

PUMP STATION 1 RESPONSE

LOW FLOW CHALLENGES



Overview:

- Tom Barrett, Alyeska President
 - What happened: Winter shutdown — extraordinary response
 - What we are doing...
 - Reviewing pipeline reliability factors
 - What we need...
 - More oil — reverse declining throughput trends

Perspective from Pump Station 1 response:

- Brendan LaBelle-Hamer, Pump Station 1 Operations & Maintenance Supervisor

Response overview:

- Betsy Haines, Oil Movements Director

What challenges lie ahead:

- Low flow challenges

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- Incorporated August 14, 1970, to design, build, operate and maintain the pipeline, pump stations and Valdez Marine Terminal.
- Owned by five oil pipeline companies.
- Alyeska personnel and contractors continually monitor and operate TAPS so oil flows safely, efficiently and in an environmentally sound manner.
- Approximately 12 percent of the nation's domestic oil production is carried on TAPS.
- 16 billion barrels+ of crude oil transported.
- 20,000+ tankers loaded.
- 640,000 barrels throughput per day (December 2010).
- Oversight by 22 local, state, federal regulators.

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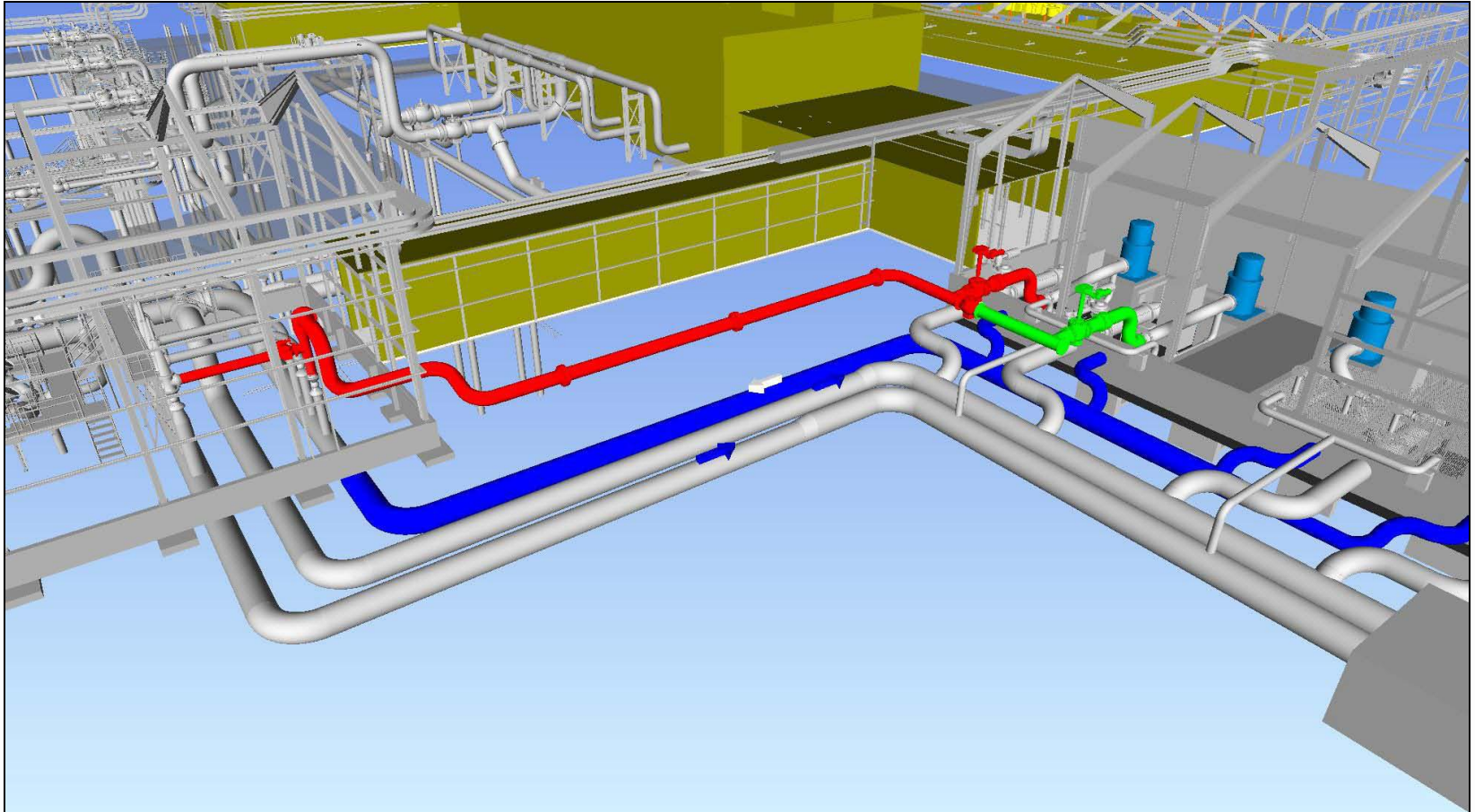
Our response...

- A coordinated response in the days following the discovery of the leak included personnel from Alyeska, TAPS contractors, and state and federal agencies. Together, people worked around the clock to restore operations.
- At the peak of the response, more than 600 people responded to the incident, including approximately 375 people at Pump Station 1.
- A complex project of this scale would normally take months of planning and preparation. Crews restored flow in a short timeframe, under very challenging weather conditions.
- Reviewing pipeline reliability factors

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Bypass piping design...



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Our response...



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Our response...



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Our response...



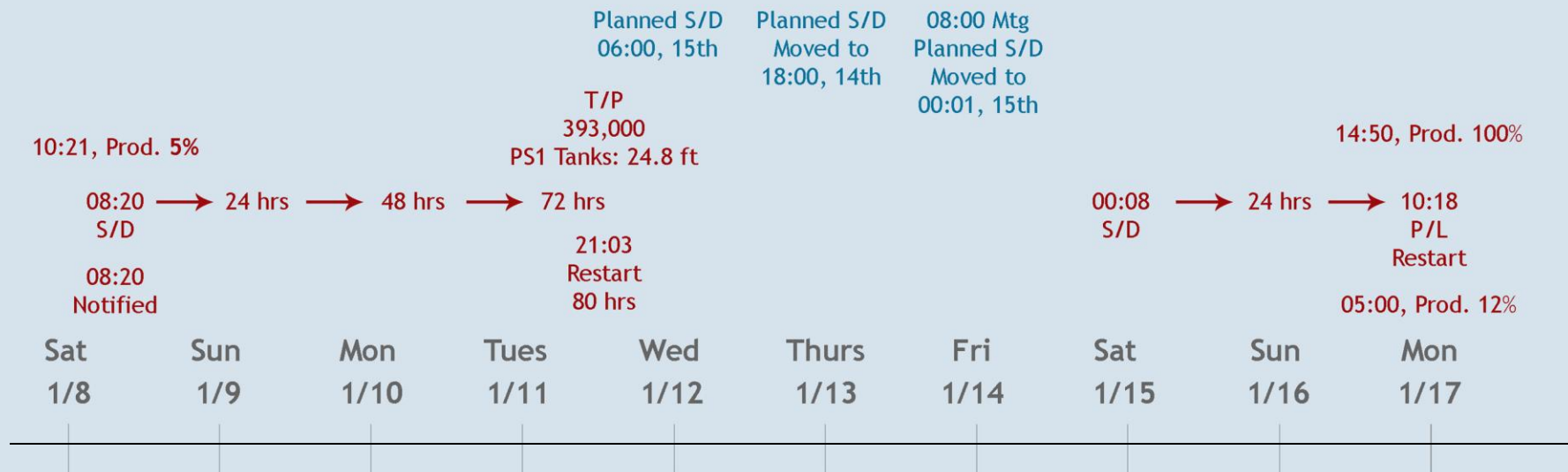
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- TAPS was designed as a warm oil pipeline
- Circumstances have changed:
 - Throughput and crude oil temperatures continue to decline
 - At 550,000 barrels/day portions of the pipeline will be at 32°F during the winter months
- Slower velocities and longer transit times
- At 1 M Barrels/Day — 9 days Pump Station 1 to Valdez
- At 600,000 Barrels/Day — 15 days Pump Station 1 to Valdez
- At 500,000 Barrels/Day — 18 days Pump Station 1 to Valdez
- At 300,000 Barrels/Day — 30 days Pump Station 1 to Valdez
- Lower crude oil temperatures
- Less turbulence with lower flow rates
- Tendency for separation of water and solids transported with the crude oil
- Wax deposition
- Frost heaves

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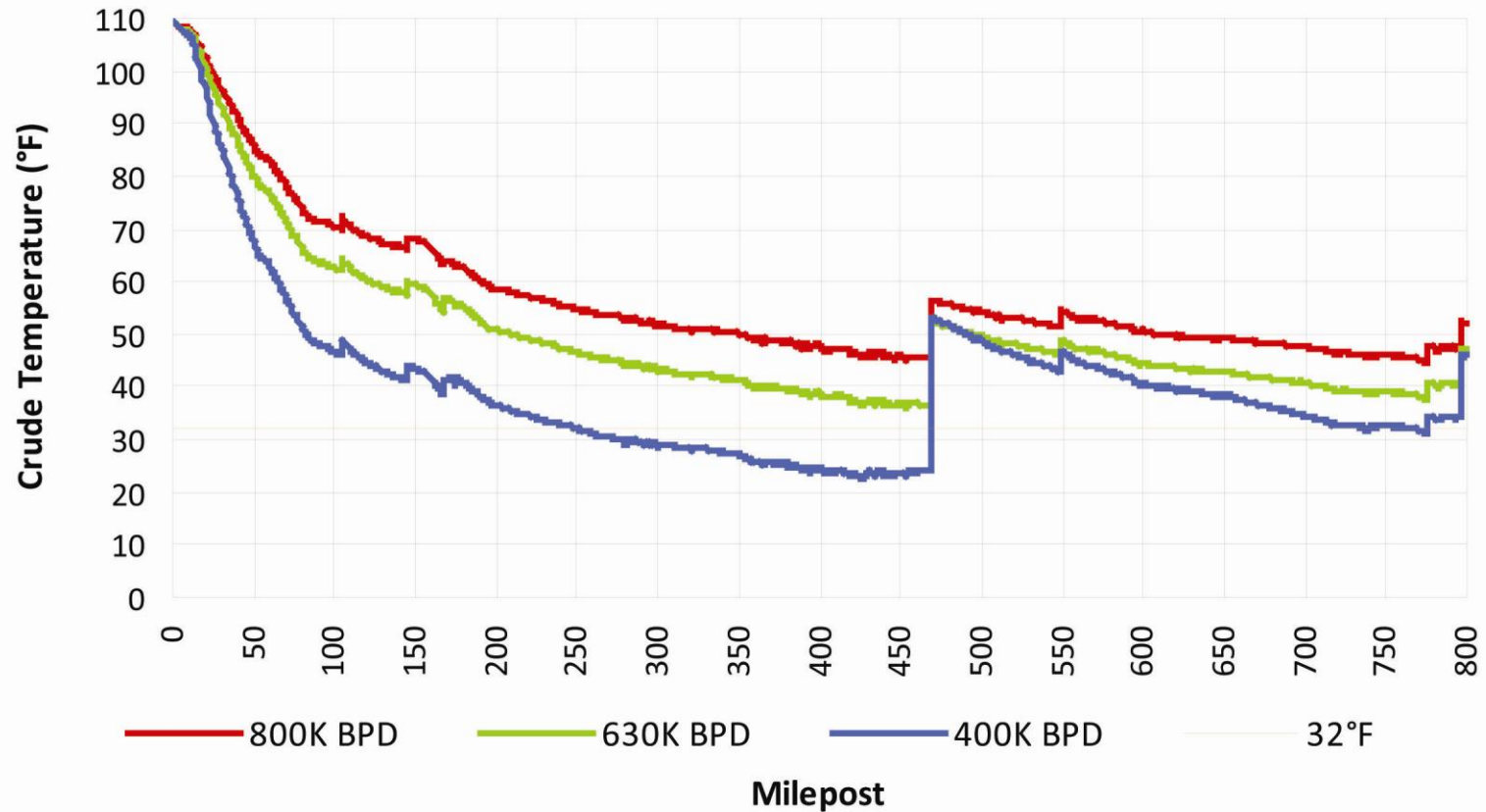
Pig 113
Rec'd
VMT
18:40

Pig 1
Rec'd
PS08
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Pump Station 1 Booster Pump Piping Incident

January Crude Temperatures

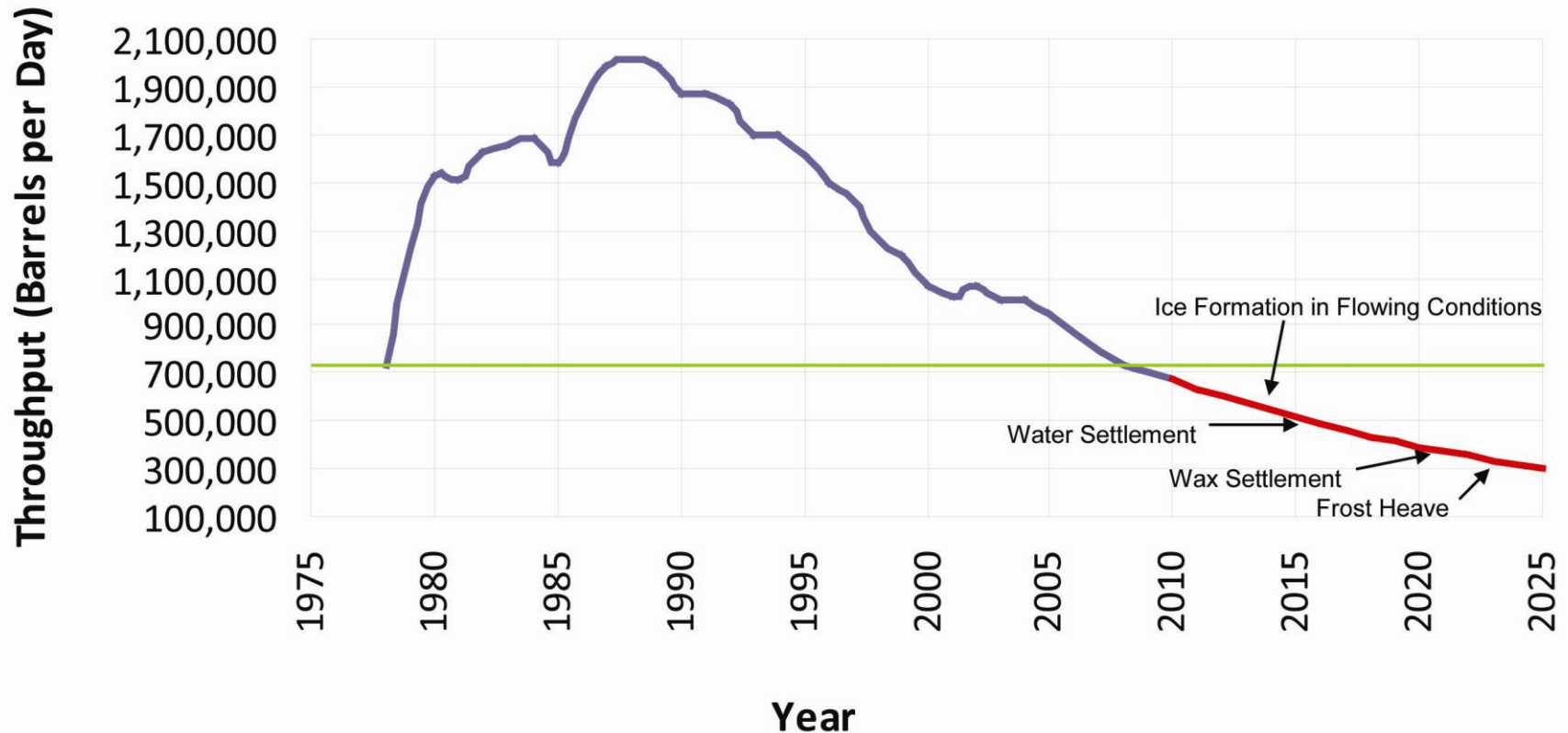


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January Average Throughput



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- Adapting to declining throughput rates will affect every corner of our business —from moving the oil, to our infrastructure, to operations at the Valdez Marine Terminal.
- What happened:
 - Winter shutdown: extraordinary response by Alaskans to restore operations
- What we are doing:
 - Reviewing all pipeline reliability factors
 - Flawless operations will continue to be our goal
- What we need:
 - More oil production into TAPS
 - Reverse the downtrend of throughput declines

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