

Sanford Underground Research Facility



ENVIRONMENT, SAFETY AND HEALTH

FACILITY ACCESS - UNDERGROUND

Document-147091
Version 1
March 2018

Version Control

Responsible Person	Document Control Number	Document Version	Publication Date	Description of Change
Pete Girtz	Document - 147091	1	03/09/2018	New document for Facility Access – Underground. Removed from previous Facility Access Chapter.

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1.0 PURPOSE

The purpose of this chapter is for the Sanford Underground Research Facility (SURF) to manage and control individual access to its underground facilities in order to provide a safe and secure work place for all employees, contractors, researchers/users and visitors.

2.0 DEFINITIONS

Contractor: Individual working for or as a person, partnership, corporation, subsidiary of a corporation, firm, association, or other organization that provides services or materials to the SURF. SDSTA Contractors have defined scopes of services, defined locations of work, and defined durations of agreements.

Established Lab Area: A designated location developed to support an experiment that may have some hazards mitigated.

Guide: An individual who meets the qualifications outlined in the SURF Guide Training Program.

- Guides are utilized to escort personnel who do not meet the Unescorted Worker criteria
- Required on any level on which work is taking place

Leased Areas: The SURF has leased areas on the surface and underground that are assigned to Department of Energy for the purpose of the Deep Underground Neutrino Experiment

Project Manager: Single point of contact between the Laboratory and contractors.

Trip Plan: A documented pre-planned event to approve individuals or groups to access facility areas. For the purposes of this chapter applies to underground.

Unescorted Worker: Workers who have been trained in the specific areas for which they are working, including emergency egress requirements. Are able to access a specific work area and perform duties without a guide in direct attendance.

User: A collaborating partner such as a scientist, researcher, or educator conducting a scientific experiment or engineering research at SURF underground and/or on the surface.

Visitor: A person who has an appointment with a designated point of contact (Sponsor) at SURF and who requires temporary access to site facilities.

3.0 ROLES & RESPONSIBILITIES

3.1 Laboratory Director

- Authorizes the underground occupancy limits
- Determines the proper underground Guide ratio
- Resolves disputes concerning occupancy limits

3.2 ESH Director & Department

- Maintain archive of completed waivers
- Develop underground access and training requirements
- Maintain and provide underground access training

- Provides badge access based on Project Manager/Sponsors request

3.3 Underground Access Director

- Review and approve Trip Action Plan(s)
- Assure occupancy limits are not exceeded
- Approve deviations in trip action plans

3.4 Administrative Services Office

- Complete check-in process
- Distribute permanent and/or temporary badges to authorized persons
- Log waivers for visitors

3.5 Guide

- Provide safety oversight for those assigned in their Trip Action Plan
- Initiate emergency communications, communicate instructions, and lead personnel to safety
- Guides will carry a copy (paper or electronically) of the approved Trip Plans

3.6 Unescorted Worker Access

- Must abide by the Trip Action plan
- A Guide must be present that is assigned to the level where work is being performed
- Are not allowed to escort personnel

3.7 Cage Operator

- Verify that individuals are listed on the Trip Action Plan before granting access to the cage
- Verify the occupancy limits for the cage are not exceeded.
- Monitor the brass tag boards to ensure:
 - That underground occupancy limits are not exceeded and
 - Are correlated to the TAP
- Authorized to deny access and notify supervisor on shift

4.0 UNDERGROUND ACCESS REQUIREMENTS

4.1 Process for Underground Access

- All individuals who will be traveling underground must complete appropriate underground training per the Training Matrix (Section 5.1) and complete the SURF Acknowledgment of Risk/Waiver form
- Complete or be listed on Trip Action Plan
- Don required PPE
- Perform Brass In/Out procedures
- Ensure a Guide is present on the level for which work is to be conducted
- Must stay within the scope of the Trip Action Plan. Do not venture outside of approved access areas, unless for an emergency evacuation

4.2 Underground Occupancy Limits and Guide Requirements

The underground occupancy limit is based upon the ability for individuals to access a safe location in an emergency situation in a 1-hour time period. Safe locations include:

- Shaft Collar
- Refuge Chamber

The underground occupancy limit in this case excludes the 300L and Tramway (cage support not required/secondary egress walkable).

The Guide ratio requirements are:

- *4850L Science Triangle*: 1 Guide to 12 individuals
- *Construction Areas*: As a minimum, 1 Guide per working level if all workers meet Unescorted Worker status
- *Established Lab Areas*: 1 Guide per area
- *All Other Areas*: 1 Guide to 6 individuals

4.3 Physical Requirements for Underground Access

Persons accessing underground must be able to perform the following:

- Recognize and respond to emergency signals and signs (visual, auditory, and olfactory)
- Travel to egress points, unassisted, and under their own power
- Operate communications equipment
- Don and use a Self-Rescuer
- Don and use a fall arrest harness
- Any accommodations to the physical requirements requires Laboratory Director approval

4.4 Underground Trip Action Plan

Trip Action Plans must state the details of a planned trip. Trip Action Plans must:

- Provide authorization for the trip to designated areas within the Facility
- Document the expected locations in time of personnel on a trip
- Serve to notify Facility personnel of activities
- Serve to help manage established occupancy limits

Trip Action Plans must consider:

- The requestor must first identify and contact a sponsoring department who will assign a Sponsor or Project Manager.
- The Sponsor or Project Manager will enter a Trip Action Plan in advance of the trip and submit the Trip Action Plan for required approval/concurrence. The Sponsor or Project Manager will post the trip information (date & time, location, number of visitors, etc.) to the Trip Action Plan Calendar.
- The Sponsor or Project Manager will arrange for the appropriate number of Guide(s) to meet the underground ratio requirements.
- Names are to be submitted at least 3 days prior to trip in order to receive trip approval.
- At no time is anyone allowed to gain access to a designated trip area without being on a Trip Action Plan.

- The Sponsor or Project Manager will ensure all personnel under their supervision have received the proper safety training.
- A Trip Action Plan must be carried by the Guide (electronically or hard copy).
- As soon as possible, the Sponsor or Project Manager will enter any changes on the Trip Action Plan Calendar.

4.5 Underground Accountability

Brass In / Brass Out

- All individuals going underground for any purpose must utilize the brass-in, brass-out procedure. Persons authorized for access without personalized brass tags will be assigned a numbered visitor’s brass tag, which is recorded on a log sheet located at the Yates and Ross brass tag boards, respectively.

4.6 Underground Access Restrictions

Access to the underground may at times be restricted to essential personnel.

- Written notification required
- Access points restricted and signed

5.0 TRAINING REQUIREMENTS

5.1 Underground Training Matrix

	SURF Orientation (UG)	General Safety Basic if >40 hr on site	Unescorted Worker Access	Guide	Annual Refresher
Visitor	X				
Researcher/ User	X	(X)	(X)	(X)	X
Employee		(X)	(X)	(X)	X
Contractor	X	(X)	(X)	(X)	

() indicates that this course is based on need

5.2 General Safety Basic (Includes SURF Orientation)

Five hour class consisting of:

- Four hours of Classroom
- One hour in-field tour

5.3 SURF Orientation

A safety video or a 30-minute underground safety training course based on scope of visit, plus waiver/risk form completion.

5.4 Underground Orientation (See SURF Orientation above)

5.5 Unescorted Worker

- Individuals performing work in a designated area who have been trained to the hazards and evacuation procedures of the specific level. This training is conducted by a person who is competent of the below items:
 - Training of an area specific map with recognized hazards/safety precautions;
 - Ventilation;
 - Primary & secondary egress;
 - Communication equipment / supplies;
 - A walkthrough through of the levels will be completed to point out the features discussed during the classroom portion of training prior to commencement of work;
 - Training will be documented per ESH Training Chapter.

5.6 Guide

- Will consist of the training identified above with additional training in work site hazards, communications, and emergency evacuation procedures, etc.
- Guide training will be documented per ESH Training Chapter.

6.0 REFERENCES & RELATED DOCUMENTS

6.1 Related Documents

- [ESH Training Chapter](#)
- [Trip Action Plan Database](#)