Craft personnel can install new supports and anchors, but this BOPM form does not cover any new penetrations to the safety-significant cell walls, defense-in-depth (DID) confinement barriers, or the building fire barriers.

The installation work will be completed under Work Plan MWP059955, *Lighting Upgrades at Building 3525 Glove Maintenance Room (GMR)*. This work plan was previously evaluated under USQDSCREEN/3525/23-019 and is outside the scope of this effort.

DSA change? Yes No

4. Primary Safety Basis Document:

- 1) ORNL/3525/SAR, Rev. 10, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525*
- 2) ORNL/3525/TSR, Rev. 12D, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525*
- 3) ORNL/3525/SBS/2018-001, Rev. 1, *Safety Basis Supplement Irradiated Fuel Examination Laboratory, Building 3525, Functional Testing of the K-15 System Ventilation Upgrade Project*
- 4) ORNL/3525/SBS/2020-001, Rev. 1, *Safety Basis Supplement for the Operation of the Upgraded K-15 System in Building 3525* (submitted but not approved)
- 5) ORNL/3525/TSR, Rev. 13, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 6) ORNL/NNFD/3525/SAR, Rev. 0, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)



EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

- 7) ORNL/NNFD/3525/SAR, Rev. 0A, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 8) ORNL/NNFD/3525/TSR, Rev. 0, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 9) ORNL/NNFD/SSAR, Rev. 19, *Oak Ridge National Laboratory Standardized Safety Analysis Report*

Part II – Expert Determination

1. Relative to the documented safety analysis (DSA), is it readily apparent, based on expert knowledge, training, and experience, that the proposed change **does not**:
 - a. Increase the probability or consequences of an accident described in the DSA?
 - b. Increase the probability or consequences of a malfunction of equipment important to safety described in the DSA?
 - c. Create the possibility of an accident of a different type than previously evaluated in the DSA?
 - d. Create the possibility of a malfunction of equipment important to safety of a different type than previously considered in the DSA?

Yes No

2. If the conclusion is Yes, provide a brief rationale why the change is not a USQ. Otherwise, prepare a standard USQD.

The SAR acknowledges that facility systems, including light fixtures, will need to be periodically replaced. Aside from steps needed to address possible radiological contamination, the methodology for removing the old light fixtures and installing the new ones is a common practice being made throughout many industrial settings that wish to improve lighting in work areas as well as take advantage of energy cost savings, improved reliability, and decreased maintenance associated with LED lighting fixtures.

Facility lighting is not a credited item in the SAR for preventing or mitigating accident events. The lights are being updated with more energy efficient fixtures which supply brighter lights at a low energy rate. The new lights operate in the same basic way as the existing lights. For the safety basis, the operation of the new fixtures is not considered to result in any new or elevated hazard levels beyond those already evaluated in the current SAR. Frequencies assigned to the failure of the lights and other components is not associated with a particular type, brand or style; therefore, changing the fixtures and other components does not result in a change of failure or malfunction frequencies. The SAR descriptions of the facility do not include detail such that this change will require text changes in the SAR itself.

Aside from the light fixtures, circuit components, and hardware, no other facility structure, systems, or components (SSCs) will be affected. When electrical circuits are to be de-energized, checks will be made to identify any safety-related SSCs will be impacted. All lockout/tagout and other activities will be coordinated with the facility before beginning work. The facility has existing procedures and protocols for loss of electrical power events.

NNFD-3525-AP-003 limits the total amount of radioactive materials permitted in the evaluated areas and the total facility to quantities (or to levels slightly less than) already evaluated in the current SAR. Before radiological materials are brought onto the facility footprint or transferred between areas, they are screened and approved to ensure the quantities approved by the SAR analyses are not exceeded. There are no new radiological materials associated with the BOPM form. Thus, the material forms and quantities evaluated in the SAR are not increased.

Some hazardous materials may also be needed to install and/or remove the lighting fixtures and related components. Cleaners, lubricants, and decontamination solutions are materials commonly used to support operations in the 3525 Facility and across the ORNL complex. Existing facility procedures limit the amounts of hazardous materials. The



EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

amounts of these materials involved with installing, repairing, and maintaining these units are present in commercially available quantities and are below any threshold limits in the hazardous material program. Thus, the BOPM Form scope does not introduce any elevated hazardous material quantities above those evaluated in the SAR.

Conclusion

The change will not introduce any new hazards or energy sources nor affect the quantity, form, or dispersibility of radiological materials in the 3525 Facility. Moreover, existing energy sources are not increased, no new energy sources are introduced, and the consequences of analyzed accidents will not change from those documented in the SAR. No new accident scenarios are possible. The change will not impact any identified initiating event in any of the SAR accident scenarios. Thus, the frequencies stated in the SAR are not affected. Equipment will operate, malfunction, and fail as evaluated in the SAR. The change will not result in any new or altered equipment interactions.

Part III – Conclusion and Approval

Based on this determination, the proposed change does NOT represent a USQ.

This document has been electronically approved for use. Documentation of electronic concurrence and approval of this document is maintained in EDRM.

Approver Name	Role	Approval Status	Approval St
Bailey, Brian (00744255)	Safety Basis Engineer	Approved	10/20/2023
Goranflo III, Henry (00952420)	Final Approver	Approved	10/20/2023

BOP Modification Form

SECTION 1: CHANGE ORIGINATION / IDENTIFICATION			
Work Package No. MWP059955	Facility 3525	Date 10-16-2023	Originator Name / uid Aaron Webb / lwu
Title of Change: Glove Maintenance Room Lighting Upgrades			
Component / System Building Lighting / Electrical			
<p>Description of Change / Reason for Change (add attachments or redline drawings if needed)</p> <p>The scope of this task covers the repair and upgrading of the lighting fixtures in the Glove Maintenance Room (GMR), room number 207. This work will be accomplished by bypassing the ballast in the old fixtures and installing new LED bulbs, it also covers any repairs required to get the lighting fixtures back in working order and complete replacement of the fixtures if required with an engineering-approved replacement. This also allows for installing/upgrading/replacing the electric circuitry from panelboard breakers, wiring, conduit, switches, lighting fixtures, and other associated equipment to ensure a complete professional installation meeting the current electrical code requirements.</p>			
<p>Drawings are included as a reference for craft personnel to identify feeder circuits, home run info, and how the lighting circuits are connected. Drawings should be used as a guide for planning work tasks. Since these lighting drawings, for Building 3525, are old and have not been consistently updated they may not reflect the as-built configuration in the field. Refer to system engineering or craft supervisor for a determination on how to proceed if anything unexpected is encountered while performing this work and for help in any troubleshooting effort to correct discrepancies in drawings. Field markups that reflect the as-built configuration will be collected and then passed along to engineering for revision.</p>			
<p>Care should be taken during the demolition of older lights to ensure any issues with the older ballasts, contamination, or asbestos wiring are addressed and that they are handled and disposed of properly.</p>			
<p>All work shall be performed in accordance with NFPA-70 and NFPA-70E.</p>			
<p>All electrical components may be substituted with an engineering-approved equal part.</p>			
<p>The scope of this task is limited to the replacement of building lighting only and does not include specialized equipment lighting or in-cell lighting. Craft personnel can install new supports and anchors, but this balance of plant does not cover any new penetrations to the safety significant cell walls, DID confinement barriers, or the building fire barriers.</p>			
<p>Does this change impact other components/systems <input type="checkbox"/> Yes (list below) <input checked="" type="checkbox"/> No</p>			
<p>Does this change involve penetrations(s) of SSC's credited in the DSA for confinement of radioactive materials or shielding of personnel?</p>			
<p><input type="checkbox"/> Yes refer to NNFD-002, <i>Change Control of Modifications</i> <input checked="" type="checkbox"/> No, proceed to Section 2.</p>			
<p>Do the penetration(s) meet the permit exclusions (refer to NNFD-002, <i>Change Control of Modifications</i>)?***</p>			
<p><input type="checkbox"/> Yes <input type="checkbox"/> No, Initiate CCP.</p>			

SECTION 2: CHANGE DOCUMENTATION LIST existing and/or newly required documents (drawings, specifications, calculations, procedures etc.) N/A <input checked="" type="checkbox"/> if change is below documentation threshold.			
Document Number	Document Title	Rev # BEFORE Change	Required for Return to Service
			<input type="checkbox"/>

ACTS entry made to revise High Priority or Electrical drawings <input type="checkbox"/>

SECTION 3: APPLICABLE CODES / STANDARDS

NFPA 70 National Electrical Code

NFPA 70E Standard for Electrical Safety in the Workplace

SECTION 4: MODIFICATION EVALUATION

Modification Background / Description / Reason / Type:

The lighting in the GMR has been slowly getting worse for years and now that the facility has regained man-entry access to the GMR it's time to upgrade the lighting. Facility personnel have recently completed a campaign to perform preventative maintenance on the 2nd Level Cranes in the GMR. While we still have the scaffolding setup and the ability to enter the room, we will be upgrading the lighting.

The GMR is a High Rad, Contamination Area, and an Airborne Contamination Area. The work to replace the lighting will be performed in the GMR on scaffolding in full dress-out and respirator. For this reason, the complex LTV will be applied to the Lighting Panel LF circuits 14 and 16 and on the 2nd Level Crane System disconnect prior to entry. The zero-energy verification will be performed at the secondary of the breakers in the panel and load side of the crane disconnect prior to entry with an additional verification performed in the GMR prior to starting work.

Design Basis & Functional Requirements / Justification:

Refer to the drawings attached for more information on equipment location, lighting panel details/feeder circuits, and fixture arrangement.

All electrical components planned for this may be substituted with an engineering-approved equal part.

All changes detailed in this BOPM must be installed per all applicable ORNL and NEC requirements.

Acceptance Criteria & Testing Requirements:

Perform visual inspection of all added equipment & labeling to ensure accuracy with respect to design documentation.

Perform visual inspection of electrical connections to ensure proper wiring sizing and connections.

Perform absence/ presence of voltage checks as required to ensure the wiring is installed correctly.

Perform functional testing of all systems after installation.

Controls Required During Modifications:

Coordinate all lockout / tagout and other activities with the facility manager before beginning work.

SAFETY AND TECHNICAL REVIEWS

Discipline	N/A	Approval Signature	uid	Date
Facility Safety Basis Engineer OR USQD or USQDSCREEN Number (attach copy) <i>E45QD-3525-23-037</i>				
Independent Design Reviewer	LAW			
Informed Training Group to evaluate training needs	LAW			
Design Authority (if multiple disciplines involved and/or if *** answer is yes)	LAW			
Additional SME	LAW			
Additional SME	LAW			
Process/System Engineer	<i>Leslie Auerbach</i>	lwu	<i>10-20-23</i>	

Instructions:

General: All signatures should be accompanied by the signers' ORNL user ID (uid). If a uid is not available, the signer's badge number may be substituted.

Section 1, CHANGE ORIGINATION / IDENTIFICATION: The Originator shall complete Section 1 and submit the BOP Modification Form (BOPM) to the System /Process Engineer.

Description of Change: Describe the Change in enough detail to identify what components are being modified and the scope of the modification.

Impact: If the change impacts other components or systems, check yes then list and describe the impact. If the change involves penetration(s) that meet the exclusions of SBMS SA, *Excavation/Penetration* and are in SSCs credited in the DSA then the BOPM form shall be signed by the Design Authority.

Section 2, CHANGE DOCUMENTATION: The System /Process Engineer lists all output documents that will be changed as a result of this modification including drawings, NCR's, procedures, etc. The "Rev # Before Change" column should be completed with the document/drawing revision number current when the modification begins.

If the change does not alter any existing documents, check N/A.

Those documents which are required to be completed in order for the item to be returned to service shall have the "Required for Return to Service" box checked.

High Priority or electrical drawings shall be revised per NNFD-002, and an associated action shall be entered in ACTS.

Section 3, APPLICABLE CODES AND STANDARDS: The Process/ System Engineer should complete this section. SBMS Area, Creating Engineering Designs, contains an exhibit: Design Codes and Standards, which includes the engineering design standards applicable at ORNL. Designs must incorporate engineering hazard controls to alleviate potential workplace hazards where feasible and appropriate. If a hazard is identified which cannot be alleviated through one of the codes/standards listed in the Work Smart Standard (WSS), a request should be made to add the code/standard to the WSS.

Section 4, MODIFICATION EVALUATION: The Process/System Engineer should complete this section using a graded approach commiserate with the complexity and scope of the change. Information entered in Section 1 – Description of Change does not have to be repeated in this section. This section may include the following:

Modification Background / Description / Reason / Type: Describe the problem and the events leading to the change and include a description of how the system, equipment, or component operated before the proposed modification.

Design Basis & Functional Requirements / Justification: Describe the specific functions to be performed by the item affected by the design modification and the specific values or range of values that bound the design (e.g., pressure, temperature, flow, voltage input, voltage output, etc.). Provide explanation, analysis or calculation on why the proposed modification is within the boundaries of the cited design requirements.

Acceptance Criteria & Testing Requirements: Enter Acceptance Criteria/Testing Requirements that ensures the modification functions as expected.

Controls Required During Modifications: Describe any controls, (i.e. compensatory measures, TSR mode restrictions) required to be in place while this modifications is being installed and normal equipment may be out of service.

SAFETY AND TECHNICAL REVIEWS: The System/Process Engineer initially determines which reviews are required by checking or initializing the "N/A" column for those reviews not required. In addition to the applicable System Engineer, review and approval from the Design Authority is required if multiple engineering disciplines are involved and/or if the change involves penetration(s) that meet the exclusions of SBMS SA, *Excavation/Penetration* and are in SSCs credited in the DSA. In this case, the Design Authority shall ensure all appropriate engineering input is obtained, and may list additional engineers for review. After the System/Process Engineer has determined review applicability the BOPM form should be routed to all reviewers for approval and signature. After approvals, route the BOPM form to the Process/System Engineer for final approval.

The approved BOPM form shall be included with the Maintenance Work Package



EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

Part I - Introduction

1. EUSQD#: EUSQD-3525-23-037 Revision #: 0 Facility/Activity: 3525 Facility

2. Subject of Evaluation:

Balance of Plant Modification Form 3525-BOPM-185, *Glove Maintenance Room Lighting Upgrades*

3. Description of the change:

The subject of this evaluation is Balance of Plant Modification Form 3525-BOPM-185, *Glove Maintenance Room Lighting Upgrades*. This task covers the repair and upgrading of the lighting fixtures in the Glove Maintenance Room (GMR), Room 207, in the 3525 Facility. This work will be accomplished by bypassing the ballast in the old fixtures and installing new LED bulbs as well as completing any repairs required to get the lighting fixtures back in working order. Complete replacement of the lighting fixtures may be required with an engineering-approved replacement. The scope also allows installing/upgrading/replacing the electric circuitry from the applicable panelboard breakers, wiring, conduit, switches, lighting fixtures, and other associated equipment to ensure a complete, professional installation meeting the current electrical code requirements.

Care should be taken during the demolition of older lights to ensure any issues with the older ballasts, contamination, or asbestos wiring are addressed and that they are handled and disposed of properly.

All work shall be performed in accordance with NFPA-70 and NFPA-70E.

All electrical components may be substituted with an engineering-approved equal part.

The scope of this task is limited to the replacement of building lighting only and does not include specialized equipment lighting or in-cell lighting. Craft personnel can install new supports and anchors, but this BOPM form does not cover any new penetrations to the safety-significant cell walls, defense-in-depth (DID) confinement barriers, or the building fire barriers.

The installation work will be completed under Work Plan MWP059955, *Lighting Upgrades at Building 3525 Glove Maintenance Room (GMR)*. This work plan was previously evaluated under USQDSCREEN/3525/23-019 and is outside the scope of this effort.

DSA change? Yes No

4. Primary Safety Basis Document:

- 1) ORNL/3525/SAR, Rev. 10, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525*
- 2) ORNL/3525/TSR, Rev. 12D, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525*
- 3) ORNL/3525/SBS/2018-001, Rev. 1, *Safety Basis Supplement Irradiated Fuel Examination Laboratory, Building 3525, Functional Testing of the K-15 System Ventilation Upgrade Project*
- 4) ORNL/3525/SBS/2020-001, Rev. 1, *Safety Basis Supplement for the Operation of the Upgraded K-15 System in Building 3525* (submitted but not approved)
- 5) ORNL/3525/TSR, Rev. 13, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 6) ORNL/NNFD/3525/SAR, Rev. 0, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)



EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

- 7) ORNL/NNFD/3525/SAR, Rev. 0A, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 8) ORNL/NNFD/3525/TSR, Rev. 0, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 9) ORNL/NNFD/SSAR, Rev. 19, *Oak Ridge National Laboratory Standardized Safety Analysis Report*

Part II – Expert Determination

1. Relative to the documented safety analysis (DSA), is it readily apparent, based on expert knowledge, training, and experience, that the proposed change **does not**:
 - a. Increase the probability or consequences of an accident described in the DSA?
 - b. Increase the probability or consequences of a malfunction of equipment important to safety described in the DSA?
 - c. Create the possibility of an accident of a different type than previously evaluated in the DSA?
 - d. Create the possibility of a malfunction of equipment important to safety of a different type than previously considered in the DSA?

Yes No

2. If the conclusion is Yes, provide a brief rationale why the change is not a USQ. Otherwise, prepare a standard USQD.

The SAR acknowledges that facility systems, including light fixtures, will need to be periodically replaced. Aside from steps needed to address possible radiological contamination, the methodology for removing the old light fixtures and installing the new ones is a common practice being made throughout many industrial settings that wish to improve lighting in work areas as well as take advantage of energy cost savings, improved reliability, and decreased maintenance associated with LED lighting fixtures.

Facility lighting is not a credited item in the SAR for preventing or mitigating accident events. The lights are being updated with more energy efficient fixtures which supply brighter lights at a low energy rate. The new lights operate in the same basic way as the existing lights. For the safety basis, the operation of the new fixtures is not considered to result in any new or elevated hazard levels beyond those already evaluated in the current SAR. Frequencies assigned to the failure of the lights and other components is not associated with a particular type, brand or style; therefore, changing the fixtures and other components does not result in a change of failure or malfunction frequencies. The SAR descriptions of the facility do not include detail such that this change will require text changes in the SAR itself.

Aside from the light fixtures, circuit components, and hardware, no other facility structure, systems, or components (SSCs) will be affected. When electrical circuits are to be de-energized, checks will be made to identify any safety-related SSCs will be impacted. All lockout/tagout and other activities will be coordinated with the facility before beginning work. The facility has existing procedures and protocols for loss of electrical power events.

NNFD-3525-AP-003 limits the total amount of radioactive materials permitted in the evaluated areas and the total facility to quantities (or to levels slightly less than) already evaluated in the current SAR. Before radiological materials are brought onto the facility footprint or transferred between areas, they are screened and approved to ensure the quantities approved by the SAR analyses are not exceeded. There are no new radiological materials associated with the BOPM form. Thus, the material forms and quantities evaluated in the SAR are not increased.

Some hazardous materials may also be needed to install and/or remove the lighting fixtures and related components. Cleaners, lubricants, and decontamination solutions are materials commonly used to support operations in the 3525 Facility and across the ORNL complex. Existing facility procedures limit the amounts of hazardous materials. The



EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

amounts of these materials involved with installing, repairing, and maintaining these units are present in commercially available quantities and are below any threshold limits in the hazardous material program. Thus, the BOPM Form scope does not introduce any elevated hazardous material quantities above those evaluated in the SAR.

Conclusion

The change will not introduce any new hazards or energy sources nor affect the quantity, form, or dispersibility of radiological materials in the 3525 Facility. Moreover, existing energy sources are not increased, no new energy sources are introduced, and the consequences of analyzed accidents will not change from those documented in the SAR. No new accident scenarios are possible. The change will not impact any identified initiating event in any of the SAR accident scenarios. Thus, the frequencies stated in the SAR are not affected. Equipment will operate, malfunction, and fail as evaluated in the SAR. The change will not result in any new or altered equipment interactions.

Part III – Conclusion and Approval

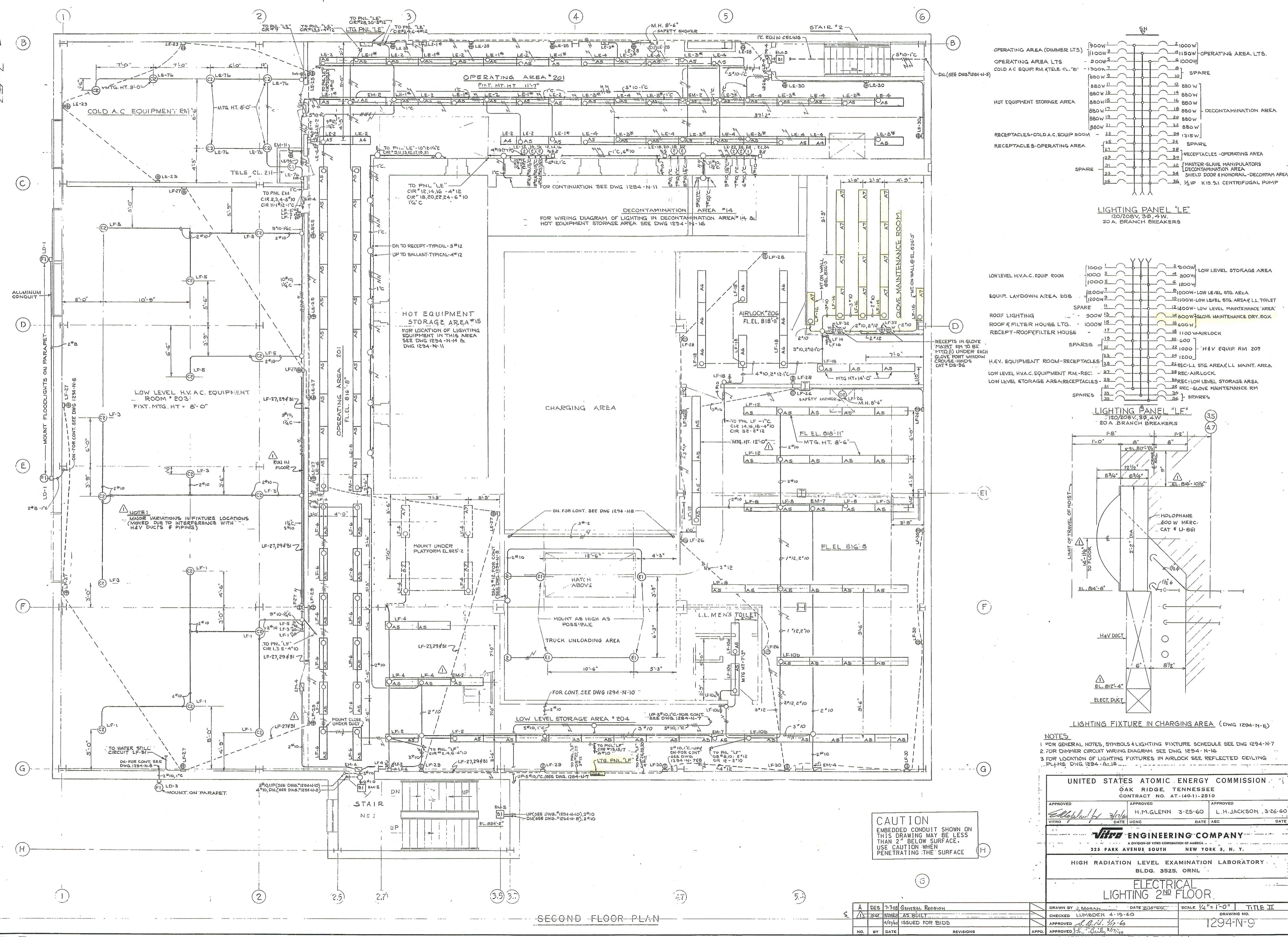
Based on this determination, the proposed change does NOT represent a USQ.

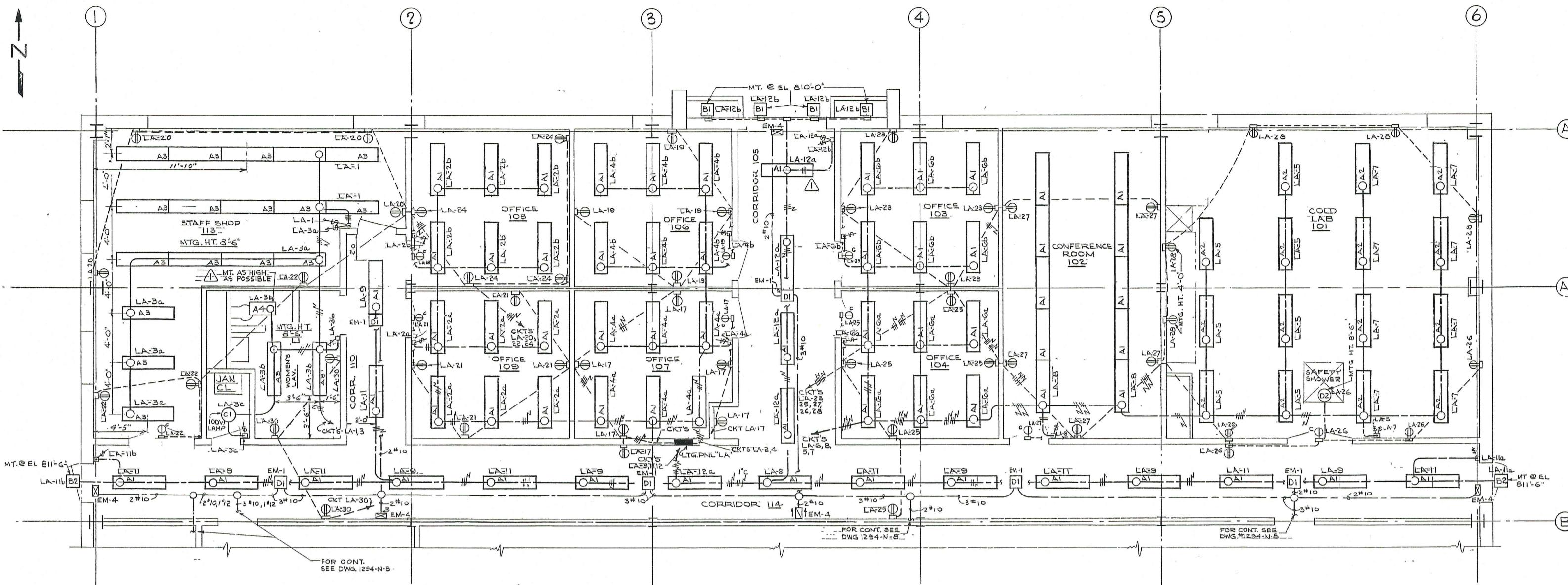
Brian Bailey
Expert USQD Preparer

Date

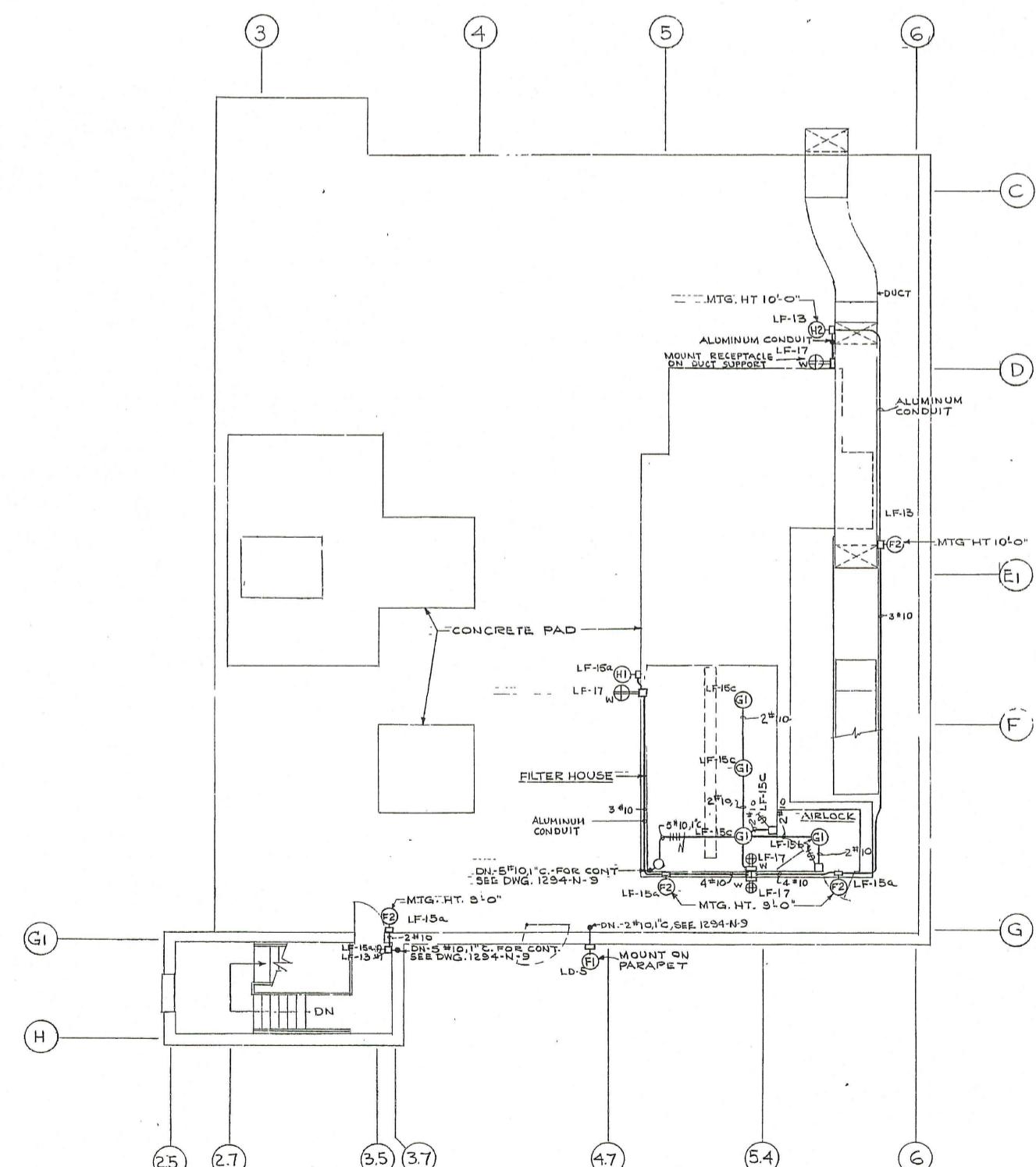
Wes Keeton
Facility Manager or Transportation Activity Owner (or
designee)

Date





PART PLAN
FIRST FLOOR



PLAN - ROC

LIGHTING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION ..	CAT. NO.	WATTS	REMARKS
A1	FLUORESCENT LUMINAIRE RECESSED TROFFER 12W. 48L. 2-40W-R.S LAMPS	PITTSBURGH #ARK-214 BST	100	
A2	FLUORESCENT LUMINAIRE RECESSED TROFFER 12W. 48L. 3-40W-R.S LAMPS	PITTSBURGH #ARK-314 BST	150	
A3	FLUORESCENT LUMINAIRE, 2-40W. - R.S LAMPS, SUSPENSION MTG.	GARCY #97284 CPT W/ 2-30" STEMS EACH	100	
A4	FLUORESCENT LUMINAIRE, 2-20W. - T.S. LAMPS, SUSPENSION MTG.	MCPHILBEN #23/AT92-A- 220 TS-P OR EQUAL	50	
A5	FLUORESCENT LUMINAIRE, 2-40W. - R.S. LAMPS, SUSPENSION MTG.	MCPHILBEN #23/4792-A- 240 RS-D OR EQUAL	100	WHEN USED WITH DIMMER CONTROL USE(2) BALLAST G.E. 89G929 PER FIXTURE.
AG	SAME AS A5 EXCEPT RECESSED TROFFER	PITTSBURGH #ARK 214-B-C-60	100	WHEN USED WITH DIMMER CONTROL USE (2) BALLASTS G.E. CAT# 89G929 PER FIXTURE. MAX. DEPTH OF FIXT. = 5"
A7	SAME AS A5 EXCEPT SURFACE MTG.	MCPHILBEN #23/4776-A- 240 RS-S OR EQUAL	100	
AB	FLUORESCENT LUMINAIRE RECESSED TROFFER, 12W 24L. 2-20W-R.S LAMPS	PITTSBURGH #ARK 212-B-4-15-A	50	MAX. DEPTH OF FIXT = 5"
B1	BRACKET TYPE FIXTURE WITH INCANDESCENT LAMP	MCPHILBEN #43-50VT OR EQUAL	200	
B2	BRACKET TYPE FIXTURE WITH INCANDESCENT LAMP & GUARD	MCPHILBEN #43-54VT OR EQUAL	150	
C1	RLM DOME REFLECTOR, PENDANT TYPE WITH INCANDESCENT LAMP	WHEELER #DP-14-H	150	
C2	RLM DOME REFLECTOR PENDANT TYPE. WITH INCANDESCENT LAMP	WHEELER #DP-16-H	200	
C3	RLM DOME REFLECTOR, SURFACE TYPE WITH INCANDESCENT LAMP	WHEELER #DP-16 H	200	
D1	RECESSED TYPE INCANDESCENT LAMP FIXTURE, 12"X12".	PITTSBURGH #AF-150-GFC	100	
D2	PENDANT TYPE FIXTURE WITH GREEN GLOBE AND GUARD.	CROUSE-HINDS #VDA2759 OR EQUAL	60	WITH CROUSE HINDS GLOBE #VN82
E1	LO-BAY LUMINAIRE, VENTILATED, WIDE DISTR. J-HI MERCURY VAPOR LAMP, SURFACE MTD.	WHEELER #4128	400	
E2	WALL MOUNTED "HOT CELL" FIXTURE - MERCURY VAPOR LAMP. WITH GUARD	RESEARCH EQUIP CO OR EQUAL	400	
E3	RECESSED IN WALL E-HI MERCURY LAMP	CROUSE HINDS #47218	400	WITH 1" TAPE CONDUIT ENTRANCES ON EACH SIDE
F1	FLOODLIGHT, GROUND AREA 750 W. INCANDESCENT	REVERE #3807	750	
F2	INCANDESCENT LAMP YARDLIGHT	STEER #YEV-14	150	
IX	EXIT LIGHT, FLUSH MTG., 2-25W. INCANDESCENT LAMPS	DAYBRITE II 2506 OR EQUAL	50	
R	EXIT LIGHT, FLUSH MTG. W/DIRECTIONAL ARROW, 2-25W. INC. LAMPS	DAYBRITE II 2505-R	50	

GENERAL NOTES

- 1 - ELECTRICAL MATERIAL AND INSTALLATION SHALL BE IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS "N37"
 - 2 - ALIGNERS TO BE INSTALLED IF LIGHTING FIXTURE STEMS EXCEED A LENGTH OF 3'-0"
 - 3 - CONDUIT RACEWAYS SHALL BE AS FOLLOWS : EMT UP TO $\frac{1}{2}$ " MAY BE USED FOR LIGHTING & RECEPTACLE WIRING ABOVE EXPANDED CEILING. RIGID STEEL GALVANIZED SHALL BE USED FOR ALL BURIED CONDUIT RUNS. ALUMINUM MAY BE USED FOR EXPOSED RUNS. ALL ABOVE RACEWAY SHALL BE THREADED
 - 4 - ALL EXPOSED CONDUIT RUNS SHALL BE AT EIGHT ANGLE OR PARALLEL TO WALLS OR FLOORS.
 - 5 - ALL RECEPTACLES AND SWITCHES ARE SHOWN IN APPROXIMATE LOCATION
 - 6 - ALL LIGHTING SWITCHES TO BE MOUNTED 4'-6" ABOVE FINISHED FLOOR
 - 7 - ALL RECEPTACLES TO BE MOUNTED 1'-6" ABOVE FLOOR EXCEPT WHERE OTHERWISE NOTED. CLOCK RECEPT. TO BE 8'-0" ABOVE FLOOR UNLESS OTHERWISE NOTED.
 - BRANCH CIRCUIT WIRE SHALL BE TYPE "TW" #12 AWG, GCOV. RATING UNLESS OTHERWISE NOTED. FIXTURE WIRE SHALL BE TYPE "AF" #16 AWG MIN. WIRING IN CONTINUOUS ROW FLUORESCENT TO BE TYPE AVA #12 AWG MIN.
 - 8 - FIXTURE MOUNTING HEIGHT SPECIFIED IS DISTANCE FROM BOTTOM OF FIXTURE TO FINISHED FLOOR OR PLATFORM DIRECTLY BELOW. ALL PENDANT FIXTURES TO BE MOUNTED 10'-0" HIGH (UNLESS OTHERWISE NOTED). ALL EXIT LIGHTS TO BE MOUNTED 8'-0" HIGH (UNLESS OTHERWISE NOTED).
 - 9 - FOR LOCATIONS OF LIGHTING FIXTURES IN OFFICE AREA SEE REFLECTED CEILING PLAN-DWG. 1294-A-1B.

10 MINIMUM SIZE OF CONDUIT RUN BURIED IN FLOOR SLAB OR WALLS
SHALL BE 1" GS

SHALL BE 1 GS

SYMBOLS

LIGHTING PANEL "LD

120/208V, 130°, 4W
20A BRANCH BREAKERS

GALVANIZED, STEEL CONDUIT, BURIED IN FLOOR SLAB OR IN WALLS

UNIT, EXPOSED

UNIT, CONCEALED IN HUNG CEILING

ATES HOME RUN TO PANEL. CROSS MARKS INDICATE NUMBER OF WIRES
NDUIT. ABSENCE OF CROSS MARKS INDICATES 2 WIRE CIRCUIT.

UIT "TEE" FITTING

UIT "ELL" FITTING

E POLE SWITCH, SURFACE MOUNTED, HUBBELL CAT. #1221 OR EQUAL

E WAY SWITCH, SURFACE MOUNTED., HUBBELL CAT#1223 OR EQUAL

AST FOR ONE MERCURY VAPOR LAMP-G.E#9TG64YGG2 OR EQUAL.

AST FOR TWO MERCURY VAPOR LAMPS-G.E#9TG64Y34 OR EQUAL.

OLT, 15 AMPS, 3 POLE DUPLEX CONVENIENCE OUTLET, FLUSH MOUNTED
ELL CAT# 5262 OR EQUAL

OLT, 15 AMPS, 3 POLE CLOCK OUTLET, FLUSH MOUNTED
SELL CAT # 7708 OR EQUAL

ATES LAMP IS CONNECTED TO DIMMER CIRCUIT

R SWITCH-LUXTROL CAT. #WBD 1800 OR EQUAL, SURFACE MTD,

ER SWITCH-LUXTROL CAT. #WBD 1800 OR EQUAL, FLUSH MTD

LBOARD

OLT, 15 AMP, 3 POLE DUPLEX CONVENIENCE OUTLET, SURFACE MTD
SELL CAT # 5262 OR EQUAL

OLT, 15 AMPS, 3 POLE, SINGLE CONVENIENCE OUTLET; SURFACE MTD
HERPROOF, CROUSE HINDS CAT# DS99 OR EQUAL UNLESS OTHERWISE NOTED

LE POLE SWITCH, FLUSH MOUNTED, HUBBELL CAT# 1221 OR EQUAL

EE' WAY SWITCH, FLUSH MOUNTED, HUBBELL CAT # 1223 OR EQUAL

LE POLE SWITCH, FLUSH MOUNTED, HUBBELL CAT # 1222 OR EQUAL

TION BOX

SWITCH WITH ASTRONOMICAL DIAL - 3PST-TORK CAT # 1563 Z OR EQUAL
H MOUNTED

, 12 POLE, FLUSH MTD, CANNON CAT# MS 3102A-24-(2008-24) S

CAUTION
EMBEDDED CONDUIT SHOWN ON
THIS DRAWING MAY BE LESS
THAN 2" BELOW SURFACE.
USE CAUTION WHEN
PENETRATING THE SURFACE.

THIS DOCUMENT CONTROLLED BY
CHANGE CONTROL SYSTEM 3a
ENGINEERING PROCEDURE EP-C-18

GENERAL REVISION					LIGHTING 1 ST FL. & ROOF					
B	DES	7-7-68			DRAWN BY SULLIVAN		DATE 3-10-68		SCALE AS NOTED	TITLE II
S-A	MDH	10/7/68	REVISED CIRCUITS #21 & 22 LTG. PNL. LD		DRAFTED BY		CHECKED LUMSDEN		APPROVED S.B. 3/17-68	
1	GM	3/28/68	AS BUILT		ISSUED FOR BID		S.B. 3/17-68		DRAWING NO.	
		4-21-68								
NO.	BY	DATE	REVISIONS		VEG APPD	UCNC APPD	ALC APPD	APPROVED	S.B. 3/17-68	

N

1

—

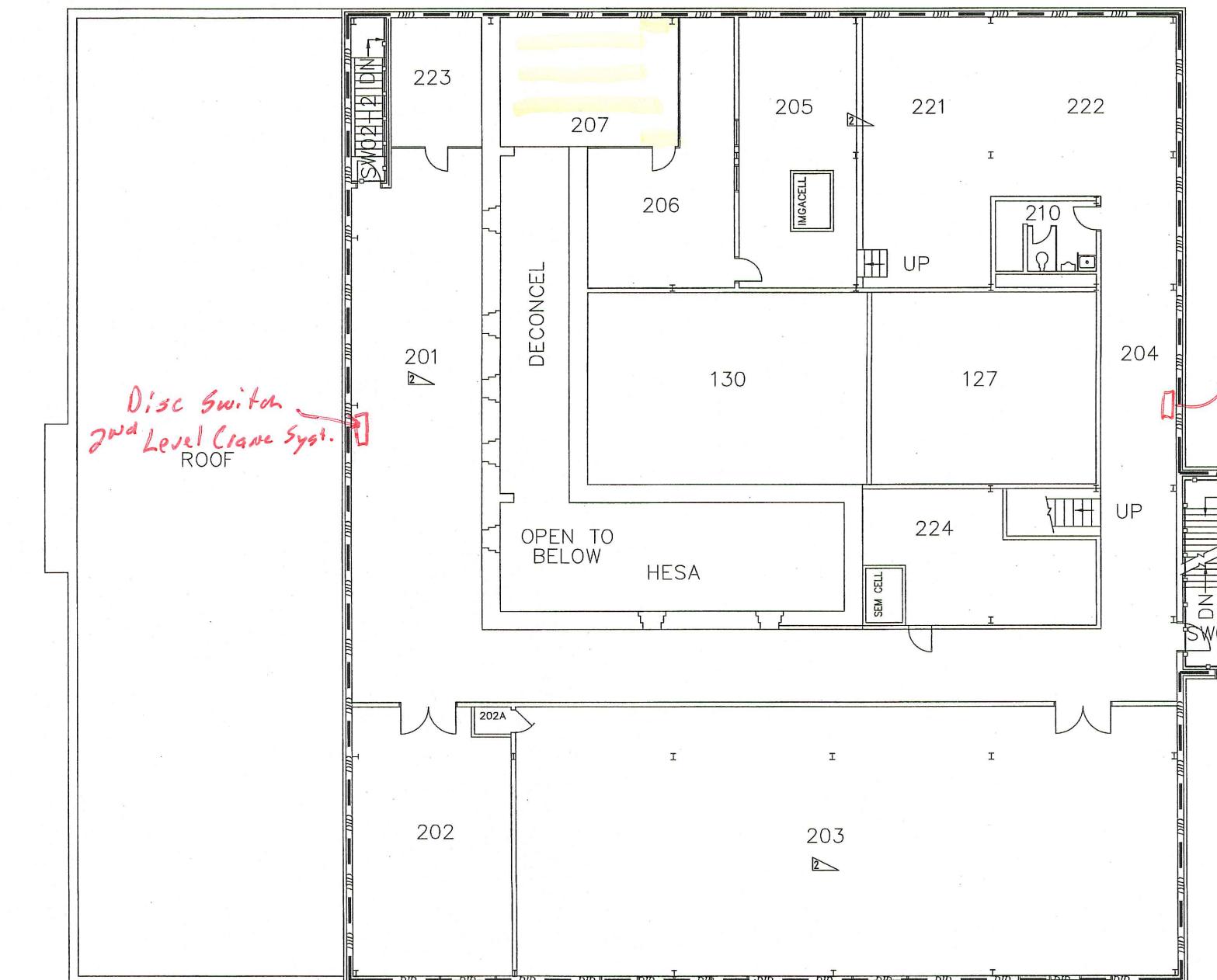
E

1

1

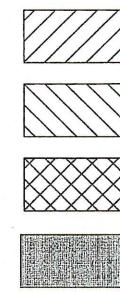
1

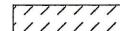
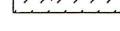
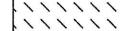
1



BUILDING 3525 SECOND FLOOR PLAN

LEGEND:



FLOOR		FLOOR - REQUIRED WHEN OUTER DOORS ARE OPEN
CEILING		CEILING - REQUIRED WHEN OUTER DOORS ARE OPEN
FLOOR AND CEILING		FLOOR AND CEILING - REQUIRED WHEN OUTER DOORS ARE OPEN
ROOF (AS SEEN FROM ABOVE)		

— SS — SS — SS — SS —	SAFETY SIGNIFICANT
= = = SS WDO = = = SS WDO = = = SS WDO =	SAFETY SIGNIFICANT WHEN OUTER DOORS ARE OPEN
— SC — SC — SC — SC —	SAFETY CLASS
= = = SC WDO = = = SC WDO = = = SC WDO =	SAFETY CLASS DURING WHEN OUTER DOORS ARE OPEN
— DID — DID — DID —	DEFENSE-IN-DEPTH
= = = DID WDO = = = DID WDO = = = DID WDO =	DEFENSE-IN-DEPTH WHEN OUTER DOORS ARE OPEN
— — — — —	SEE SPECIFIC NOTE 1

GENERAL NOTES:

1. THE COGNIZANT COMPLEX FACILITY MANAGER (CFM) MUST APPROVE ANY PROPOSED MODIFICATIONS AFFECTING THE FEATURES DEPICTED ON THIS DRAWING PER NNFD-002, CHANGE CONTROL OF MODIFICATIONS, AND NNFD-004, WORK CONTROL.
2. THIS SYSTEM IS UNDER CONFIGURATION CONTROL. MODIFICATIONS TO THIS SYSTEM REQUIRE THE COMPLEX FACILITY MANAGER'S APPROVAL AND WILL REQUIRE A CHANGE TO THIS DRAWING PER NNFD-ENG-953, DRAWING MANAGEMENT. ACCESS PROJECTWISE TO VERIFY THE MOST RECENT REVISION.
3. FIRE BARRIERS ARE DEPICTED ON SEPARATE DRAWINGS AND HAVE BEEN EVALUATED IN A SEPARATE REPORT. THE FIRE HAZARD ANALYSIS FOR THIS BUILDING CONTAINS THE APPROPRIATE REPORT REFERENCE AND THE FACILITY INFORMATION CENTER (FIC) CAN BE USED TO ACCESS CURRENT FIRE BARRIER DRAWINGS.

REFERENCE DOCUMENTS:

2. SAFETY ANALYSIS REPORT, IRRADIATED FUELS EXAMINATION LABORATORY, BUILDING 3525, ORNL/3525/SAR (LATEST REVISION).
 3. NONREACTOR NUCLEAR FACILITIES DIVISION, BUILDING 3525 CONFIGURATION ITEMS LIST, NNFCD-CI-3525 (LATEST REVISION).

SPECIFIC NOTES:

-  THIS WALL SECTION IS ALSO A FIRE BARRIER. REFER TO DRAWING F3E020566A003.

 REFER TO SECOND FLOOR MEZZANINE PLAN (SEE DRAWING N3E020566A473) FOR GENERAL CEILING CONFINEMENT BOUNDARY. ALSO, THE FLOOR IS MAINTAINED AS A SMOKE BARRIER PER DRAWING F3E020566A003.

												DEFAULT STANDARDS UNLESS OTHERWISE SPECIFIED		DRAWN BY L. B. GORMAN DESIGNER HARVEY GORANSON		11/8/13 11/8/13															
												TO WINDORF		CHECKER J. A. LANDMESSER, JR. DESIGN REVIEW N/A		11/12/13															
												FRACTIONS $\pm 1/64$ XX DECIMALS ± 0.01 XXX DECIMALS ± 0.005 ANGLES $\pm 0^\circ - 30^\circ$ BREAK SHARP EDGES 1/64 MAX. FINISH = 125 RMS		TASKE LEADER N/A																	
														ENGINEERING SUPPORT DEPT HEAD D. FOSTER		11/14/13															
												REQUESTOR N/A		PROJECT MANAGER/DESIGNEE DALE A. CAQUELIN		11/13/13															
												SPECIAL REVIEW N/A		SPECIAL REVIEW N/A		3525 SECONDARY CONFINEMNT		TYPE P													
												WHENEVER A MANUFACTURER'S NAME OR CATALOG NUMBER IS INDICATED, AN APPROVED EQUAL MAY BE SUBSTITUTED		SPECIAL REVIEW N/A		1 48 49 3 M E		PLANT ORNL		BLDG 3525		FL 02		SHEET 01							
												THIS DRAWING CREATED IN ACCORDANCE WITH ANSI Y14.5M-1994		SPECIAL REVIEW N/A		SCALE NONE		ID X3525ENG		REV A											
												REVISION APPROVALS		DRAWING APPROVALS		DATE		N3E020566A472													
A  SEE DCN-3525-062		LBG	H _b	DJK	N/A	N/A	NMS	N/A	W _b	10/12/08	H _b	RK	N/A	N/A	TR	REV	DESCRIPTION	BY	DSNR	CHK	DR	TL	ESDH	REQ	FAC	DATE	SR1	SR2	SR3	SR4	QR
REVISION OR ISSUE PURPOSE																															

BOP Modification Form

SECTION 1: CHANGE ORIGINATION / IDENTIFICATION			
Work Package No. MWP059955	Facility 3525	Date 10-16-2023	Originator Name / uid Aaron Webb / lwu
Title of Change: Glove Maintenance Room Lighting Upgrades			
Component / System Building Lighting / Electrical			
<p>Description of Change / Reason for Change (add attachments or redline drawings if needed)</p> <p>The scope of this task covers the repair and upgrading of the lighting fixtures in the Glove Maintenance Room (GMR), room number 207. This work will be accomplished by bypassing the ballast in the old fixtures and installing new LED bulbs, it also covers any repairs required to get the lighting fixtures back in working order and complete replacement of the fixtures if required with an engineering-approved replacement. This also allows for installing/upgrading/replacing the electric circuitry from panelboard breakers, wiring, conduit, switches, lighting fixtures, and other associated equipment to ensure a complete professional installation meeting the current electrical code requirements.</p>			
<p>Drawings are included as a reference for craft personnel to identify feeder circuits, home run info, and how the lighting circuits are connected. Drawings should be used as a guide for planning work tasks. Since these lighting drawings, for Building 3525, are old and have not been consistently updated they may not reflect the as-built configuration in the field. Refer to system engineering or craft supervisor for a determination on how to proceed if anything unexpected is encountered while performing this work and for help in any troubleshooting effort to correct discrepancies in drawings. Field markups that reflect the as-built configuration will be collected and then passed along to engineering for revision.</p>			
<p>Care should be taken during the demolition of older lights to ensure any issues with the older ballasts, contamination, or asbestos wiring are addressed and that they are handled and disposed of properly.</p>			
<p>All work shall be performed in accordance with NFPA-70 and NFPA-70E.</p>			
<p>All electrical components may be substituted with an engineering-approved equal part.</p>			
<p>The scope of this task is limited to the replacement of building lighting only and does not include specialized equipment lighting or in-cell lighting. Craft personnel can install new supports and anchors, but this balance of plant does not cover any new penetrations to the safety significant cell walls, DID confinement barriers, or the building fire barriers.</p>			
<p>Does this change impact other components/systems <input type="checkbox"/> Yes (list below) <input checked="" type="checkbox"/> No</p>			
<p>Does this change involve penetrations(s) of SSC's credited in the DSA for confinement of radioactive materials or shielding of personnel?</p>			
<p><input type="checkbox"/> Yes refer to NNFD-002, <i>Change Control of Modifications</i> <input checked="" type="checkbox"/> No, proceed to Section 2.</p>			
<p>Do the penetration(s) meet the permit exclusions (refer to NNFD-002, <i>Change Control of Modifications</i>)?***</p>			
<p><input type="checkbox"/> Yes <input type="checkbox"/> No, Initiate CCP.</p>			

SECTION 2: CHANGE DOCUMENTATION LIST existing and/or newly required documents (drawings, specifications, calculations, procedures etc.) N/A <input checked="" type="checkbox"/> if change is below documentation threshold.			
Document Number	Document Title	Rev # BEFORE Change	Required for Return to Service
			<input type="checkbox"/>

ACTS entry made to revise High Priority or Electrical drawings <input type="checkbox"/>

SECTION 3: APPLICABLE CODES / STANDARDS

NFPA 70 National Electrical Code

NFPA 70E Standard for Electrical Safety in the Workplace

SECTION 4: MODIFICATION EVALUATION

Modification Background / Description / Reason / Type:

The lighting in the GMR has been slowly getting worse for years and now that the facility has regained man-entry access to the GMR it's time to upgrade the lighting. Facility personnel have recently completed a campaign to perform preventative maintenance on the 2nd Level Cranes in the GMR. While we still have the scaffolding setup and the ability to enter the room, we will be upgrading the lighting.

The GMR is a High Rad, Contamination Area, and an Airborne Contamination Area. The work to replace the lighting will be performed in the GMR on scaffolding in full dress-out and respirator. For this reason, the complex LTV will be applied to the Lighting Panel LF circuits 14 and 16 and on the 2nd Level Crane System disconnect prior to entry. The zero-energy verification will be performed at the secondary of the breakers in the panel and load side of the crane disconnect prior to entry with an additional verification performed in the GMR prior to starting work.

Design Basis & Functional Requirements / Justification:

Refer to the drawings attached for more information on equipment location, lighting panel details/feeder circuits, and fixture arrangement.

All electrical components planned for this may be substituted with an engineering-approved equal part.

All changes detailed in this BOPM must be installed per all applicable ORNL and NEC requirements.

Acceptance Criteria & Testing Requirements:

Perform visual inspection of all added equipment & labeling to ensure accuracy with respect to design documentation.

Perform visual inspection of electrical connections to ensure proper wiring sizing and connections.

Perform absence/ presence of voltage checks as required to ensure the wiring is installed correctly.

Perform functional testing of all systems after installation.

Controls Required During Modifications:

Coordinate all lockout / tagout and other activities with the facility manager before beginning work.

SAFETY AND TECHNICAL REVIEWS

Discipline	N/A	Approval Signature	uid	Date
Facility Safety Basis Engineer OR USQD or USQDSCREEN Number (attach copy) <i>E45QD-3525-23-037</i>				
Independent Design Reviewer	LAW			
Informed Training Group to evaluate training needs	LAW			
Design Authority (if multiple disciplines involved and/or if *** answer is yes)	LAW			
Additional SME	LAW			
Additional SME	LAW			
Process/System Engineer	<i>Leslie Auerbach</i>	lwu	<i>10-20-23</i>	

Instructions:

General: All signatures should be accompanied by the signers' ORNL user ID (uid). If a uid is not available, the signer's badge number may be substituted.

Section 1, CHANGE ORIGINATION / IDENTIFICATION: The Originator shall complete Section 1 and submit the BOP Modification Form (BOPM) to the System /Process Engineer.

Description of Change: Describe the Change in enough detail to identify what components are being modified and the scope of the modification.

Impact: If the change impacts other components or systems, check yes then list and describe the impact. If the change involves penetration(s) that meet the exclusions of SBMS SA, *Excavation/Penetration* and are in SSCs credited in the DSA then the BOPM form shall be signed by the Design Authority.

Section 2, CHANGE DOCUMENTATION: The System /Process Engineer lists all output documents that will be changed as a result of this modification including drawings, NCR's, procedures, etc. The "Rev # Before Change" column should be completed with the document/drawing revision number current when the modification begins.

If the change does not alter any existing documents, check N/A.

Those documents which are required to be completed in order for the item to be returned to service shall have the "Required for Return to Service" box checked.

High Priority or electrical drawings shall be revised per NNFD-002, and an associated action shall be entered in ACTS.

Section 3, APPLICABLE CODES AND STANDARDS: The Process/ System Engineer should complete this section. SBMS Area, Creating Engineering Designs, contains an exhibit: Design Codes and Standards, which includes the engineering design standards applicable at ORNL. Designs must incorporate engineering hazard controls to alleviate potential workplace hazards where feasible and appropriate. If a hazard is identified which cannot be alleviated through one of the codes/standards listed in the Work Smart Standard (WSS), a request should be made to add the code/standard to the WSS.

Section 4, MODIFICATION EVALUATION: The Process/System Engineer should complete this section using a graded approach commiserate with the complexity and scope of the change. Information entered in Section 1 – Description of Change does not have to be repeated in this section. This section may include the following:

Modification Background / Description / Reason / Type: Describe the problem and the events leading to the change and include a description of how the system, equipment, or component operated before the proposed modification.

Design Basis & Functional Requirements / Justification: Describe the specific functions to be performed by the item affected by the design modification and the specific values or range of values that bound the design (e.g., pressure, temperature, flow, voltage input, voltage output, etc.). Provide explanation, analysis or calculation on why the proposed modification is within the boundaries of the cited design requirements.

Acceptance Criteria & Testing Requirements: Enter Acceptance Criteria/Testing Requirements that ensures the modification functions as expected.

Controls Required During Modifications: Describe any controls, (i.e. compensatory measures, TSR mode restrictions) required to be in place while this modifications is being installed and normal equipment may be out of service.

SAFETY AND TECHNICAL REVIEWS: The System/Process Engineer initially determines which reviews are required by checking or initializing the "N/A" column for those reviews not required. In addition to the applicable System Engineer, review and approval from the Design Authority is required if multiple engineering disciplines are involved and/or if the change involves penetration(s) that meet the exclusions of SBMS SA, *Excavation/Penetration* and are in SSCs credited in the DSA. In this case, the Design Authority shall ensure all appropriate engineering input is obtained, and may list additional engineers for review. After the System/Process Engineer has determined review applicability the BOPM form should be routed to all reviewers for approval and signature. After approvals, route the BOPM form to the Process/System Engineer for final approval.

The approved BOPM form shall be included with the Maintenance Work Package



EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

Part I - Introduction

1. EUSQD#: EUSQD-3525-23-037 Revision #: 0 Facility/Activity: 3525 Facility

2. Subject of Evaluation:

Balance of Plant Modification Form 3525-BOPM-185, *Glove Maintenance Room Lighting Upgrades*

3. Description of the change:

The subject of this evaluation is Balance of Plant Modification Form 3525-BOPM-185, *Glove Maintenance Room Lighting Upgrades*. This task covers the repair and upgrading of the lighting fixtures in the Glove Maintenance Room (GMR), Room 207, in the 3525 Facility. This work will be accomplished by bypassing the ballast in the old fixtures and installing new LED bulbs as well as completing any repairs required to get the lighting fixtures back in working order. Complete replacement of the lighting fixtures may be required with an engineering-approved replacement. The scope also allows installing/upgrading/replacing the electric circuitry from the applicable panelboard breakers, wiring, conduit, switches, lighting fixtures, and other associated equipment to ensure a complete, professional installation meeting the current electrical code requirements.

Care should be taken during the demolition of older lights to ensure any issues with the older ballasts, contamination, or asbestos wiring are addressed and that they are handled and disposed of properly.

All work shall be performed in accordance with NFPA-70 and NFPA-70E.

All electrical components may be substituted with an engineering-approved equal part.

The scope of this task is limited to the replacement of building lighting only and does not include specialized equipment lighting or in-cell lighting. Craft personnel can install new supports and anchors, but this BOPM form does not cover any new penetrations to the safety-significant cell walls, defense-in-depth (DID) confinement barriers, or the building fire barriers.

The installation work will be completed under Work Plan MWP059955, *Lighting Upgrades at Building 3525 Glove Maintenance Room (GMR)*. This work plan was previously evaluated under USQDSCREEN/3525/23-019 and is outside the scope of this effort.

DSA change? Yes No

4. Primary Safety Basis Document:

- 1) ORNL/3525/SAR, Rev. 10, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525*
- 2) ORNL/3525/TSR, Rev. 12D, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525*
- 3) ORNL/3525/SBS/2018-001, Rev. 1, *Safety Basis Supplement Irradiated Fuel Examination Laboratory, Building 3525, Functional Testing of the K-15 System Ventilation Upgrade Project*
- 4) ORNL/3525/SBS/2020-001, Rev. 1, *Safety Basis Supplement for the Operation of the Upgraded K-15 System in Building 3525* (submitted but not approved)
- 5) ORNL/3525/TSR, Rev. 13, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 6) ORNL/NNFD/3525/SAR, Rev. 0, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)



EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

- 7) ORNL/NNFD/3525/SAR, Rev. 0A, *Safety Analysis Report Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 8) ORNL/NNFD/3525/TSR, Rev. 0, *Technical Safety Requirements Irradiated Fuels Examination Laboratory Building 3525* (submitted but not approved)
- 9) ORNL/NNFD/SSAR, Rev. 19, *Oak Ridge National Laboratory Standardized Safety Analysis Report*

Part II – Expert Determination

1. Relative to the documented safety analysis (DSA), is it readily apparent, based on expert knowledge, training, and experience, that the proposed change **does not**:
 - a. Increase the probability or consequences of an accident described in the DSA?
 - b. Increase the probability or consequences of a malfunction of equipment important to safety described in the DSA?
 - c. Create the possibility of an accident of a different type than previously evaluated in the DSA?
 - d. Create the possibility of a malfunction of equipment important to safety of a different type than previously considered in the DSA?

Yes No

2. If the conclusion is Yes, provide a brief rationale why the change is not a USQ. Otherwise, prepare a standard USQD.

The SAR acknowledges that facility systems, including light fixtures, will need to be periodically replaced. Aside from steps needed to address possible radiological contamination, the methodology for removing the old light fixtures and installing the new ones is a common practice being made throughout many industrial settings that wish to improve lighting in work areas as well as take advantage of energy cost savings, improved reliability, and decreased maintenance associated with LED lighting fixtures.

Facility lighting is not a credited item in the SAR for preventing or mitigating accident events. The lights are being updated with more energy efficient fixtures which supply brighter lights at a low energy rate. The new lights operate in the same basic way as the existing lights. For the safety basis, the operation of the new fixtures is not considered to result in any new or elevated hazard levels beyond those already evaluated in the current SAR. Frequencies assigned to the failure of the lights and other components is not associated with a particular type, brand or style; therefore, changing the fixtures and other components does not result in a change of failure or malfunction frequencies. The SAR descriptions of the facility do not include detail such that this change will require text changes in the SAR itself.

Aside from the light fixtures, circuit components, and hardware, no other facility structure, systems, or components (SSCs) will be affected. When electrical circuits are to be de-energized, checks will be made to identify any safety-related SSCs will be impacted. All lockout/tagout and other activities will be coordinated with the facility before beginning work. The facility has existing procedures and protocols for loss of electrical power events.

NNFD-3525-AP-003 limits the total amount of radioactive materials permitted in the evaluated areas and the total facility to quantities (or to levels slightly less than) already evaluated in the current SAR. Before radiological materials are brought onto the facility footprint or transferred between areas, they are screened and approved to ensure the quantities approved by the SAR analyses are not exceeded. There are no new radiological materials associated with the BOPM form. Thus, the material forms and quantities evaluated in the SAR are not increased.

Some hazardous materials may also be needed to install and/or remove the lighting fixtures and related components. Cleaners, lubricants, and decontamination solutions are materials commonly used to support operations in the 3525 Facility and across the ORNL complex. Existing facility procedures limit the amounts of hazardous materials. The



EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

amounts of these materials involved with installing, repairing, and maintaining these units are present in commercially available quantities and are below any threshold limits in the hazardous material program. Thus, the BOPM Form scope does not introduce any elevated hazardous material quantities above those evaluated in the SAR.

Conclusion

The change will not introduce any new hazards or energy sources nor affect the quantity, form, or dispersibility of radiological materials in the 3525 Facility. Moreover, existing energy sources are not increased, no new energy sources are introduced, and the consequences of analyzed accidents will not change from those documented in the SAR. No new accident scenarios are possible. The change will not impact any identified initiating event in any of the SAR accident scenarios. Thus, the frequencies stated in the SAR are not affected. Equipment will operate, malfunction, and fail as evaluated in the SAR. The change will not result in any new or altered equipment interactions.

Part III – Conclusion and Approval

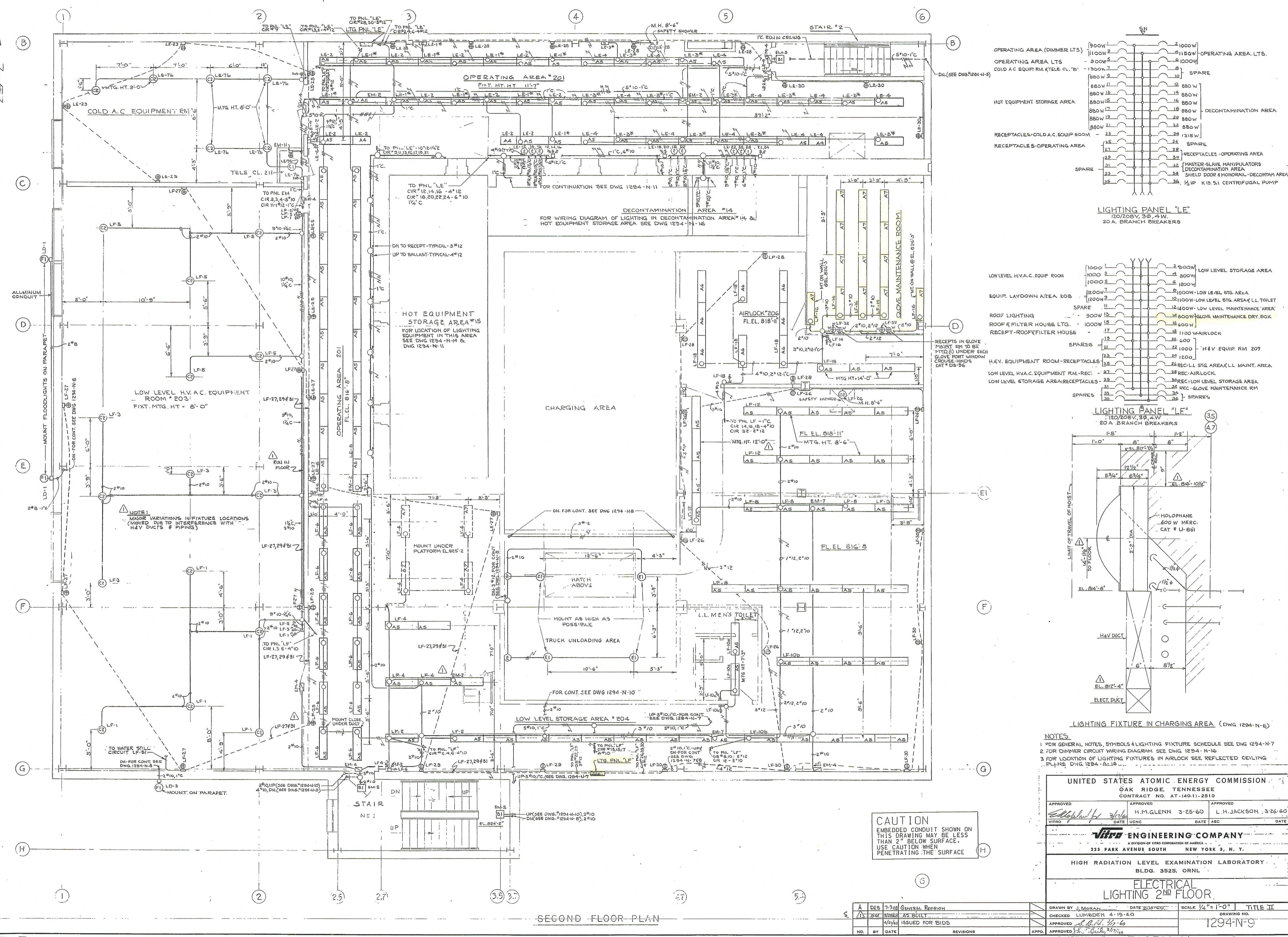
Based on this determination, the proposed change does NOT represent a USQ.

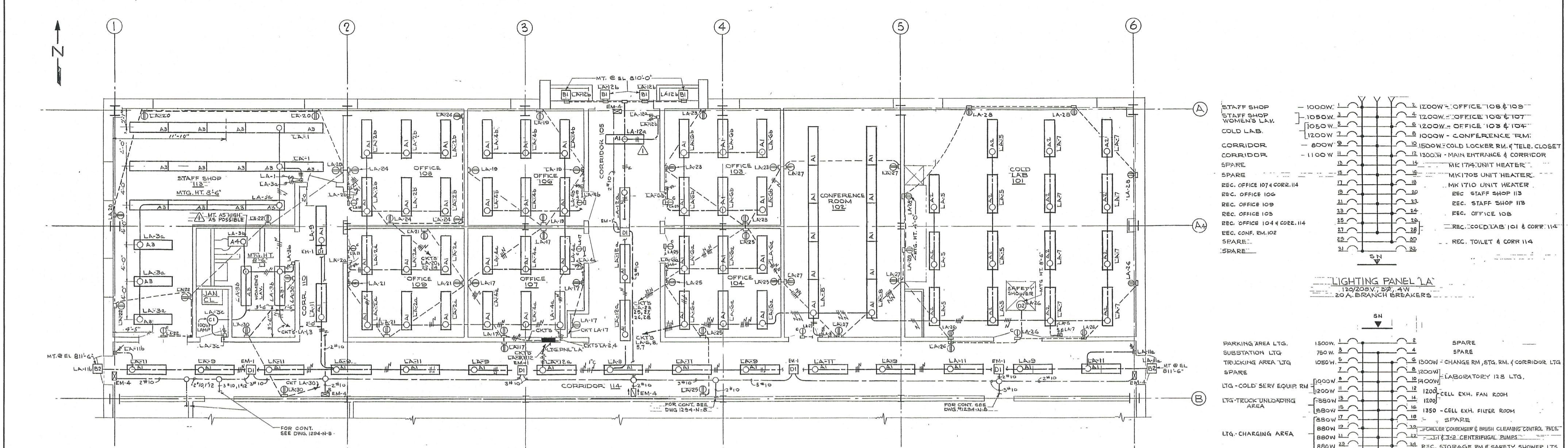
Brian Bailey
Expert USQD Preparer

Date

Wes Keeton
Facility Manager or Transportation Activity Owner (or
designee)

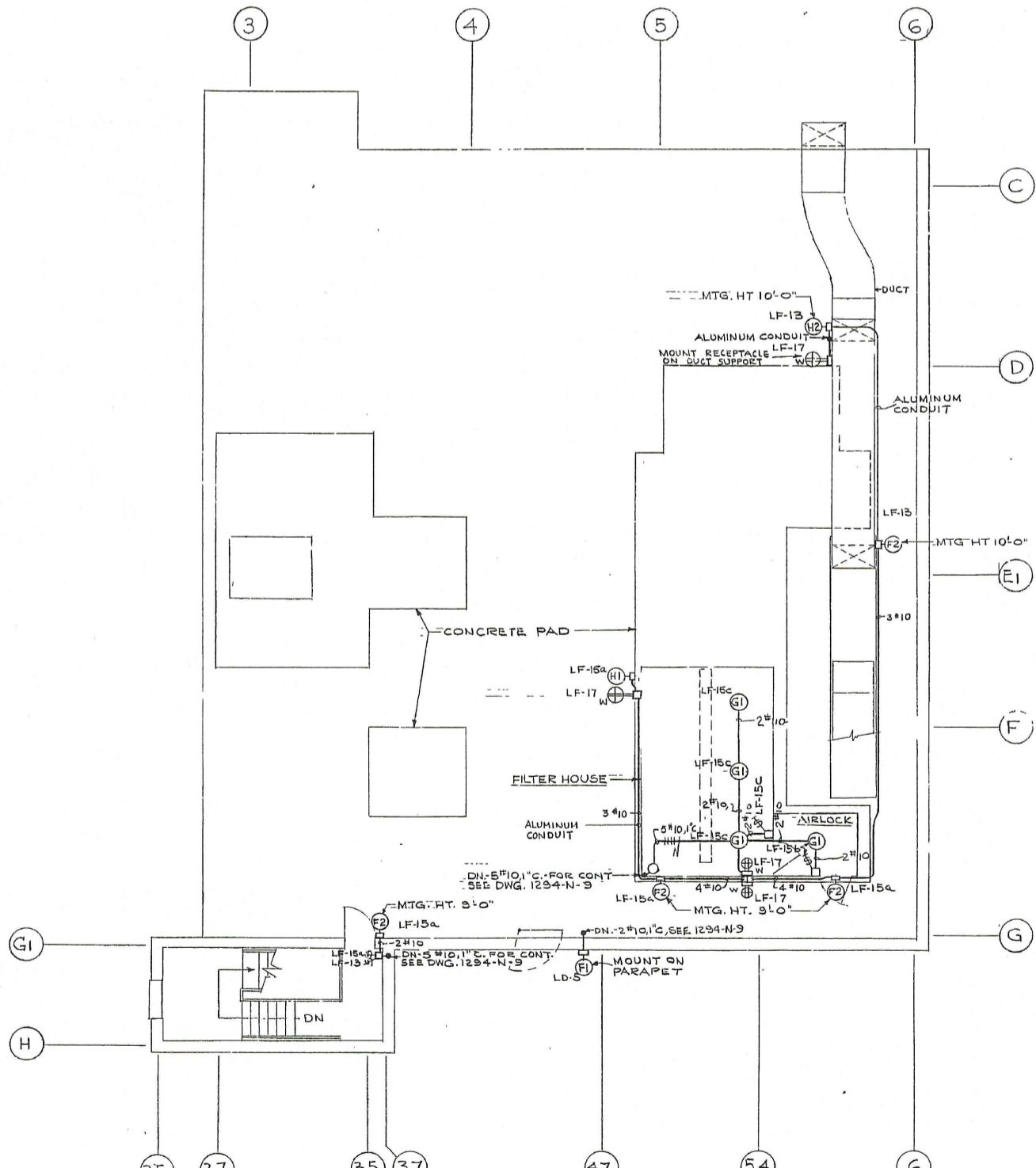
Date





**PART PLAN
FIRST FLOOR**

EL. 80'-0" SCALE: 1/4"=1'-0"



PLAN - ROOF

SCALE: 1/8"=1'-0"

OPERATOR	DOE	PE	CA	EC	EE	EM	IE	M	PD	SE	XAD	REV	DESCRIPTION	BY	CHK	SECT	DEPT	DATE
APPROVALS																		
SQUAD CHECK																		

MARTIN MARIETTA ENERGY SYSTEMS, INC. - REVISION

LIGHTING FIXTURE SCHEDULE				
SYMBOL	DESCRIPTION	CAT. NO.	WATTS	REMARKS
A1	FLUORESCENT LUMINAIRE RECESSED TROFFER 16W, 45L, 8-40W, R5 LAMPS	PITTSBURGH PARK 214-B51	100	
A2	FLUORESCENT LUMINAIRE RECESSED TROFFER 12W, 40L, 8-40W, R5 LAMPS	PITTSBURGH PARK 214-B51	150	
A3	FLUORESCENT LUMINAIRE 2-20W, 2-S. LAMPS, SUSPENSION MTG.	GARCY 9726	100	
A4	FLUORESCENT LUMINAIRE 2-20W, T.S. LAMPS, SUSPENSION MTG.	F24/T24-A-2D TS-16	50	
A5	FLUORESCENT LUMINAIRE 2-20W, T.S. LAMPS, SUSPENSION MTG.	M-PHILBEN 23/476-A-2D TS-16	100	WHEN USED WITH DIMMER CONTROL USE (2) BALLASTS & (2) LAMPS PER FIXTURE MAX. DEPTH OF FIXT. 5"
A6	SAME AS A5 EXCEPT RECESSED TROFFER	PITTSBURGH PARK 214-B51	100	WHEN USED WITH DIMMER CONTROL USE (2) BALASTS & (2) LAMPS PER FIXTURE MAX. DEPTH OF FIXT. 5"
A7	SAME AS A5 EXCEPT SURFACE MTG.	M-PHILBEN 23/476-A-2D TS-16	100	
A8	FLUORESCENT LUMINAIRE RECESSED TROFFER 12W, 24L, 2-20W, R5 LAMPS	PITTSBURGH PARK 214-B19-A	50	MAX. DEPTH OF FIXT. 5"
B1	BRACKET TYPE FIXTURE WITH INCANDESCENT LAMP	M-PHILBEN 43-50V	200	
B2	BRACKET TYPE FIXTURE WITH INCANDESCENT LAMP & GUARD	M-PHILBEN 43-54V	150	
C1	RIM DOME REFLECTOR, PENDANT TYPE WITH INCANDESCENT LAMP	WHEELER #DP-14-H	150	
C2	RIM DOME REFLECTOR, PENDANT TYPE WITH INCANDESCENT LAMP	WHEELER #DP-16-H	200	
C3	RIM DOME REFLECTOR, SURFACE TYPE WITH INCANDESCENT LAMP	WHEELER #DP-16-H	200	
D1	RECESSED TYPE INCANDESCENT LAMP FIXTURE, 1/2"X12"-	PITTSBURGH EAF-100-GFC	100	
D2	PENDANT TYPE FIXTURE WITH GREEN GLOBE AND GUARD	CROSSES HINDS VDA-2759	60	WITH CROSSES HINDS GLOBE #VN-52
E1	10-DAY LUMINAIRE VENTILATED, WIDE DIA. HINDS HANGING POLE LAMP, SURFACE MTD.	WHEELER #4128	400	
E2	WALL MOUNTED 'HOT CELL' FIXTURE - MERCURY VAPOR LAMP, WITH GUARD	RESEARCH EQUIP CO OR EQUAL	400	
E3	REFLECTOR MOUNTED INCANDESCENT LAMP	DAYBRITE #7210	400	WITH 1" TAFFED CONDUIT ENTRANCES ON EACH SIDE
F1	FLUORESCENT LIGHT, SURFACE MTD. 750W, INCANDESCENT	REVERSE #3807	750	
F2	INCANDESCENT LAMP, YARDLIGHT	STERK #WV10A	150	
F3	EXIT LIGHT, FLUSH MTG, 2-25W, INCANDESCENT LAMPS	DAYBRITE 2505-R	50	
F4	EXIT LIGHT, FLUSH MTG, 2-25W, INC. LAMPS	DAYBRITE 2505-R	50	
F5	EXIT LIGHT, SURFACE MTG, 2-25W, INCANDESCENT LAMPS	DAYBRITE 2516-R	50	
F6	EXIT LIGHT, SURFACE MTD, 2-25W, INC. LAMPS	DAYBRITE 2516-R	50	
G1	VAPORTIGHT INCANDESCENT FIXTURE, WITH GLASS & BULB, SURFACE MTD.	DAYBRITE #AC-200	100	
H1	FLOOR LIGHT, GENERAL PURPOSE, WITH WIDE BEAM REFLCTOR, 100W, LAMP GE TYPE PAR 38	REVERSE #7100K	500	
H2	FLOOR LIGHT, WITH ISDN, PAR 38, FLOOD	GE TYPE L-85P, EFL-85P	150	

THIS DOCUMENT CONTROLLED BY
CHANGE CONTROL SYSTEM 3.0
ENGINEERING PROCEDURE EP-C-18

CAUTION
EMBEDDED CONDUIT SHOWN ON THIS DRAWING MAY BE LESS THAN 2" BELOW SURFACE. USE CAUTION WHEN PENETRATING THE SURFACE

UNITED STATES ATOMIC ENERGY COMMISSION
OAK RIDGE, TENNESSEE
CONTRACT NO. AT-(40-1)-2510

APPROVED L. Jackson APPROVED H. Glen APPROVED L. Jackson

VITRO DATE 10/10/81 UCN 6 DATE 10/10/81 AEC 10/10/81

VITRO ENGINEERING COMPANY
A DIVISION OF VITRO CORPORATION OF AMERICA
225 PARK AVENUE SOUTH NEW YORK 3, N.Y.

HIGH RADIATION LEVEL EXAMINATION LABORATORY
BLDG. 3525, ORNL

ELECTRICAL LIGHTING 1ST FL. & ROOF

B	DES	7-7-82	GENERAL REVISION	
(1)	MDII	10/7/81	REVISED CIRCUITS #21 & 22 LTG. PLN. LD	APPROVED
(1)	G.M.	10/26/82	AS BUILT	APPROVED
(1)	4-2-82	ISSUED FOR BID	APPROVED	10/24/81
NO.	BY DATE	REVISIONS	VER	USE APPD APPD

DRAWN BY SULLIVAN DATE 3-10-80 SCALE AS NOTED TITLE II

CHECKED LUMSDEN DATE 10/10/81 DRAWING NO. E20566-Y-506-E-R-B

APPROVED J. H. Jackson DATE 10/10/81

APPROVED H. Glen DATE 10/10/81

