Oil and Mining Solutions at the University of Alaska

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University of Alaska
House Resources Committee

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Our Mission

Providing
Industry Solutions

- ✓ Quality Education
- ✓ Engineering Workforce
- ✓ Research and Business Partnerships

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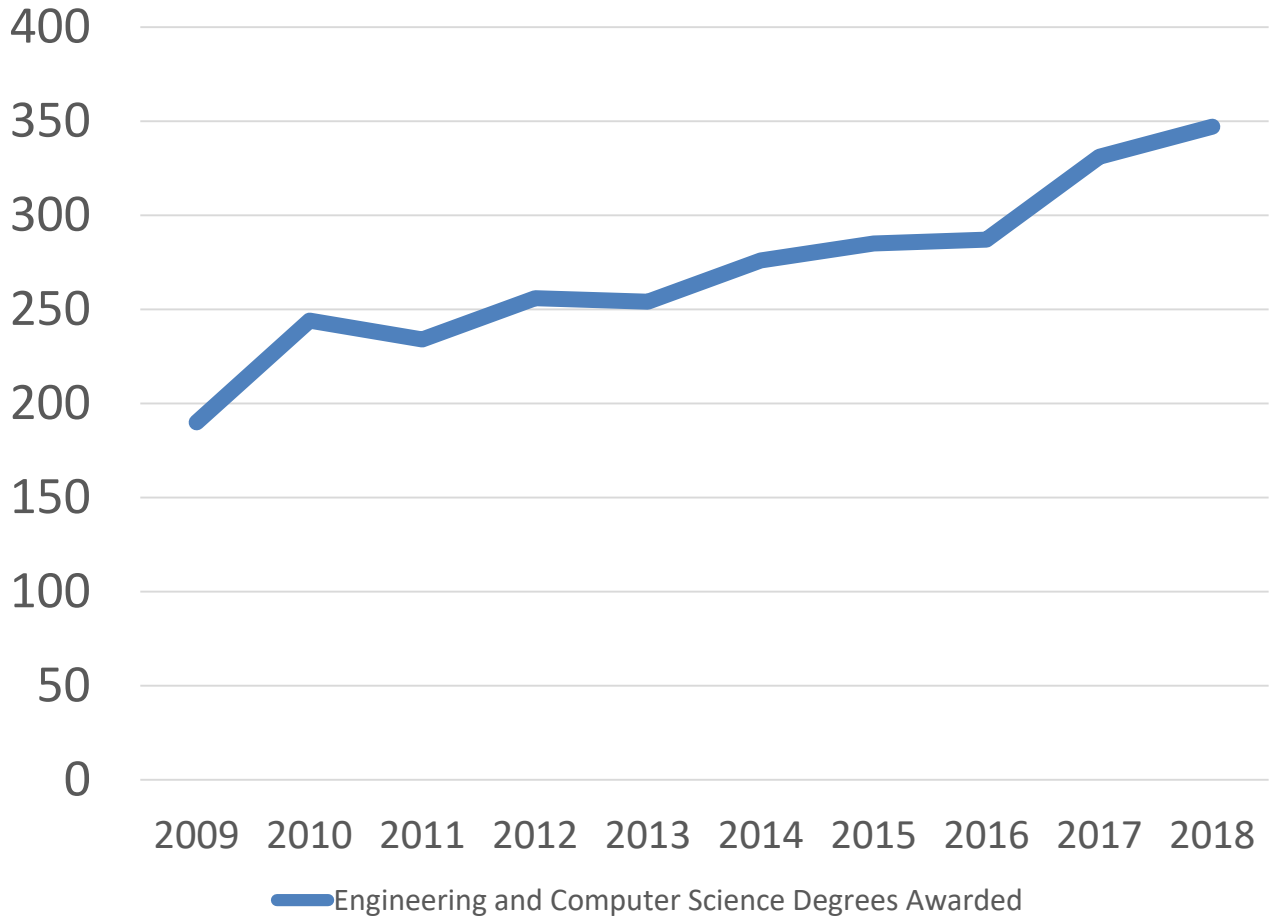
Student Success

Engineering and Computer Science

(*Bachelors and Master Degrees*)



Over <u>2,700 degrees</u> awarded in past 10 years

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UA Engineering: Alaskan Experience

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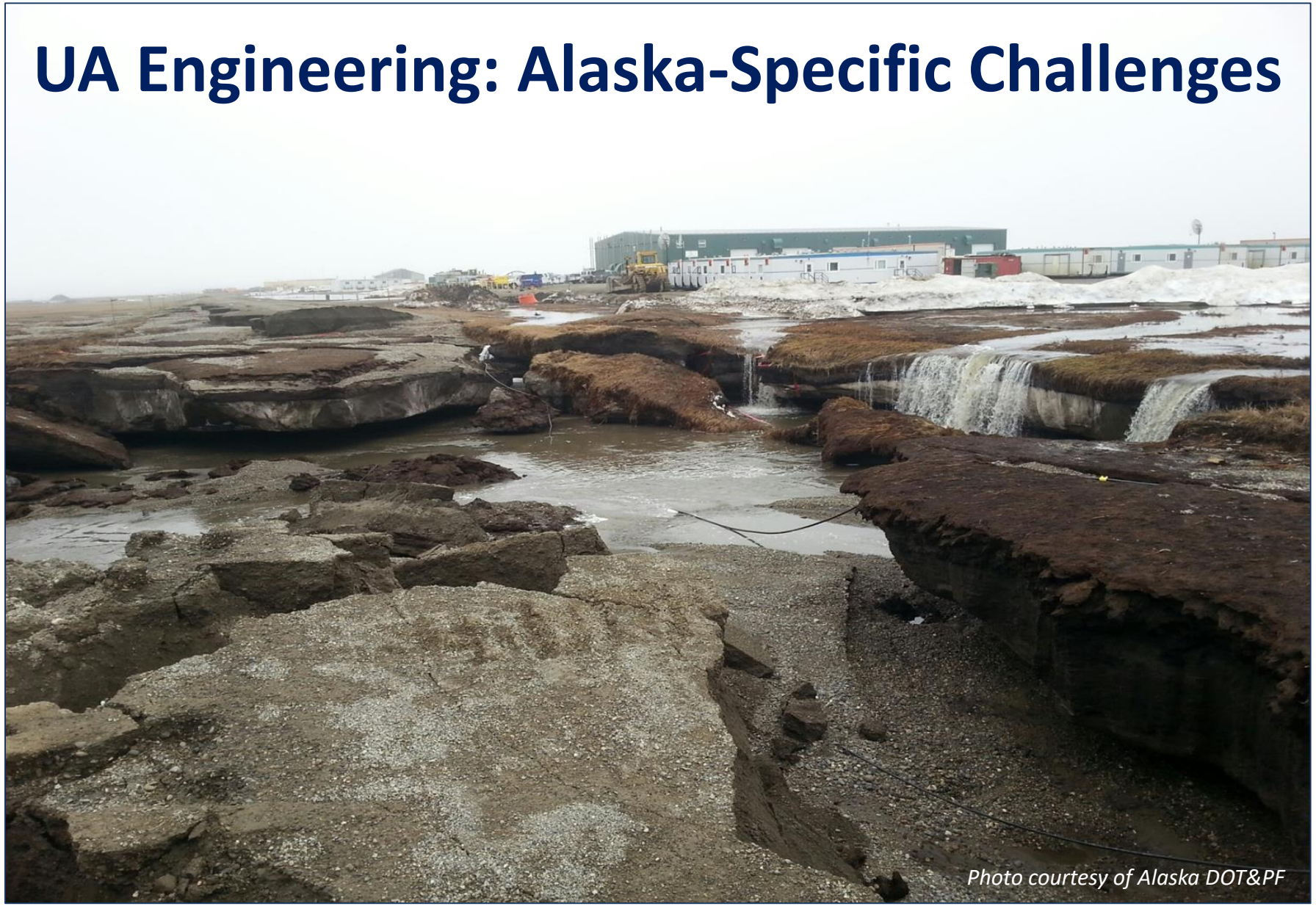
UA Engineering: Alaska-Specific Challenges



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Just a *glimpse* of what UA offers....

- Civil Engineering, BS, MS, Ph.D
- Computer Engineering, BS, MS, Ph.D
- Computer Science, BS, MS, Ph.D
- Electrical Engineering, BS, MS, Ph.D
- Geomatics, AAS, BS
- Geological Engineering, BS, MS, Ph.D
- Mechanical Engineering, BS, MS, Ph.D
- Mining Engineering, BS, MS, Ph.D
- Petroleum Engineering, BS, MS, Ph.D
- Project Management, MS
- Engineering, Ph.D
- Occupational Safety and Health, AAS, BS

- Entry Level Welding, O.E.
- Construction Management, AAS
- Power plant Maintenance, Cert.
- Drafting/ Design Technology, Cert., AAS
- Diesel/ Heavy Equipment, Cert.
- Diesel Power Technology, AAS, UC
- Process Technology
  - Process Technology AAS
  - Instrumentation Technology, Cert.
  - Safety, Health and Environmental Awareness Technology, Cert.
  - Mining Mill Operations, O.E.
- Information Technology
  - IT Specialist: Computing Technology, AAS
  - IT Specialist: Network and Cybersecurity, AAS
  - IT Specialist: Network and Systems Admin, AAS
  - Information Technology Specialist, Cert.
  - Computer Information Technology *(Minor)*

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MINING & GEOLOGICAL ENGINEERING

- Vital workforce and professional expertise for developing Alaska's resources
- Dates back to University's Founding
- Job placement rate nearly 100% after graduation
- Over 65 students currently enrolled on these tracks at UAF

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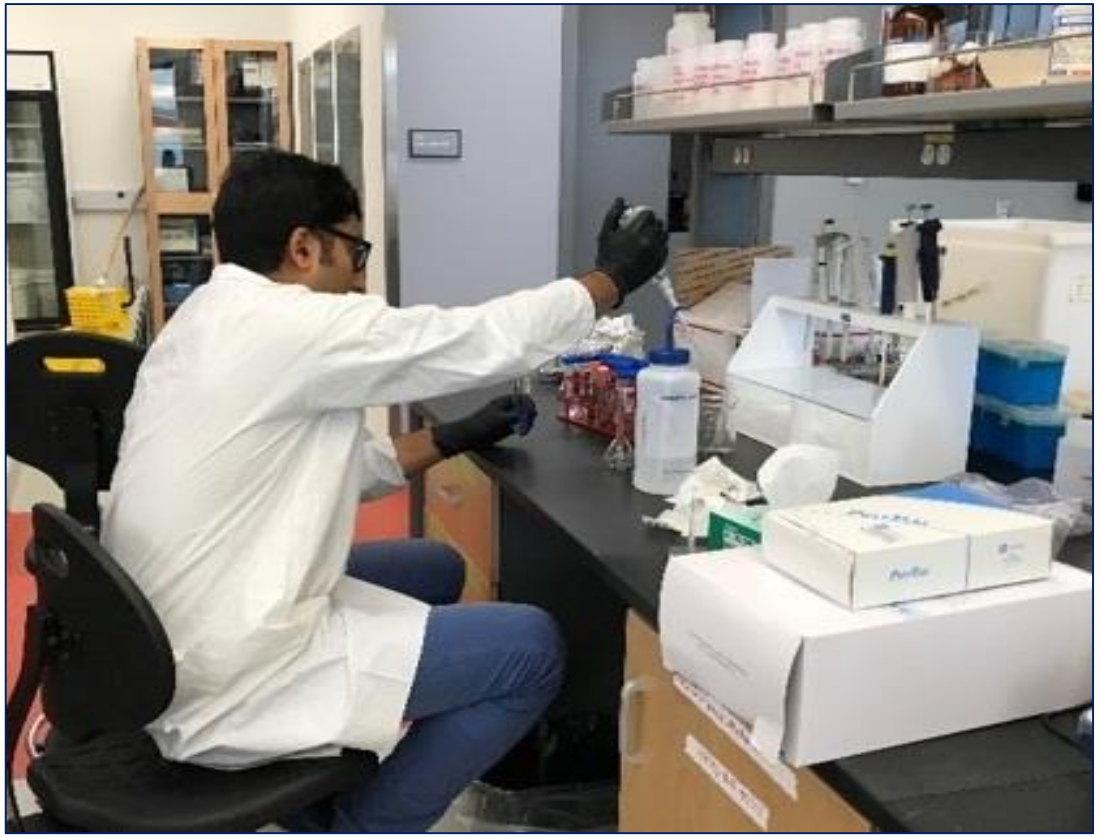
Arctic Mine Water Remediation at Red Dog Mine

Dr. T. Ghosh, Dr. R. Ganguli, Post Doc, S. Dev, Grad Students F. Dehlmi

Goal: *Use bacteria from mine site to remedy acid mine water at Red Dog Mine*

Benefits: *Ecologically sound remediation method, and supports resource development in the Arctic on state and ANCSA land holdings*



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Increasing Flotation Yield

Dr. T. Ghosh, Dr. R. Ganguli, Post Doc, S. Dev,
Grad Students F. Dehlmi

Goal: *Improving metal recovery in the mineral processing plant*

Benefits: *Directly improves mine economics and helps sustain a key economic driver in the state.*

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Opportunity and Demand for Skilled Workers

World-class underground Surface Mine Training Facility

Alaska Miners Assoc. identified priority occupations:

- Mill Process Operators
- Mechanics
- Underground Miners

UA maximizes industry partnerships, federal grants, and philanthropic giving to train Alaskans for resource jobs

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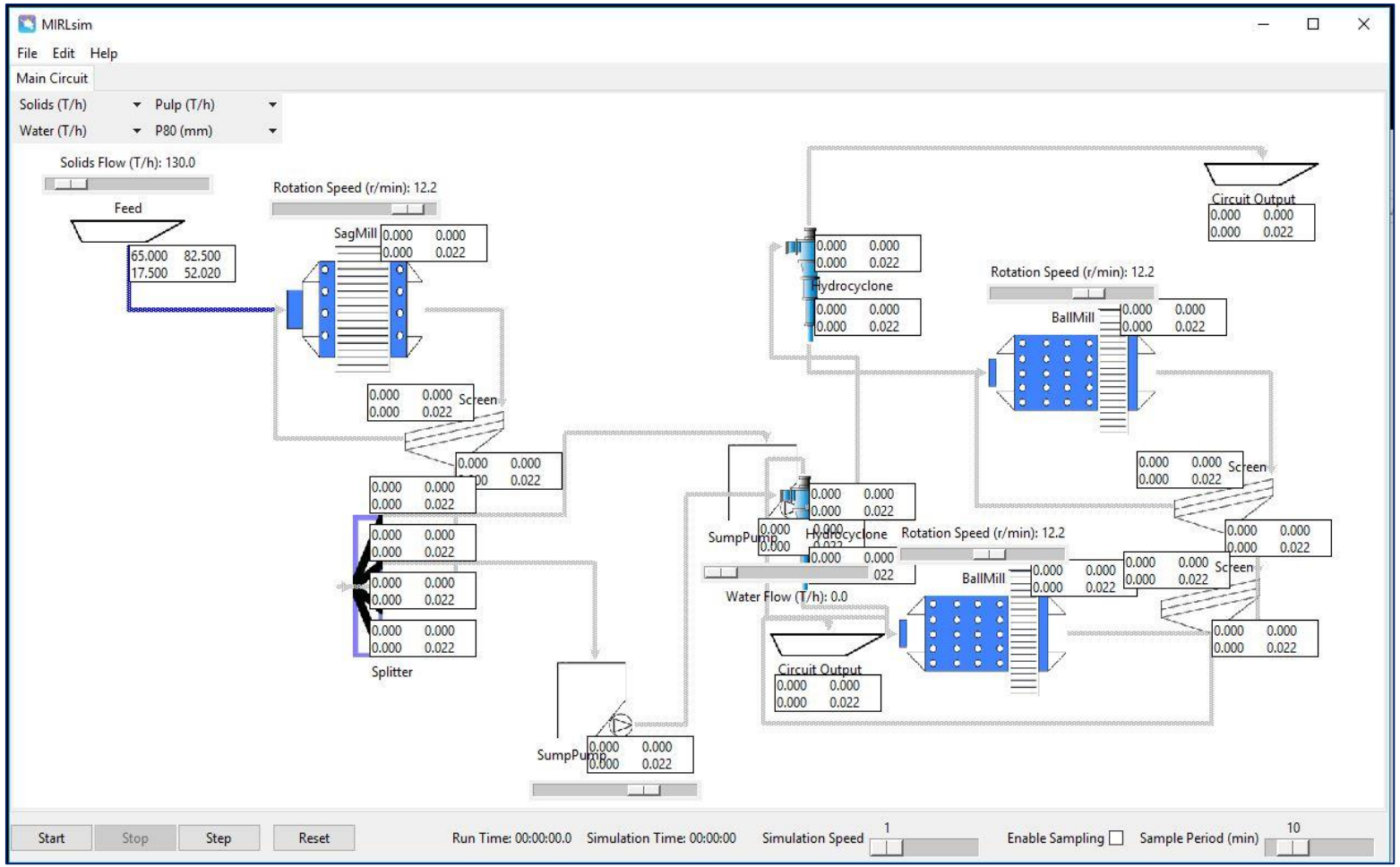
Training Mill Operators

Mineral Industry Research Lab



- Nation's only mill operator training program
- Simulator developed by UA faculty used industry and internationally in Brazil and Mongolia

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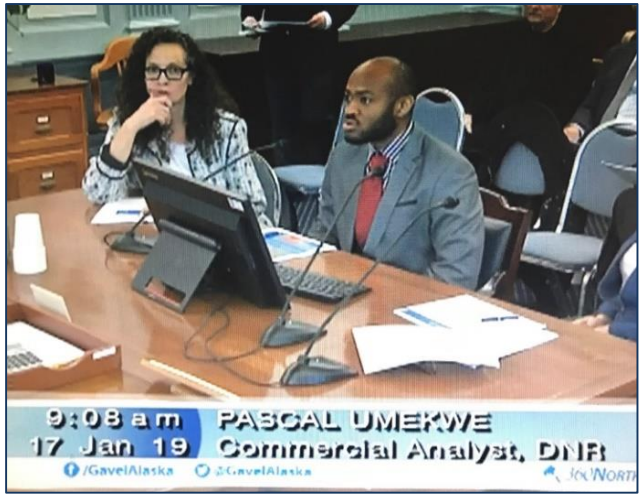
PETROLEUM ENGINEERING

- Education for oil & gas development in the home of largest oil field in North America
- 98% of our graduates placed in oil & gas industry after graduation
- Over 65 students currently enrolled on this track at UAF



Our alumni advise legislators and state departments

Pascal Umekwe *(Ph.D. UAF '18)*

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Senior Design Classes: Academics + Real World

Petroleum Enginering *(PETE)* students are working with AGDC to develop a virtual "Data Room" for Alaka natural gas resources

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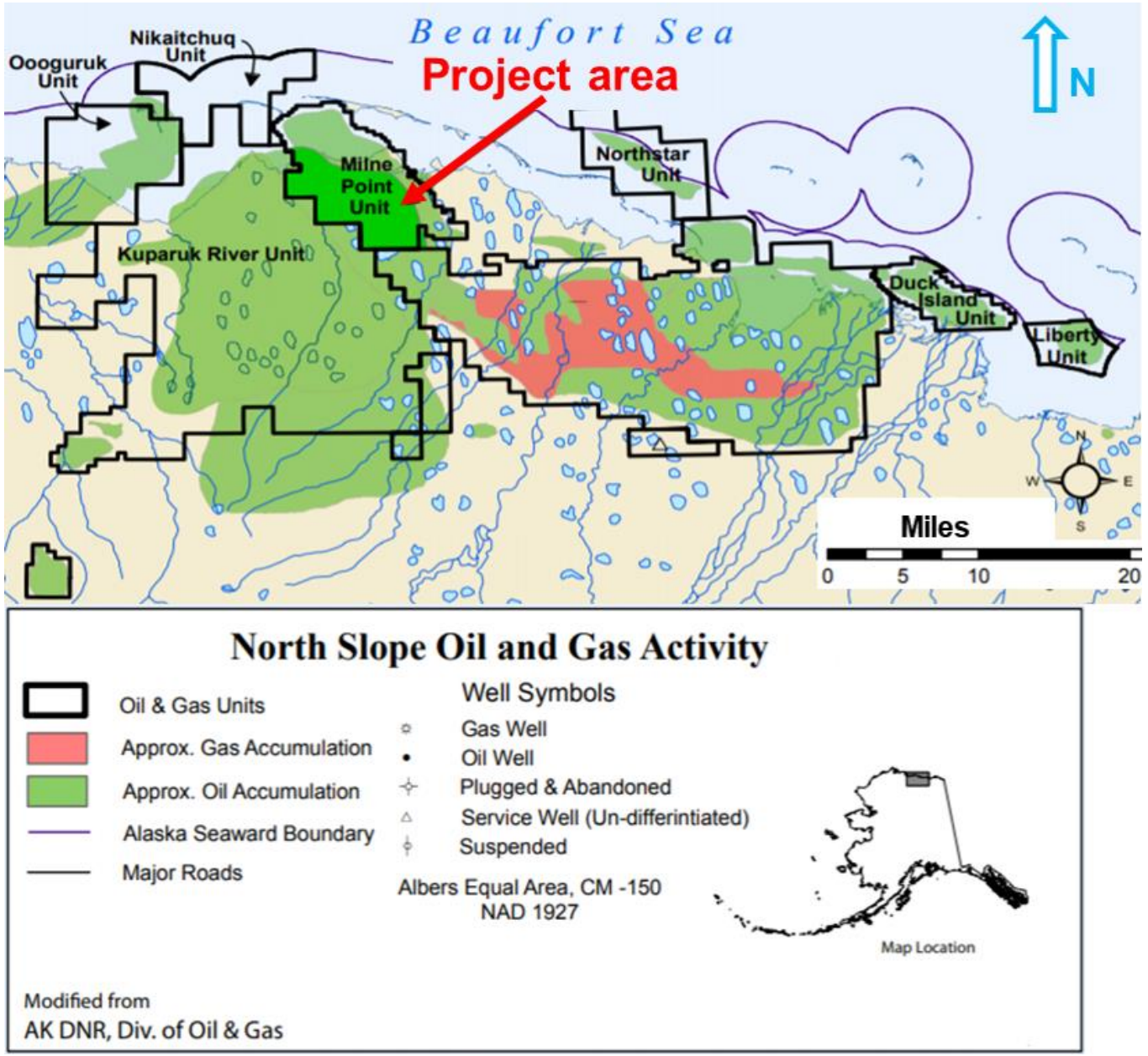

Partnership

Hilcorp

UAF College of Engineering & Mines

Industry-driven research leveraging federal funds

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Enhanced Oil Recovery

Dr. Abhijit Dandekar

First ever field pilot on Alaska North Slope to validate use of Polymer Floods

Potentially produce 10% more heavy oil than current technology used on the North Slope

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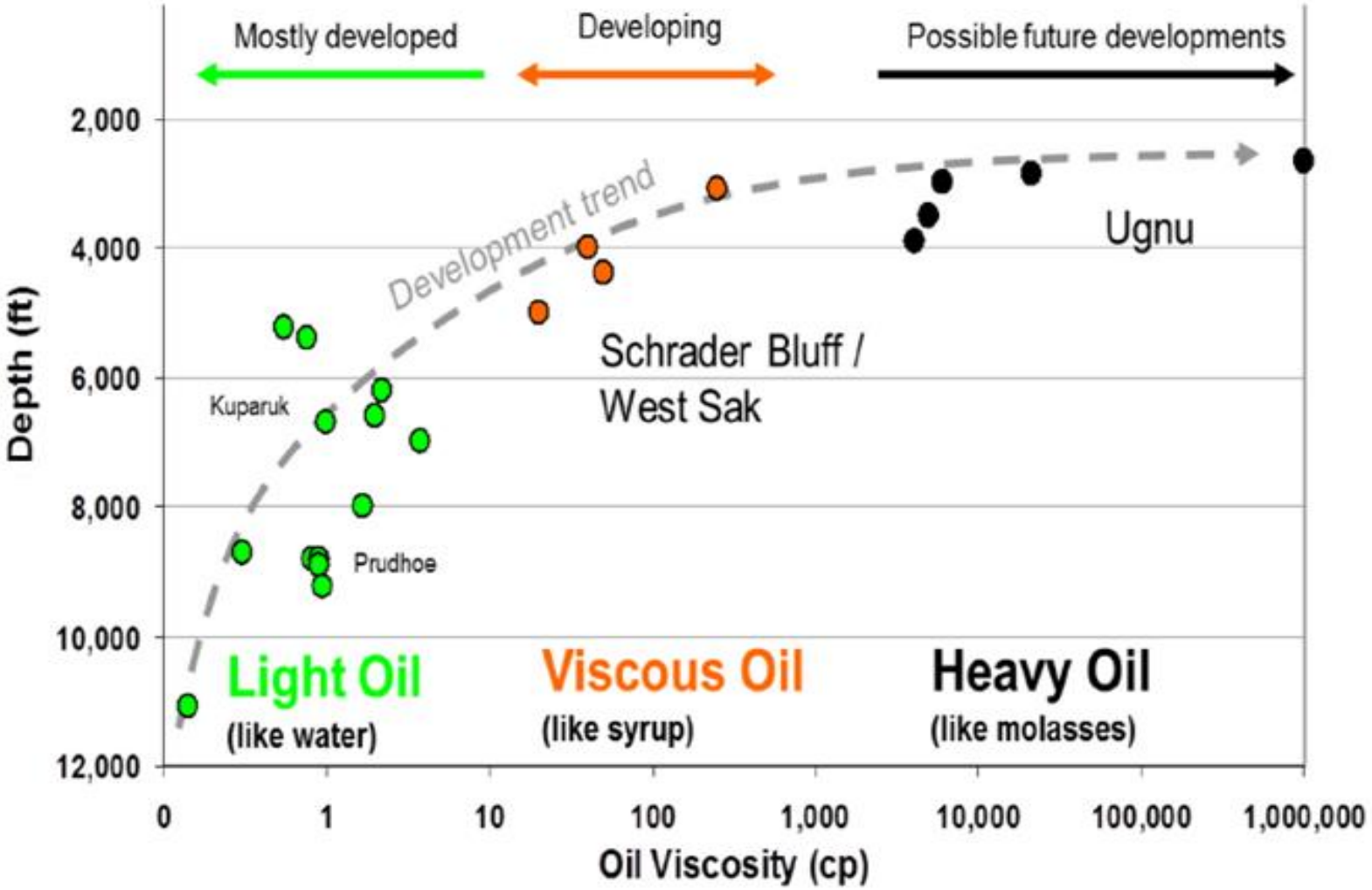
Current Proposal: Advanced Oil Recovery *(AOR)*

Polymer-Alternating-Solvent Injection



UAF + Hilcorp are pursuing an $8M research grant from DOE/NETL to develop technology for extracting heavy oil from Ugnu

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Energy Research Consortium of Alaska *(ERCA)*

Consortium Kick-off Meeting
October 20, 2017

- Pair industry with university researchers and assets
- Collaboratively address research needs and gaps
- Further technology that shapes the future of energy
- Fully utilize the expertise of University of Alaska

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Oil and Changing Permafrost

ERCA Consortium

Permafrost Science and Engineering

- Permafrost effects on infrastructure – roads, pads, pipelines, well heat
- Research funding consideration by 2 major companies

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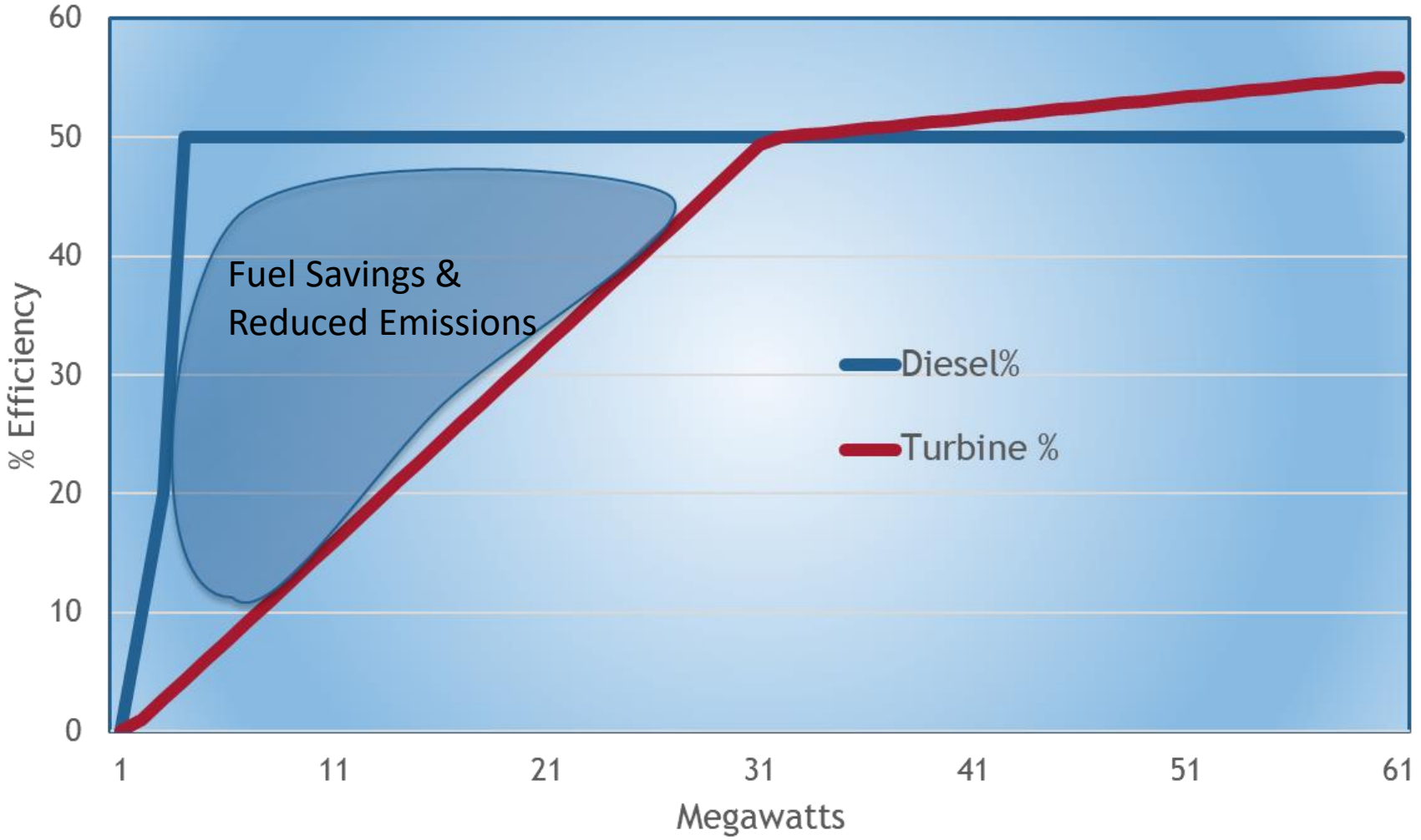
Prospective Research: Employing Coal-Syngas to Promote Renewable Energy Sources



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Resource Industry Training Programs

Sponsored by UA

University of Alaska has trained over ***1,500 workers*** for oil & gas and mining industries in past five years

Skilled **Workforce Development** for Alaskans - with proven results

85% of MAPTS graduates are still employed 1 year after graduation
(Education Northwest, Final TAACCCT Report, 2018)

Mining and Petroleum Training Service - Alaska Process Industries Careers Consortium

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