

General Users Meeting

SURF Operations Division

William R. McElroy
Deputy Director for Operations



September 29, 2021

Will McElroy – Deputy Director for Operations

- Employed by the South Dakota Science and Technology Authority (SDSTA) for nine years
 - PM for Davis Campus excavation and fit out
 - PM for Ross Shaft rehabilitation from inception to 3500L construction
 - Served as Director of Underground Access and Operations Program Manager
 - Currently Serve as Deputy Director for Operations
 - Responsible for Underground/Surface Operations and Engineering
- Executive Leadership experience with public and privately funded projects, and volunteer organizations
 - President of Ainsworth-Benning Construction, A Journey Group company for four years
 - 10-year contract employee for Science Applications International Corp, Raytheon & Stinger Graffarian Technologies (aerospace contractor to the USGS)
- Certified as a Project Management Professional (PMP)

Agenda

- Organization
- Process/Work Planning
- Cooperative Agreement
 - Shafts
 - Hoists
 - Travel ways
 - Ventilation
 - Water collection and processing
 - Services
- LBNF Coordination
- Special Initiatives
- Yates Shaft Update

Operations Division



Institutional Key:

BHSU
CONTRACT
SDSTA

SDSTA

Board of Directors

Ani Aprahamian	Casey Peterson (Chair)
Dana Dykhouse	Ron Wheeler
Patricia Lebrun	Robert Wilson
Roger Musick	SDSM&T President (ex-officio)

Legal Counsel
May, Adam, Gerdes & Thompson LLP
Timothy Engel

SURF Foundation
Director
Staci Miller

SDSTA
Executive Director
Mike Headley

Administrative Services Office
Manager
Mandy Knight

SURF
Laboratory Director
Mike Headley

Inclusion, Diversity, Equity and Access (IDEA) Office
Program Manager
Debra Wolf

Science Dept
Director
Jaret Heise

Environment, Safety & Health Dept
Director
Julie Ewing

Quality Office

Operations Division
Deputy Director
William McElroy

Education & Public Relations Dept
Director
Debra Wolf

Business Services Dept
Chief Financial Officer
Nancy Geary

Surface Operations & Utilities Dept
Director
Tim Baumgartner
Deputy Director-Jake Davis

Hoists & Shafts Dept
Director
Wendy Straub

Communications Dept
Director
Constance Walter

Contracts & Procurement Office
Manager
Bill Kelly

Engineering Dept
Director
Allan Stratman

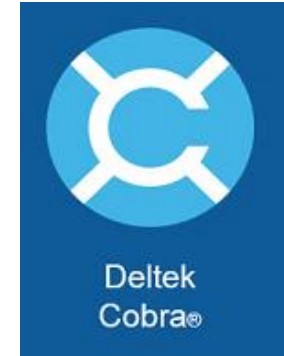
Underground Operations Dept
Director
Bryce Pietzyk

Education & Outreach Dept
Director
Nicol Reiner

Human Resources Office
Administrator
Eileen Brosnahan

AUDIT

Ops Work Planning/Execution



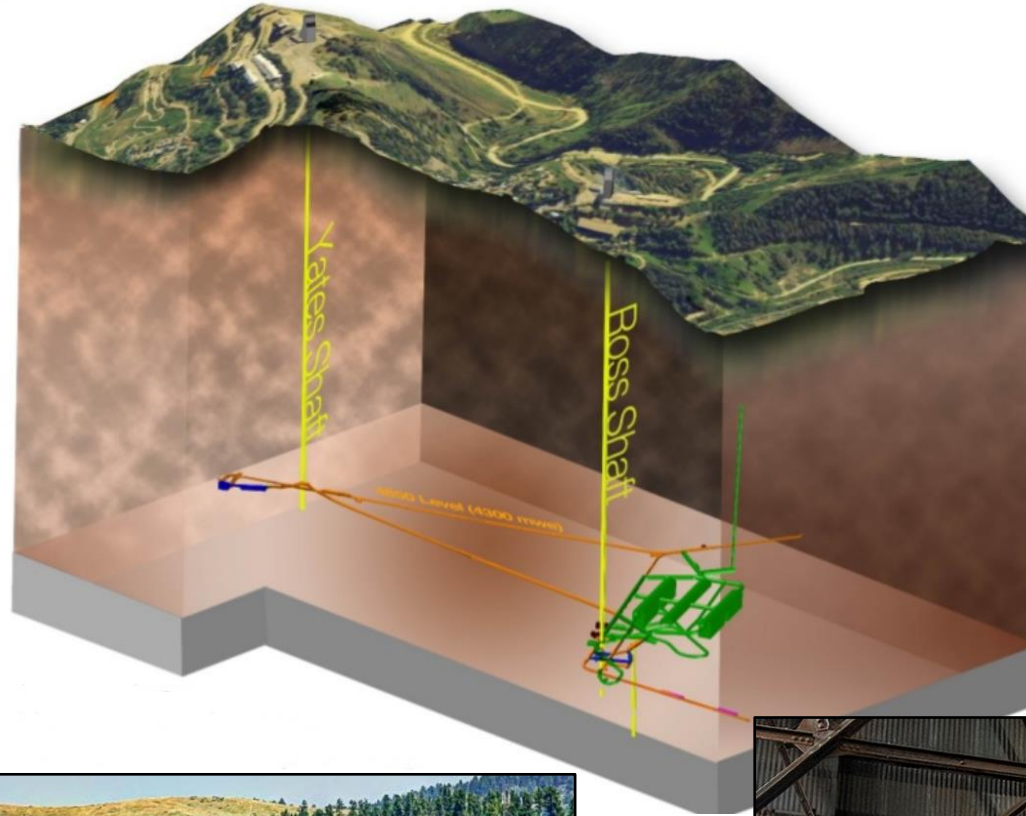
- Job Hazard Analysis
 - Prior planning
- SOP Development
 - Repeatable tasks
 - Periodic Reviews
- Training Program
 - On-line through Bridge software
 - Vendor supported when required
- EOS
 - Strategic planning
 - 3-year, 1-year and quarterly goals
 - Accountability by position
 - Standard meeting format for all departments
- P6
 - Master scheduling tool for SURF projects
- Cobra
 - Control accounts, budget/actuals, variance tracking

DOE Cooperative Agreement

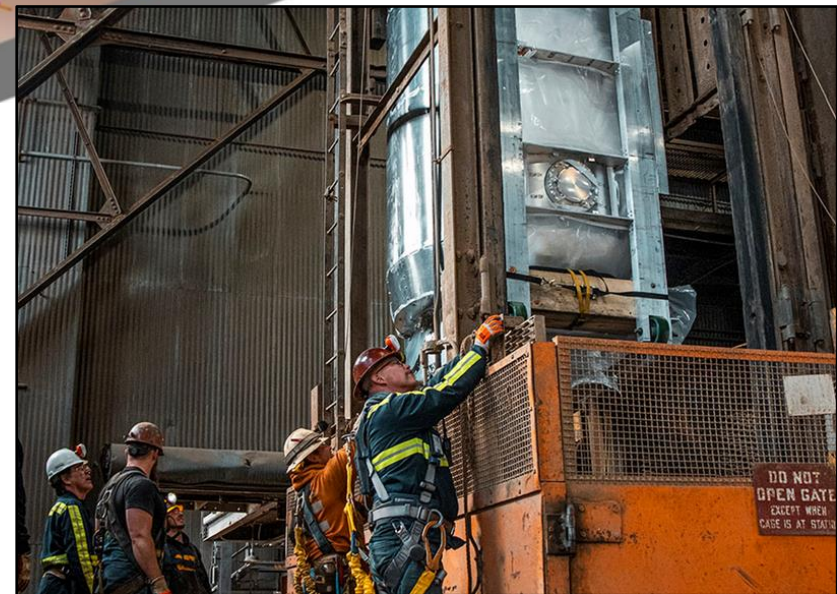
- Five-year cooperative agreement to operate and maintain SURF
 - SDSTA will provide an established core set of facility and user support services to enable safe performance of science underground.
 - SDSTA will implement a program of facility infrastructure improvement projects that will modernize SURF technical systems and enhance safety, reliability and maintainability of the facility.
 - Through a direct relationship with DOE, SDSTA will efficiently and safely operate and maintain SURF in support of the science mission, modernize the facility infrastructure, and mature its management systems to be responsive to the increasingly demanding requirements of its user community.
 - The SDSTA management team has over 13 years' experience operating SURF in direct support of federally funded activities. Our management processes and toolsets enable effective work planning and execution, facility assessment and multiyear infrastructure improvement plans.
 - SDSTA has established a strategic advisory committee to provide expert counsel to advance SURF programs in alignment with DOE Office of Science goals.
 - Advisory committees have been formed to drive excellence in Environment, Safety and Health, science user support, facility infrastructure operations, and cultural diversity and inclusion.

CA - What do we operate and maintain?

(2) 5,000' deep ingress/egress shafts



Mobilizing the LZ detector at Yates



CA - What do we operate and maintain?

(4) separate hoisting systems (service & production)



Yates Shaft Ore Hoist

CA - What do we operate and maintain?

Underground Access and Travel Ways



Sigma-V
in West
Access Drift



Davis Campus
Entrance



CA - What do we operate and maintain?

Water Inflow Controls

Water captured on 2000L, sent to the 2450L sump



CA - What do we operate and maintain?

Ventilation Controls



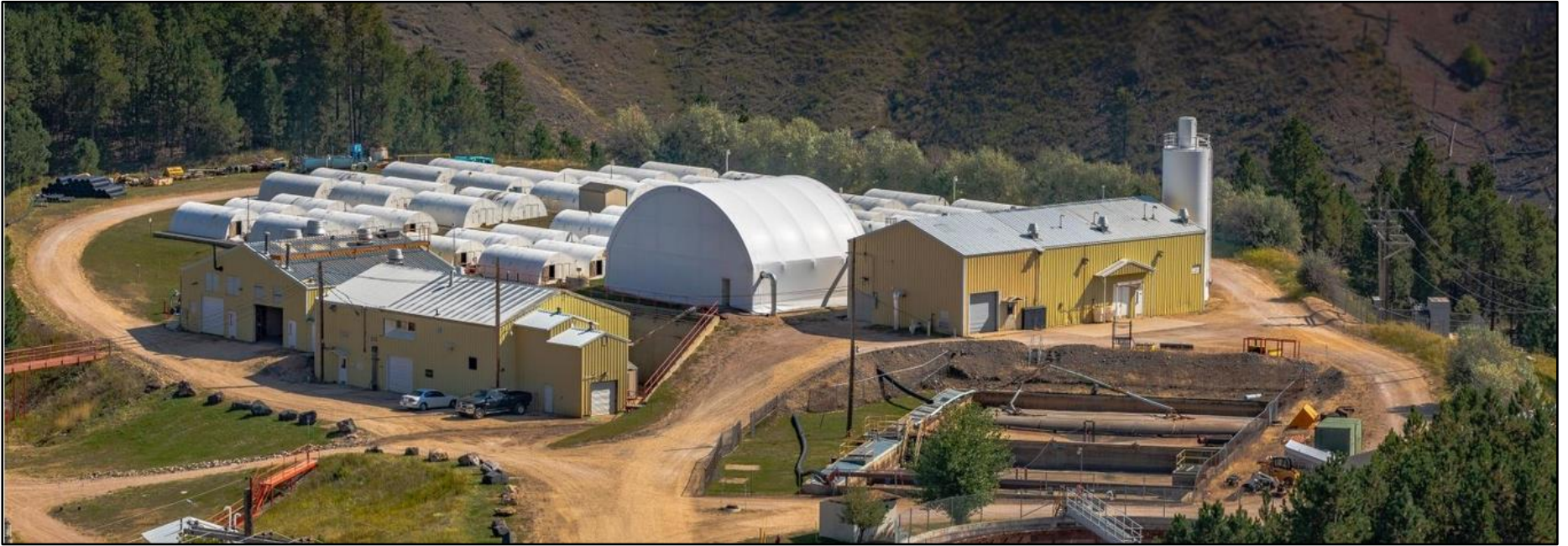
← Oro Hondo Primary Fan



Oro Hondo Back-up Fan →

CA - What do we operate and maintain?

Wastewater treatment facility



700,000,000 gallons treated annually



Underground pump station



SD DNR compliant discharge

CA - What do we operate and maintain?

Systems That Allow for Underground Science

HVAC, electrical, water, waste management



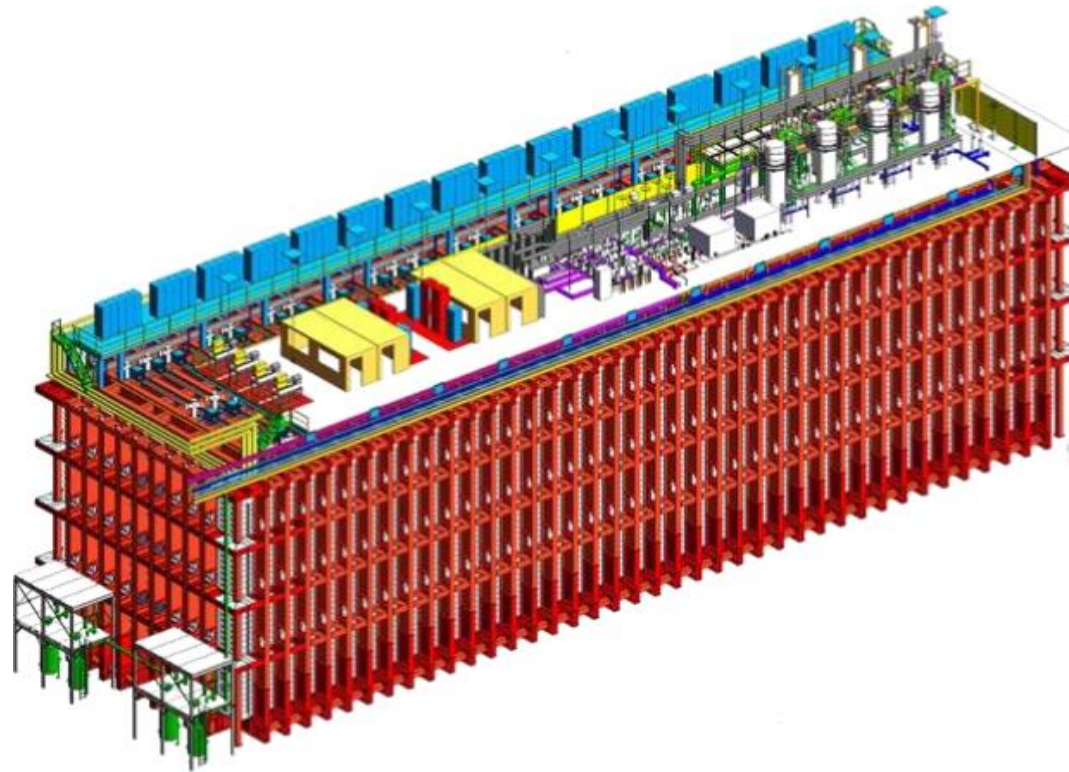
Cyber Connectivity



Safety Systems

Interface and Support to LBNF

- Ross Shaft/Hoist dedicated to LBNF
 - ~30 SDSTA employees dedicated
- Staff Services provided through the SDSTA
 - Engineering services
 - Reliability projects
- Blasting
 - Planning
 - Coordination



- Constant communication is required to keep current science, LBNF and SDSTA initiatives moving forward.

Top-Down Maintenance (TDM)

Yates Utility Panels Progress

Goal for RTO

1. Pipe secured or removed as needed in the shaft to the 4850L
 - Remove to set 395.
 - To be secured in 150ft intervals (at each station) from 2600L to 4850L.
2. Repair or Replace Timber as needed in the shaft to the 4850L - *tracking to Set 401*
3. Provide overhead protection for inspections and shaft work progress.
4. Detailed inspection to the 4850L - **COMPLETED**

TDM Progress

- TDM Progress to Set 298
- Set 296 additional set needing significant repair

Contingency Tracker: 2/22 contingency shifts used

- Schedule for RTO dates range dependent upon further discovery of compromised timber between current location to set 401.
 - Early RTO date is tracking to **Dec 10** if no additional sets are identified, or other delays experienced.
 - Long RTO date tracking to Dec 22 – 20% *Contingency*.

Yates Shaft Utility Panels Maintenance Status - Sept 27, 2021

L E V E L	Set Number	Utility Compartment Panels 1 & 2							Progress Tracking for Shaft RTO					
		Panel 1 - Utility Comp			Panel 2 - Runabout				Actual Progress	Planned Progress				
		Timber Repair	Remove Piping	Secure Piping	Bar & Repair Lacing	Detailed Inspection	Inspection Ports Inst	Timber Repair			Bar & Repair Lacing	Inspect	Inspection Ports	
B	1700L	246	X	O										
		251	X	O										
		263	X	O										
B	1850L	271	X	O										
		267	X	O										
		272	X	O										
		296	X	O										
		301												
		326												
		340												
B	2300L	344												
		364												
		379												
		384												
		385												
		387												
		388												
		389												
		390												
		392												
		393												
		394												
B	2600L	395	+	+										
		396												
		397												
		398												
		400												
		401												
B	2750L	419												
B	2900L	444												
B	3050L	469												
B	4100L	640												
B		665												
B		690												
B		715												
B		740												
B	4850L	767				767	767			767	767			
B	Sump	800												

Progress to Set 298
2 shifts cont used

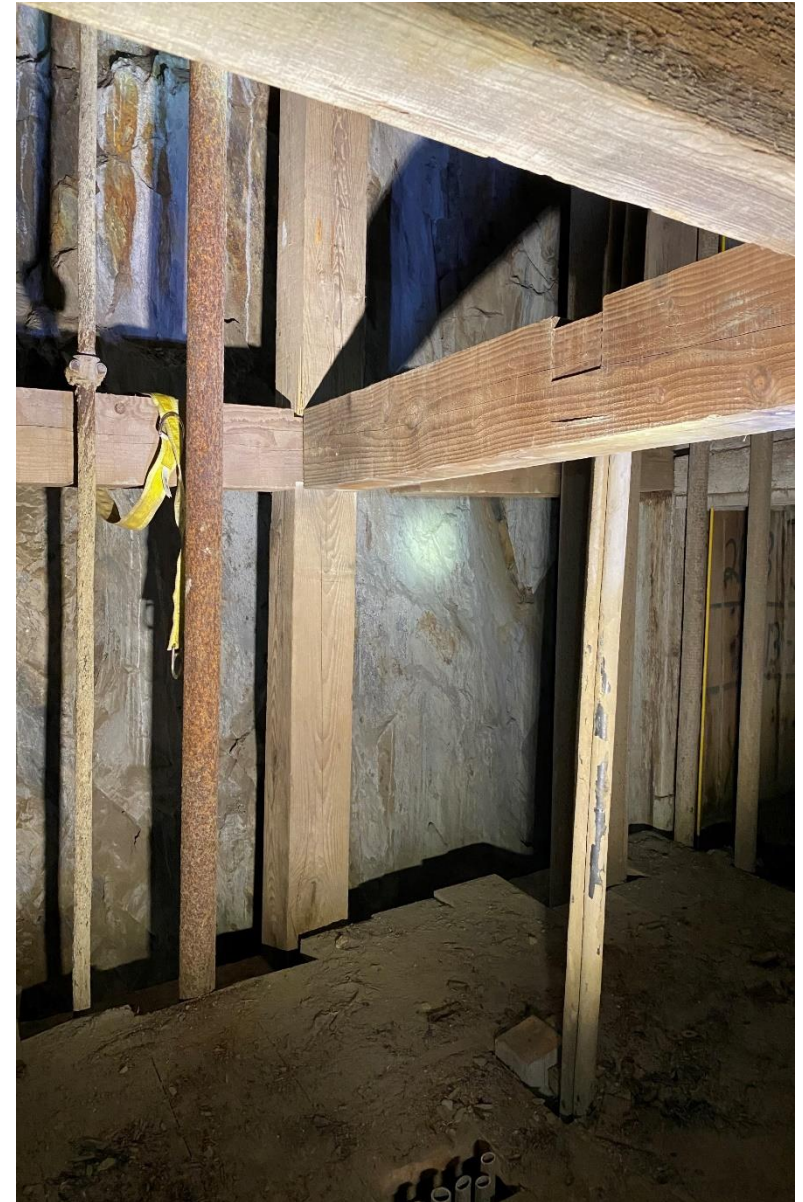
Table KEY

X Piping has been removed	767 Detailed Inspection Progress to Set #
Par Partial piping removed	298 Panel Work Progress
O Piping has been Secured	301 Timber Set identified for evaluation
+ Piping Identified for Securing	301 Planned Progress to meet Dec 8 RTO
767 Inspection Ports Installed to Set #	298 Actual Progress Status
296 Previously Unidentified Set Requiring Replacement	
B 1700L Bearing Set	

Yates Shaft Set 263 – Before & After (1850L area)



- 4 new posts
- New wall plate
- New divider



Thank you

Questions?