



RED DOG-SUVISI

2020 – Vol. 11, Issue 1

What are the many people doing?

Harvesting Seeds Sustainably for Red Dog Land Restoration – and Getting Paid for It!

BY JOHANNA SALATAS, RED DOG ENVIRONMENTAL DEPARTMENT

One of the most important goals in Red Dog Operations (RDO) land restoration is to use plant seeds that grow in the Arctic. Unfortunately, locally harvested Arctic plant seeds are not available for purchase in stores.

In 2015, Alison Kelley, an environmental scientist, worked with NANA and Teck to develop an innovative Seed Harvest Program in nearby Noatak, Alaska. Noatak was chosen because of its similar climate, habitat, and plant communities as those found in the area of the RDO.

Community workshops are held in Noatak annually to teach interested participants how to identify and sustainably harvest target seeds. Traditional ecological knowledge gained during subsistence activities can be used to locate potential seed harvest areas. The program pays community members \$15/hour to collect seeds from target plants in areas around Noatak.

The program targets specific flowering plants that are “nitrogen-fixing” to develop healthy soils. The target seeds were initially planted

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PHOTO (Above) Noatak youth learn to identify and sustainably harvest seeds to be used for Red Dog land restoration.



Les Yesnik, Red Dog Operations General Manager.

Message from the GM

Happy New Year to you all! I hope that many of you were able to enjoy time with family and friends at year-end. Another very busy year is behind us and overall the final results are very good.

We should all be especially proud that the frequency and severity of injuries at our operation was reduced in 2019. Most of the workforce participated in hazard identification training sessions and at year-end, most crews were completing high-potential-risk assessments. Also, our contractors – including all NANA contractors – achieved one million hours worked with no lost time injuries in October. While I am very pleased with these achievements, we still had three lost time injuries, and three high-potential incidents that could have resulted in serious injuries. This is evidence that we are still not achieving Teck's vision of "Everyone going home safe and healthy every day." We will continue to work on improving hazard awareness in 2020 and advancing Courageous Safety Leadership training for employees and contractors.

In 2019, we faced several challenges that could have limited our production. Significant winter storms in March and April caused us to fall behind on production; we were not able to operate for 20 days due to full concentrate inventories. Recovery from this lost opportunity was remarkable, as year-to-date production was restored to budget by the end of June. In addition, part of the VIP2 project scope included modifying the electric and mechanical drive, including replacing the main gears for two of our SAG mills. Mill production rates were reduced to enable modifications in the final quarter of the year. SAG mill #2 was down for twice as long as planned when a main discharge bearing was damaged due to contamination. Our maintenance team successfully repaired the equipment and restored operation. When SAG mill #1 was taken down for the same modification, the VIP2 project team and contractors restored equipment operation on schedule. Even considering these and other challenges, year-end production was 102% of plan.

In this edition, one story provides information on Camp Sivunniigvik located on the Kobuk River. This camp is devoted to helping pass on Iñupiat traditions to local youth, to combat social issues and instill traditional values. Another article explains how Teck and Red Dog Operations are embracing technology through an initiative called RACE21. By deploying advanced analytics and machine learning, we will be able to further improve recovery of the metals in the ore and improve overall mill operation. This will help minimize the impacts on production rates and the ore properties change.

Thanks to everyone for your efforts in 2019. 2020 will bring new challenges that we will need to work together to overcome. Let's work together to have a safe and productive year.

Les Yesnik

RED DOG-SUVISI

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2019 Red Dog Community Meetings – Let’s Talk Tuttu!

In 2019, Teck Alaska, with members of NANA, the Red Dog Subsistence Committee, and the Alaska Department of Fish and Game, held public meetings throughout the region to talk about tuttu (*caribou*) and listen to community feedback.

In previous annual meetings, Teck asked communities through feedback forms what topics they would like to learn more about. The communities expressed that they wanted presentations focused

on key topics; of those, caribou was one of the most mentioned. The 2019 meetings were the first to present in this focused style.

During the meeting, a presentation provided information on Red Dog’s efforts to minimize impacts to caribou migration, Red Dog’s support for subsistence practices by allowing hunters to access the haul road, and the results of studies from the Fugitive Dust Risk Management Plan. A member of

the Red Dog Subsistence Committee was also present to speak on their activities during 2019. Additionally, Kotzebue-based Alaska Department of Fish and Game staff presented information on the Western Arctic caribou herds population counts, historical migratory patterns, and potential concerns or challenges related to natural occurrences.

Thank you to everyone who participated and made these meetings a rousing success! ■



Red Dog Environmental Technician Johanna Salatas discusses the results of the caribou cooking study with the community of Buckland.



Red Dog Community Investment Coordinator Verna Westlake facilitates comments and questions about caribou during the Kivalina community visit.

NMS Wins Four 2019 National Safety Council Awards

The National Safety Council (NSC), the United States’ leading safety advocate nonprofit, recently recognized NMS (previously NANA Management Services) with four 2019 Industry Leader Awards for excellent safety performance. Award recipients include the food service teams at Red Dog Operations, the housekeeping teams at Hilcorp’s Milne Point unit in Prudhoe Bay, and the food service teams at BP’s Main Construction Camp and Tarmac Camp in Prudhoe Bay.

NMS is the only Alaska company to win an Industry Leader Award from the NSC this year.

The awards recognize outstanding safety achievements of NSC members and represent the top 5% of member companies that qualified for the NSC 2019 Occupational Excellence Achievement Award.

“These awards recognize what NMS employees put into practice every day – that safety guides our behavior,”

said NMS President Eric Billingsley, a NANA shareholder.

NMS emphasizes personal safety in every work location, committing to providing safe and healthy environments for employees, clients, and customers. What does it mean to work at a company that puts people and their safety first? “We look out for each other,” said Dawn Kimberlin, a NANA shareholder and

SEE NSC AWARDS, PAGE 7

Year in Review: Community Engagement

What Did Red Dog Community Relations (CR) Accomplish in 2019?

State Lands A&A Exploration Engagement

CR facilitated, presented, or attended the following meetings and events:

- **Two** community meetings
- **Six** meetings with Kivalina IRA
- **Three** meeting with Noatak IRA
- **Four** presentations at Subsistence Committee meetings
- **Two** joint Noatak and Kivalina leadership meetings
- **Two** site tour helicopter overflights of State Lands Exploration site for Kivalina and Noatak leadership
- National Environmental Policy Act (NEPA) training for Kivalina and Noatak leadership
- **One** access road walk with Noatak and Kivalina representatives
- **One** Village Improvement Commission presentation

Red Dog Operation Engagement

CR facilitated, presented, or attended the following meetings and events:

- **Fifteen** one-on-one meetings in Kivalina
- **Six** meetings with the Kivalina IRA
- **Two** community meetings in Kivalina
- **One** annual hunters meeting in Kivalina
- **Eleven** helicopter overflights of pre-discharge and post-discharge for Kivalina residents
- **Four** Siñgaqmiut Working Group meetings and events including a community celebration with Kivalina
- **Seven** community meetings across the region
- Attended **nine** Northwest Arctic Borough (NAB) and assembly meetings
- **Five** Red Dog Subsistence Committee meetings
- **Four** Red Dog Management Committee meetings
- Attended/supported **three** Village Improvement Commission meetings
- Hosted **two** water quality training sessions for Kivalina water sampling trainees and youth
- **Four** meetings with the Noatak IRA
- **Two** one-on-one meetings with residents in Noatak
- Attended **two** Regional Elders Council meetings

- Participated in **three** Economic Development Commission meetings
- Hosted **three** site tours (for National Fish and Wildlife Association, Alaska House Resource Committee, and ConocoPhillips)
- Presented at **three** regional meetings, such as the Western Arctic Caribou Herd Working Group and the Northwest Arctic Subsistence Regional Advisory Council
- Participated in **three** NANA informal shareholder meetings
- Hosted booths at AFN and Alaska State Fair Mining Day
- Participated in **eight** community investment events (Kobuk 440, Qatnut, 4th of July activities, Elders and Youth Conference, Noatak Hasty Crew Appreciation Potluck, Sivunniigvik Elders and Youth Camp, The Winter Bear Project, and SWG celebration)

Community Development

- Presented on Community Investment to regional entities (Northwest Arctic Borough, Maniilaq, School District, and Regional Elders Council)
- **Fifteen** presentations on the Community Investment process across the region
- Received **44** applications and funded **32** Community Investment requests in the region. This totals **\$518,947** for the year. Examples of contributions are as follows:
 - Youth Leaders – Northwest Arctic Borough School District
 - *Winter Bear*, an outreach play with a primary focus on suicide prevention, delivered in Buckland and Shungnak
 - Back-to-school community events in **eleven** villages
 - Local villages Search and Rescue
 - Noatak Hasty Crew
 - Elders and Youth Conference
 - Camp Sivunniigvik

To be considered for donation, apply online at communityinvestment.teck.com/community. ■

Red Dog's Community Investment

Teck's Community Investment (CI) fosters trusted relationships and resilient and thriving communities. Teck's CI focuses in areas of good health and well-being, inclusion and sustainable livelihoods, and environmental stewardship.

RDO CI has made donations and contributions to the 11 communities of the northwest Arctic region since operations commenced 30 years ago. In 2019 and going forward, RDO's CI has taken a strategic approach to community-driven outcomes in the areas of community

wellness, employment, and subsistence, with the goal of enhancing quality of life and promoting healthy communities.

To be considered for donation, apply online at communityinvestment.teck.com/community or contact Verna Westlake at Verna.Westlake@teck.com.

Requests will be considered for initiatives most aligned with RDO's strategic plan to support wellness in the region. ■

Fall 2019 Back-to-School Community Potlucks

This past fall, Teck Alaska and NANA sponsored the back-to-school potlucks in each of the 11 communities. NANA's shareholder relations coordinators worked with local leaders, community members, and school staff to organize a fun community gathering to emphasize the importance of education and show support of youth in each of their communities.

Teck is proud to coordinate with NANA and contribute to the continuing educational journey of our regional youth. ■



Volunteers in Selawik serve up hotdogs and cheeseburgers to the community in the Davis-Ramoth Memorial School cafeteria during last fall's back-to-school potluck.



NANA Senior Director of Lands Damon Schaeffer and Maintenance Generalist Homer Russell tend to the grill during the Kotzebue community potluck.



It was a full house in Kotzebue for the back-to-school community potluck. Thank you, everyone, who volunteered your time to make this event successful!

Noatak Hasty Crew – Ready to Grab and Go

BY MARY ADAMS, NOATAK HASTY CREW COORDINATOR

The Noatak Hasty Crew is a community-based, volunteer emergency first responder team in the remote village of Noatak, Alaska. When the team is called out on the local VHF radio to a search or incident, time is of the essence, especially in extreme weather and ice conditions. Organizing and deploying search and rescue can sometimes take hours – valuable time in an emergency.

Thanks to funds raised and a generous donation from Teck's Community Investment, Noatak Hasty Crew members are now equipped with new grab-and-go backpacks filled with response equipment such as rope, flashlights, batteries, hatchets, hand warmers, face masks, snowshoes, and shovels. With Teck's contribution, we can only get better and faster. The hasty crew began with a few members who fundraised out of pocket, and has since grown to a team of more than 20 young men and women. Our team is now out the door within 15 minutes of a callout.

"I hope that other villages start a hasty crew to help their people," Noatak Hasty Crew President Norman Monroe commented. "I want to thank Noatak families for the great crew we have formed, and thank you, Teck, for your contributions." ■



The Noatak Hasty Crew shows off their brand new grab-and-go backpacks.

Red Dog Begins Caribou Monitoring Program

During the fall of 2019, Red Dog hosted its first season of a new caribou monitoring program. The program was designed to provide a dedicated individual from the communities of Kivalina or Noatak to monitor wildlife activity along the haul road, specifically during the caribou fall-migration.

The program came as a request of both the Red Dog Subsistence Committee – an advisory council that monitors activity to ensure that mine operations incur minimal impact to wildlife and subsistence practices – and the IRA councils of both Kivalina and Noatak. Two shareholders, one from Kivalina and one from Noatak, were hired and staffed through NMS.

From mid-September to mid-October, caribou monitors were responsible for monitoring the haul road and documenting all caribou activity. In the event of caribou activity, it was the monitors' job to alert all haul road traffic, providing drivers with a greater sense of awareness of the animals' movement to minimize impact to the herd migration.

In addition to the new caribou monitoring program, Red Dog already has several policies in place to minimize any interruption the operation could potentially have on subsistence activities. For instance, if a Red Dog personnel

Ready to level up your business?

Teck offers a \$5,000 grant to a woman entrepreneur in the northwest Alaska region who has an existing business at any stage. Included is three days of targeted education in Vancouver, Canada, plus a year of one-to-one mentorship following the training series. Applications are due by April 3.

Apply now at www.fwe.ca/programs/e-series

Questions? Email Verna Westlake at verna.westlake@teck.com or Erika Thomas at erika@fwe.ca

Teck

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NSC AWARDS

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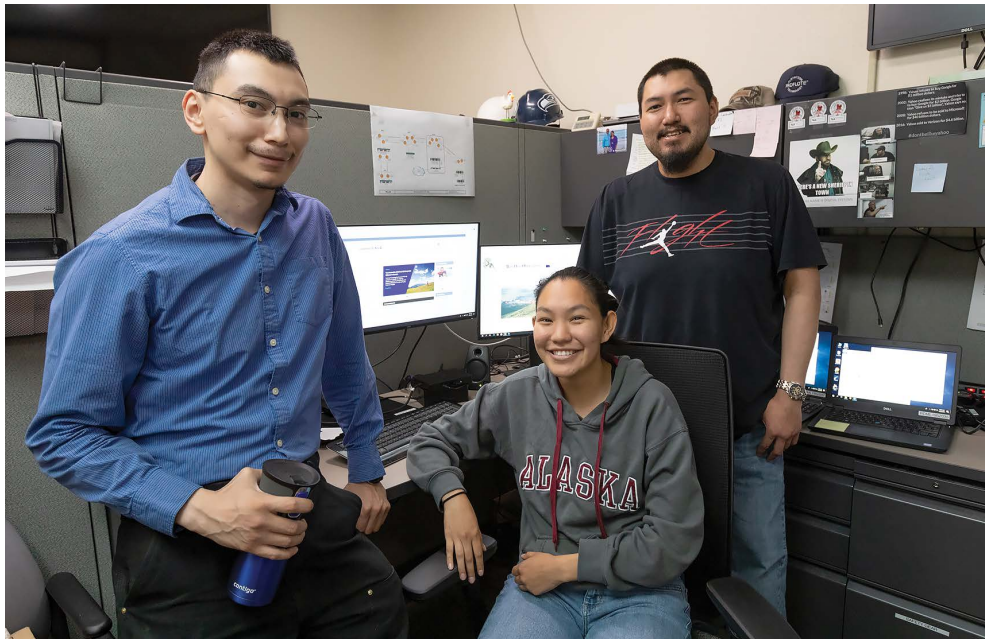


NANA shareholder Laura Atoruk works on the award-winning food service team at Red Dog.

vice president of marketing and communications at NMS. "After work, everybody goes home safely to their family, friends, and community." Being safe at work generally translates to being safe at home. NMS' strong safety culture is built on the belief that good safety practices eventually turn into positive habits.

For NMS, an excellent safety record is key to their bottom line, helping keep contracts, win new business, and employ more NANA shareholders than any other company. From October 2018 through September 2019, NANA shareholders made up 81% of the NMS Red Dog workforce.

At Red Dog Mine, NMS runs the commissary and billeting, and also provides food service, housekeeping, and janitorial services for our crews. ■



The Red Dog Digital Systems department has eight full-time employees and one intern that oversees Red Dog Operations. Pictured left to right, Jesse Janitscheck, Systems Technician Intern Jada Sheldon, and Billy Ticket.

Department Spotlight: Red Dog Digital Systems

The Red Dog Digital Systems (DS) is part of a larger Teck DS Enterprise Support Team. DS is designed to store, process, and communicate information in digital form. Red Dog Operations (RDO) DS support team is led by Adrian Anzulovich and comprised of Jesse Janitscheck, Database Coordinator; Mike Richardson, Network Communications; Robin Bailes, Senior Systems Analyst; Wes Stephens, Systems Analyst; Billy Ticket, Craig Bieseimeier, and Hamed Diawara, Information Systems Technicians.

The DS team is generally viewed as the ones located in the Red Dog Service Complex who reboot the IT system or come to employees work stations to reinstall new software. However, the team does more than install software and reset employee passwords, and they are vital to the success of the Operation with tasks that occur behind the scenes that many are not privy to.

While the team's daily responsibility is dedicated to developing and supporting DS applications used at RDO, it's not uncommon for a team member to also be seen on a helicopter flying to Smiley Peak to be dropped off to climb the radio tower and troubleshoot a connection. When a report of loss of network connectivity comes in, the team jumps into the Mystery Machine (Sprinter Van) to investigate and rectify the issue. If RDO requires a connection to one of its offices or buildings, this team is responsible for making sure those fiber splices are fused with perfection.

RDO DS is unique in the responsibilities they have to support the Operation when compared to other site support teams. The team is made up of not only people versed and familiar with computers, but commercial fishers, chefs, folk musicians, accountants, and other unique individuals, committed to serving RDO's technical support needs and ensuring that the operation is successful. ■



Left to Right: Red Dog's 2019 interns – Kimberly Frey, Aaron Towarak, Stephen Arant, Carl Ravenscroft, Jada Sheldon, and Andrea Adams.

Investing in the Next Generation: Red Dog's 2019 Summer Interns

An internship allows youth to gain a first-hand experience and understanding of what it's like to work in the business world.

Supported by various departments, Red Dog Operations (RDO) hosts a number of interns annually. This past summer, 10 interns, based at the mine and in the Anchorage office were hired to support Finance, Community Relations, Mill Maintenance, Mine Operations, Materials Management and Digital Systems. Throughout the duration of their employment with Red Dog, interns learned about the logistics operations, different safety practices and discipline related trainings, schematics, project management, relationship building, and community engagement.

Andrea Iqitqiraq Itiuliq Adams

Andrea, from Noatak, has been the Supply Chain Management Intern each summer since 2016. As a student at the University of Alaska Anchorage, she studies Global Logistics and Supply Chain

Management, a degree program she became interested in during the summer of 2015 when she worked in the warehouse at Red Dog. Receiving hands on experience in logistics operations, sealift, and coordination with third party vendors, Andrea notes her internship related directly to her field of study and lead to an offer for a full-time position at Red Dog at the end of the 2019 season.

Kimberly Aqpik Frey

Kimberly, from Nome and Sitka, was the Maintenance Intern and is a senior at the University of Alaska Anchorage, studying electrical engineering. Her interest stems from her enjoyment and understanding of mathematics. Kimberly notes her internship experience at RDO related to her field of study 100% and provided her a better understanding of the training and protocols required in this field.

Aaron Iqqagin Towarak

Aaron, from Unalakleet and Noorvik, was the Electrical Engineering Maintenance Intern, a position

he's worked each summer since 2017. Aaron also interned at the Port in 2009, 2011, and 2013; and in the mill from 2014 to 2016. As a junior at the University of Alaska Anchorage, he studies electrical engineering, a degree program based on the experience and skills he developed during his internships at Red Dog. Aaron notes his internship directly related to his field of study, assisting him in learning to read blueprints and schematics and build interpersonal relationships.

Zebadiah Fannin

Zeb, a Mine Technical Intern, is a junior at the University of Alaska Fairbanks where he studies Mining Engineering. He became interested in mining engineering after spending summers prospecting. He notes his internship was directly related to his field of study, providing him the opportunity to develop skills he'll be utilizing immediately after graduation. Zeb notes his internship strengthened his project management skills and interdepartmental interactions.

Carl Ravenscroft

Carl, born in Kotzebue and raised in Fairbanks, was the Grade Control Intern for the summer 2019 season. He held this same position during the summer 2018 season. As a junior at the University of Alaska Fairbanks, he studies Earth Sciences, a degree program that initially interested him after experiencing the UAF GeoFORCE Alaska program, a four-year, field-based, summer geoscience program for high school students from the Northwest Arctic Borough and Alaska's North Slope. Carl notes his internship related to his geology studies, providing him the opportunity to strengthen his skills in data management.

Jada Naulik Sheldon

Jada – from Anchorage, and whose grandparents are from Ambler – was the Systems Technician Intern in the Digital Systems department. As a sophomore at the University of Alaska Fairbanks, she studies computer science, a degree program

she's been interested in her entire life. Jada notes her internship provided her the opportunity to work with a lot of computers and people, strengthening her skills not only in computer science but also in building relationships.

Robert John Qinugan Sheldon

Robert, from Noatak, was a Community Relations Intern based in the Teck Anchorage office. As a freshman at Huntington Prep in West Virginia, he plays competitive basketball with hopes to receive scholarships to play in college. He became interested in this program when he realized playing basketball in Alaska wasn't giving him enough exposure to college programs. This relates to his summer internship because in both situations, he has to stay focused and dedicated each day. Robert notes, one of the most important things he learned from his internship was strengthening his communication skills, something he knows will help him in the long run.

Brennen Tyrone Norton

Brennen, from Kivalina, was a Community Relations Intern, based in the Teck Anchorage office. He will be enrolling with the University of Alaska Anchorage for the fall 2020 semester, majoring in Professional Piloting, a degree program he became interested in after growing up in a small community and realizing the opportunities a career like this would provide him. Brennen notes his internship provided him the experience of having an everyday job, strengthening his communication skills, and learning to manage projects.

Other 2019 interns included:

- **Sarah Crumbley**
Accounting Intern
- **Stephen Arant**
Metallurgical Engineering Intern

It was a pleasure hosting all of the interns last year and we hope to see you back in 2020! ■

Camp Sivunniigvik: Sharing Values with Our Youth

Teck is pleased to provide ongoing support for Camp Sivunniigvik youth sessions. The summer camp is located about 30 miles east of Kotzebue on the northern part of the Kobuk River Delta – where the Ugrivik River meets the Melvin Channel.

Sessions focus on providing youth with a curriculum of activities based on core Iñupiat Illitqusait traditions and values – *that which makes us who we are*. Last summer, more than 100 youth from the region, ages 8 – 16, attended the camp between two five-day sessions.

The curriculum included activities such as fire safety, boating safety,

geography, wilderness navigation, and winter survival; archeology, artifacts, and environment; net making, mending, and setting; fish cutting, drying, and processing; identifying fish species; Elder storytelling; tracking and animal signs; small mammal trapping and research methods; berry picking and greens gathering; food preparation and domestic skills; knowledge of language; reading the river and the tides; maintaining campgrounds; cooperation and team building; daily reflection; and Iñupiaq dance.

“There is so much to be said about knowing, understanding, and embracing your identity,” said

Red Dog Community Investment Coordinator Verna Westlake. “It is significant in shaping your future. Know where you come from and you will know where you want to go.”

Camp Sivunniigvik was established and designed to provide a setting for Iñupiaq Elders to share with the youth and pass on traditions of the Iñupiat to future generations.

Organizers, supporters, and sponsors of the camp believe that these experiences will help combat substance abuse, bullying, and suicide by building on foundational Iñupiat values such as hope, love, cooperation, and respect. ■

HARVESTING SEEDS

(CONTINUED FROM FRONT PAGE)

in test plots constructed on rock stockpiles in 2017. The results of the tests show that very high quality, pure, live seeds collected in Noatak are sustainable in harsh conditions, similar to those experienced at RDO.

Harvesting seeds provides a fun business opportunity for people in Noatak in August. If you live in Noatak and are interested, the program will begin again in August 2020. Skills are transferable to other work areas at RDO, and additional work might become available as restoration continues. Best of all – it's open to high school students!

If you or someone you know is interested in participating in the August 2020 harvest program, please contact either: Alison Kelley at akelley@fuseandtraverse.com, or Jo Salatas at Johanna.Salatas@teck.com ■



Left to right: Community Relations Coordinator Kally Greene-Gudmundson, Environmental Technician Carla Nelson, and Kivalina Liaison Amanda Sage greeted convention-goers during the three-day conference.

Teck Attends 2019 AFN Convention

The 2019 Alaska Federation of Natives Convention in Fairbanks, Alaska, was held October 17 – 19 at the Carlson Center. Teck Red Dog community relations, environmental, and human resources departments hosted an informational booth during the three-day event alongside Teck's partner, NANA.

Teck is a proud sponsor of the AFN convention. ■

CARIBOU MONITORING

(CONTINUED FROM PAGE 6)

vehicle is stopped for more than 15 minutes due to the presence of a herd or group of caribou on or near the Port Road, they are required to complete and submit a Port Road Caribou Card to the environmental department documenting the number of caribou, direction of their travel, and if hunters were present, or if any activity impacted or changed the herd movement.

Furthermore, all haul road traffic is expected to stop operational activities when the herd is migrating



To minimize the operation's impact on migrating caribou herds and local subsistence practices, Red Dog has begun monitoring wildlife activity along the haul road.

through the area, and remain stopped until the herd (or group) has crossed the haul road, providing the

animals with a minimum distance of 300 feet from all traffic. ■

RACE21™

RACE21™ is Teck's innovation-driven efficiency program. It's about taking a company-wide approach to renewing our technology infrastructure, accelerating our automation and robotics program, connecting our data systems to enable broad application of advanced analytics and artificial intelligence, and empowering our employees, with a focus on making real progress between now and 2021.

Successfully advancing initiatives like RACE21™ will be critical to our continued success, by driving positive changes in our performance and helping us remain competitive in a rapidly changing landscape.

"There are many benefits of advancing RACE21 at Red Dog Operation," said Les Yesnik, general manager of Red Dog Operations. "Most importantly, this program

will help us to maximize the value of this incredible ore deposit. With increased revenue from operating more efficiently, local shareholders, NANA, and Teck will all benefit."

Transforming Teck Through RACE21™

Mining's future will be built on a fully integrated digital platform. The technology and innovation team is working to build this platform for Teck, one that will increase safety and performance in real time, unlock knowledge about the resource base, improve planning for optimal resource extraction, and fully connect material and equipment flows.

Transformation Fundamentals

Analytics, automation, and digital tools are fundamental to the transformation underway across the mining industry, and implementation of these will be critical to achieving RACE21™ goals: unlocking significant economic value and building lasting competitive advantages for Teck.

Supporting cost reduction

RACE21™ is a business-critical program that is improving efficiency and productivity across Teck. This means it supports the company's competitiveness broadly, regardless of market conditions. RACE21™ initiatives are being implemented throughout the business and delivered at the lowest cost and with execution discipline. ■

RACE21™ will:



Renew

Modernize Teck's technology foundation



Automate

Accelerate and scale autonomy program



Connect

Develop digital platform for sensing and analytics



Empower

Design future operating model to empower our employees

Optimizing Mill Production through RDO4.0

BY CHRIS VAN ARSDALE

What is RDO4.0?

The goal of RDO4.0 is to improve the overall value of Red Dog Operations (RDO) by optimizing mill production. To achieve this, machine learning models are being developed to predict and optimize mill throughput and recovery.

These models will be used as an advisory tool for the mill operations and technical teams. Working together, while combining their skills and experience with this information, the mill operations team will be able to make the best operating decisions to produce the most efficient mill performance for each shift.

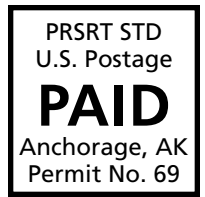
Integrating Everyone's Expertise

RDO4.0 identified 24 quick-win initiatives to deliver immediate value to the operations. These initiatives were quickly adopted by the mill technical metallurgists who, with support from Drew Vance (McKinsey), rapidly took

action to implement them. Critical parts of the supporting work, needed to accomplish these initiatives, required completion during the recent Zero Tonnage Event (ZTE).

The entire RDO team banded together to achieve the planning and execution required, completing the necessary work in under a month. The RDO4.0 team would like to commend the following individuals:

- **William Brewster** in Mill Maintenance Planning quickly coordinated and integrated the initiative work into the overall ZTE plan.
- **Cliff King, Miles Michel, and Maggie Dunleavy** with Purchasing and Logistics handled the ordering and rush shipment of the materials and labor needed for the ZTE, ensuring everything needed made it to site just in time.
- **Mike Owens and Trent Farnsworth** from the Projects team managed the ZTE work execution, ensuring the work was completed safely and on time. ■



Employee Spotlight

Tamara Aluqtuq Wells – RDO Blaster

My name is Tamara Renee Wells, and my Iñupiaq name is Aluqtuq. My parents are Homer Wells, Sr. and Shirleen Smith and I'm from Noorvik, Alaska. I have been working at Red Dog Operations in the drill and blast department as a blaster since September 12, 2019. Before working in drill and blast, I worked in the mill as an operator-in-training for six months.

To get the ore out of the ground, Red Dog must first fracture the rock so it can be excavated and hauled out. This is where the drill and blast department comes in. What I do as a blaster is prime the drilled holes – priming is connecting the detonators to two wires and dropping them into the blast holes. After the drill and blast department has primed each hole, they are filled with a gooey chemical mixture called an emulsion. Once everything is done, the pit is cleared and the blast is detonated. It's fun to watch, let alone press the button. What I like about this department is that I'm always outside. I am also the only female worker on the crew!

Growing up, I always heard about Red Dog and had my mind set on a career there. After I graduated high school,

I worked at the Noorvik Clinic as a dental assistant for about a year, then accepted a position in the mill at Red Dog. I didn't have any training or education



and learned everything on the job. Red Dog has great scholarships, training, and educational programs that I feel fortunate to be a part of! I often tell my friends and family about the opportunities on site and encourage them to apply. More people need to be aware of and take advantage of these opportunities.

My hobbies include basketball, hiking, being outdoors, hunting, and hanging out with my friends and family. The advice I would give my teenage self is to drink more water and go to college. I am my happiest when I am out in the country either hunting, picking berries, or just having a picnic with my family. A fun personal fact about myself is that I was on my school wrestling team from second to ninth grade. ■