COPPER RIVER WATERSHED PROJECT
Voices for a wild salmon economy

June 27, 2011

Sam Hall
U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration
Office of Pipeline Safety, PHP-20
2180 Adventure Lane
Maidens VA 23102

Dear Mr. Hall,

The Copper River Watershed Project is pleased to have been the recipient of a PMHSA Technical Assistance Grant, and appreciates the support from PHMSA staff that made our work over the grant period possible. We were able to build a solid platform of stakeholders on which to base future work for citizen oversight of the Trans-Alaska Pipeline System (TAPS). As specified in our grant agreement, this letter contains a summary of project deliverables, which I discuss below.

Task 1. Create list serve of interested citizens and community leaders throughout the pipeline corridor. Today our list serve has 60 members. Collectively they represent the Yukon River Drainage Fisheries Association, a North Slope community member from Nuiqsut, a few residents of Fairbanks, Alaska, several tribal councils in the Copper River drainage, and dozens of citizens from our region. We will continue to build this list through the TAPS clearinghouse web site we created with PHMSA funding (see Task 5). We also plan to work with the Local Emergency Planning Committee in Copper Basin as a way of reaching an established network of residents for education about the possibility of a spill in the region and its implications. We held at least five teleconferences with stakeholders participating over the grant period. These calls helped brainstorm ideas about reaching out to new stakeholders, what monitoring techniques we could try to implement, data sources, and how to approach Alyeska Pipeline Service Company.

Task 2. Research TAPS maintenance and operations to identify the areas of greatest concern with regard to potential pipeline breach. To fulfill this grant work plan task, we did two things: held a stakeholder workshop in May, 2010, and commissioned research by Richard Fineberg, a long-time oil and gas policy researcher in Alaska.

P.O. Box 1560, Cordova, AK 99574 tel 907.424.3334 web www.copperriver.org

Attached are the agenda from the stakeholder workshop held in Copper Center in May, 2010, the advertising flyer, and the notes from the workshop. The agenda shows that we had great participation from State and federal regulatory agencies at the workshop.

Their presentations went a long way toward explaining their respective roles, introducing staff to stakeholders, and helping the public understand what the agencies do with regard to TAPS oversight.

Richard Fineberg produced two reports for the CRWP, one summarizing the April, 2010 TAPS spill at Pump Station 9 and one summarizing TAPS operating problems associated with Strategic Reconfiguration, low-flow, corrosion and in-line pipeline inspections, valve maintenance and replacement, and automated pump stations and pipeline control systems (see attached). While we still cannot say with certainty what elements of TAPS operations are the most vulnerable to mechanical failures, we learned about where the operational weaknesses lie and what areas bear monitoring.

Another presentation made during this meeting examined the statutory and regulatory legal framework governing TAPS oversight. An Anchorage attorney prepared an analysis of what oversight decisions and enforcement actions are authorized to be employed by regulators.

Task 3. Identify monitoring techniques and measures of safety that residents can apply to areas of concern, and facilitate citizen participation in public oversight. This was and remains the most challenging step. I had envisioned being able to identify specific elements of pipeline operations that we could track through reports collected by existing oversight activity. We are working toward that goal, but we're still at the point of educating ourselves on what information we should be looking for and what it means. Without resources to collect our own data, and not wanting to duplicate what's already being collected, we will be relying on state and federal oversight reports. I met with Mike Thompson of the State Pipeline Coordinator's Office (SPCO) in July, 2010 to go over the types of surveillances and assessments that SPCO conducts. This information is summarized in the SPCO's Annual Report, but the report also acknowledges that much of its contents are derived from Alyeska's own reports: "The information presented inthis section is sourced or condensed mainly from the 2008 MP-166 and Integrity Management Reports prepared by APSC" (p. 16, 2009 SPCO Annual Report). In the SPCO Annual Report section on "Pipeline and VMT Facilities Corrosion Monitoring," the report notes with regard to corrosion protection that "a number of inspections yielded good results", and mentions that "in some locations, only further investigations are being scheduled" yet this follows the statement that of those locations scheduled for further investigation, all "either require remediation or have been scheduled for remediation" (2009 SPCO Annual Report, p. 31). Why would APSC schedule only further investigation if remediation is either required or scheduled?

On page 27 of the 2009 Annual Report, SPCO states that "APSC reports that work conducted on this program in 2008 indicates that the overall health of the system is in satisfactory condition." Later on the same page is a discussion about piping to the tanks: "Piping to the tanks is not piggable and, hence, standard ILI techniques cannot be used, making this type of corrosion difficult to find. . . APSC reports that all actionable corroded areas (under PHMSA regulations) in the piping have been remediated." And yet in January, 2011 one of these below ground pipes developed a corrosion leak, causing the longest pipeline shutdown in the past decade under challenging winter conditions.

It's difficult to make an assessment from this discussion of whether conditions warrant concern or are mechanically sound. This limited presentation of information makes clear why stakeholders face the burden of educating themselves in the mechanical and engineering operations of the TAPS. Stakeholders in the region would be more comfortable seeing independent monitoring, and are consequently continuing to increase their capacity for doing so.

For future monitoring, we plan to track APSC's MP-166 Integrity Management reports that are submitted to PHMSA. We can use one of these from a given point in time to use as a baseline from which to compare future integrity management tests and look for anomalies.

Task 4. Initiate contact with Alyeska Pipeline Service Company (APSC) regarding areas of concern to determine whether there are ways to share data between citizen monitors and Alyeska. We have initiated a relationship with APSC, and three members of the company's staff attended our one-day stakeholder workshop in May, 2010. Since then I have met with Matt Carle, Communications Liaison in Anchorage in September, 2010 and with APSC President Tom Barrett in April, 2011. We requested to be added to the company's press release, e-mail blast, and newsletter e-mail lists, but that request has not yet been fulfilled. We also plan to ask Alyeska to designate someone for us to communicate with, and for regular (say, quarterly or semi-annual) check-in conversations.

Task 5. Develop outreach materials for sharing with other communities along TAPS corridor to help residents monitor pipeline operations and maintenance in other communities. The CRWP has produced a TAPS fact sheet about the need for citizen oversight; created a TAPS clearinghouse web site, www.akpipelinesafety.org, and produced a public display poster that we've used at the Copper River WILD! Salmon Festival and the Kenny Lake Fair to present at "at a glance" snapshot on the problems with TAPS operations and the need for citizen oversight. We also worked with a communications firm to develop PSAs for airing on regional public radio stations to educate stakeholders about the difficulty of cleaning up an oil spill in glacial, braided rivers and the consequent importance of prevention.

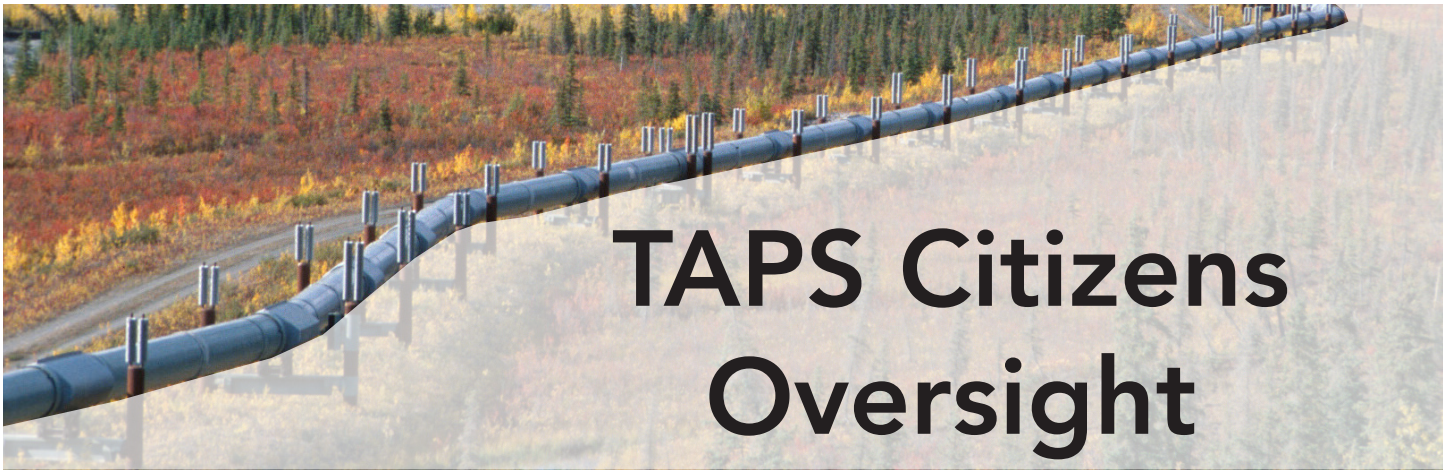
We are sincerely appreciative of the PHMSA's support for this stakeholder effort to encourage safer operation of the Trans-Alaska Pipeline. The grant was an initial catalyst for on-going citizen monitoring efforts. Thank you for your commitment to safe pipeline operations!

Sincerely,

Kristin Carpenter, Executive Director

Attachments:

May 2010 TAPS Stakeholder Workshop Agenda and Workshop notes
Fineberg Associates TAPS Briefing, May 2010
Fineberg Associates TAPS PS9 Spill Report, September 2010
TAPS Legal Framework Analysis, May 2010



TAPS Citizens Oversight

Stakeholder Workshop

May 5, 2010
8am - 5pm
Kluti-Kaah Memorial Hall

Purpose:

The Copper River Watershed Project has organized this workshop to facilitate exchange of information among stakeholders along the TAPS corridor, continue a dialogue on citizen concerns, and help develop a strategy for engaging citizens in monitoring safe pipeline operations.

This workshop is being facilitated by the Copper River Watershed Project with assistance from the U.S. DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA).

All are welcome and the meeting is open to the public.

COPPER RIVER WATERSHED PROJECT

Please contact the CRWP:
Kristin Carpenter (crwp@copperriver.org) or
Kate Alexander (kate@copperriver.org)
with any questions about this workshop. (907)424-3334

Copper River Watershed Project

Voices for a Wild Salmon Economy

Trans-Alaska Pipeline Citizens Oversight Stakeholder Workshop

May 5, 2010, Kluti-Kaah Memorial Hall, Copper Center

Purpose

The Copper River Watershed Project has organized this workshop to facilitate exchange of information among stakeholders along the TAPS corridor, continue a dialogue on citizen concerns, and help develop a strategy for engaging citizens in monitoring safe pipeline operations.

Workshop Schedule

8:00 a.m.	Coffee and continental breakfast	
8:30 – 9:00 a.m.	Welcome and Introductions	
9:00 – 9:30 a.m.	Purpose and outline of workshop, summary of past work	Kristin Carpenter, CRWP
9:30 – 11:45 a.m. (10:30 a.m. break)	Alyeska and agency presentations	Alyeska, BLM, SPCO, PHMSA
11:45 – 12:30 p.m.	Questions for presenters	
12:30 – 1:30 p.m.	Lunch provided	
1:30 – 2:30	TAPS statutory and regulatory parameters 101 (incl. Q & A)	Peter VanTuyn
2:30 – 3:30	TAPS areas of concern (Q & A)	Richard Fineberg
3:30 – 3:45	Break	
3:45 – 4:45	Synthesis and next steps	CRWP

Participants (partial list; this meeting is open to the public and all are welcome)

Aleyska Pipeline Service Company

JPO/BLM (J. Brossia, M. Wrabetz, B. Friedman)
JPO/State Pipeline Coordinator's Office (Ann Brown)
DOT/Pipeline & Hazardous Materials Safety Administration (Bill Flanders)
DNR/Petroleum Systems Integrity Office (Darcy Harris)

Ahtna, Inc.
Copper Basin residents
Copper Country Alliance
Cordova District Fishermen United
Gakona Village Council
Gulkana Village Council
Matt Obermiller, Tiekel River
Tazlina Village Council
Yukon River Drainage Fisheries Association
Peter VanTuyn, Attorney
Richard Fineberg, Research Associates

P.O. Box 1560 · Cordova, AK · 99574 · (907)424-3334 (ph.)/(907)424-4318 (fax)
www.copperriver.org · e-mail: crwp@copperriver.org

Here are some of the background questions we have asked participating agencies to address.

Alyeska:

- Please describe the company's interface with TAPS owners: how are spending decisions made and approved?
- Please identify operations data and other information resources currently available to citizens.
- What opportunities does Alyeska see for improving access to data on operations?
- Would Alyeska consider Copper Basin citizen involvement in inland spill response preparation (similar to PWS commercial fishing fleet trained responders)?

BLM/JPO:

- Please give an overview of JPO: what agencies are partners, what are their responsibilities with regard to TAPS, and how do they coordinate?
- Please provide the number of staff who conducted field inspections (or spent time in the field in other capacities) in 2009.
- What measures are being taken to ensure TAPS oversight and inter-agency communication are not affected by the move of BLM/JPO's Anchorage office to mid-town?
- Please identify agency information resources currently available to the public.

SPCO/JPO:

- Please give an overview of SPCO: what agencies are partners, what are their responsibilities with regard to TAPS, and how do they coordinate?
- Please provide the number of staff who conducted field inspections (or spent time in the field in other capacities) in 2009.
- What measures are being taken to ensure TAPS oversight and inter-agency communication are not affected by the move of BLM/JPO's Anchorage office to mid-town?
- How many DEC staff work on TAPS oversight? Can you provide a breakdown of time spent on spill prevention vs. spill response?
- Please identify agency information resources currently available to the public.

PHMSA:

- Please review principal agency responsibilities with regards to the TAPS, and discuss how PHMSA interacts with JPO.
- Please provide a briefing on TAPS corrosion issues.
- Please provide a summary of current TAPS in-line inspection equipment (PIGs) and procedures.
- Please identify agency information resources currently available to the public.

Copper River Watershed Project

Voices for a Wild Salmon Economy

Trans-Alaska Pipeline Citizens Oversight Stakeholder Workshop

May 5, 2010, Kluti-Kaah Memorial Hall, Copper Center

Participants:

Kate Alexander, CRWP
Jerry Brossia, BLM/JPO
Anne Browne, SPCO
Jeff Bruno, SPCO
Kristin Carpenter, CRWP
Matt Carle, Alyeska
John Craig, Ahtna Inc.
Katie Devenport, Gulkana Village Council
Cliff Eames, Copper Country Alliance
Lois Epstein, LNE Engineering & Consulting
Richard Fineberg, Research Associates
Bill Flanders, DOT/PHMSA
Bonnie Friedman, BLM/JPO
Lucus Gamble, attorney & Kenny Lake landowner
Dennis Gnath, ADF&G
Darcy Harris, DNR/PSIO
Shilah Kellso, Gulkana Village Council
Dan Lawn, retired DEC
Mike Levschakoff, Alyeska
Elmer Marshall, Tazlina Village Council
Judy McCormick, Alyeska
C.D. McCurry, Kenny Lake resident/business owner, CRWP board mbr.
Ruth McHenry, Copper Country Alliance
Carla Somerville, Kenny Lake resident, CRWP board member
Matt Obermiller, Tiekel Valley resident
Victoria Rego, Copper Center resident
Justin Selvik, SPCO
David Solomon, Ahtna Inc. Land Protection Officer
Mike Wrabetz, BLM/JPO
Rochelle Van den broek, Cordova District Fishermen United
Rick Young, Tazlina Village Council

Workshop minutes:

Alyeska presentation (see Copper River Watershed Project presentation.ppt)

Matt Carle: 5% decline over last few years (5% per year?). Big topic in Juneau this past session. Alyeska was asked to address four questions.

1. How does APSC interact with owners and make spending decisions? Have a TAPS owners cmte. With APSC whom leadership team interacts, put ideas to the team. Draft Long Range Plan submitted to the owners, guides how money is spent from year to year. Long Range Plan covers from 1 – 5 years depending on the issue.
2. What operations data are currently available?
   Public Awareness Program as described in **API 1162**
   DOT posts its inspection findings on its web site
   Annual reports developed by oversight agencies ***
   Public information meetings in ROW communities
   Contingency plans

APSC public web site

3. Opportunities for improving access to data on operations?
   Meetings like this and our public awareness program provide a good framework for discussing
4. Opportunities for citizen involvement: Primary Action Responder Citizen XXX capacity exists in Glennallen, Stevens Village, Ahtna goes through lots of training and has received awards

Lois: how much of the risk assessment information is available to the public – info. Used when making spending decisions?

Dan Lawn: if you had a better way of disseminating information to communities, you could get more credit. Need to do a better job of telling people.

Matt: Public Awareness program is pretty robust. We live and breathe it just like you live and breathe it, and we try to do the best we can. If you have ideas of how to get information out, that would be useful.

Matt Obermiller: how much oil could spill in any one segment between gate valves? What trips them? Is it a pressure difference? What level is required to trip it? If there's a smaller event, can small events go undetected?

Matt Carle: you're asking about operations of remote gate valves and about leak detection. I don't have the engineering background to answer that.

Jerry: C-Plan is based on realistic maximum spill (?). Maximum is 64,000 barrels for any segment. Leak detection system question has several parts to it. Pipeline can be shut down at any time but don't want to create a hydraulic hammer. Would take 8 minutes to shut down pipeline if there were an earthquake. Regs. Require leak detection ability of 1%, 6,500 barrels.

Bill Flanders: by law (CFR 49, part 195.412), APSC required to inspect ROW 26 x per year. Surveillance flights are one method of inspecting the right of way.

Matt O: use of infrared imagery? I've been told by an Alyeska employee that the company was approached by feds to use satellite imagery for surveillance – very good images. Offer was rejected. APSC makes claims that helicopter flies every day, but it doesn't happen. Satellite imagery sounds like a good way of detecting leaks, could be good way to track leaks.

Bill F: infrared is used for inspection of heat pipes on Alyeska's pipeline support system. It has not been used for water in the insulation (corrosion) on the above ground pipeline.

Dan: no spill detected on the line was detected by instrumentation. All leaks have been detected by people. Bullet hole was found by an over-flight. Leak detection is not an exact science. Not trying to dispute what agencies are saying. Concern is that there are fewer people out there now. Used to be people out there every day, people could see that the line

had moved. What's in place to compensate for lack of people in the field? We're fortunate that the pipeline was so well constructed. Don't have to dig up line very often the way they do in the Lower 48, fortunate in that regard.

Matt Carle:

John Craig: overflights – how often are they done? What's the purpose? Is it for inspection?

Matt C..: for inspection and security. Don't know whether flights are daily. Could find out and get back to you.

David Solomon: flew helicopters model XXX. Just for surveillance. Remember Livengood – if helicopter wasn't flying over that day, would never have caught the guy, saw the 4-wheeler driving away. At Pump 11 track every flight from 492 to Pump 1. Helicopters can cover areas where we can 't patrol. Depends on weather conditions, have to fly a different route sometimes because of weather. Two people in helicopter. Pilot and armed security guard.

Lois: encourage APSC to get back with a response about what triggers an overflight. Requirement is 26 x per year. In lower 48 it was so people could see whether development was moving toward ROW, or if vegetation had died it would be because of leak. Sounds like APSC is more aggressive than they need to be given federal requirements, but why?

David S.: worked up on Kuparuk for 3 years and they used infrared (get that right? Used it or not?)

John Craig: believe money would be better spent by having people on the ground daily – helicopter isn't accomplishing anything if it isn't flying. Retired off line after 22 years. That's always been my concern that things could go undetected on the ground on a daily basis – could save money by not flying so much vs. putting people on the ground.

Dan Lawn: lots of things have changed since 9/11 in terms of security. Can't tell that something's being surveilled just because there's a heliciopter. There are reasons for flying but APSC can't say. Not as much surveillance as I would like to see in any regard.

Elmer: needless to say the pipe is a lot older than when they started, you'd think they'd be doing more surveillance rather than less.

Jerry Brossia, BLM, BLM's authorized officer in JPO (see BLM JPO.ppt)

No law that created JPO. Have been a number of agreements between agencies that bring us together. Many agencies that may be seen to have duplication but when look in detail they don't. May be some overlapping responsibilities through oil spill planning response. This office has brought all these groups together. BLM C-Plan review is on a one year cycle. DEC is on a five year cycle.

Office of federal Authorized Officer was established for the construction of the TAPS. Created relationship with joint monitoring surveillance agreement. Office of Federal Inspector, one of the earlier attempts. Shortly before JPO was established in 1990 by state-federal agreement, massive corrosion was found. 1,400 permits had to be issued during that review of the oil spill plan. The incident command was created, training programs were created, equipment was pre-deployed, drills started happening – all that came out of those original few years when the office was formed. Then had whistleblowers, 1993 - 1994 had issues raised (electrical, integrity) – went through a major corrective program and then a verification program to be sure changes were made.

Alyeska is part of a big pipeline system. DEC was primary group in the office – used to have close to 30 people from DEC alone in early 1990s. Oil and gas system in Alaska has numerous parts (slide on Oil Flow Steps).

The industry's original plan was to buy about 95% of the pipeline, but about half of line is buried, half is above ground. Big area of discussion because of moving warm oil through the ground. Much discussion about how much geo-technical assessment work needed to be done beforehand. Agencies wanted lots, APSC wanted to do it as they went.

TAPS through-put: production declining. Cold re-start is another issue with declining production. The trip for oil takes longer and product is getting colder. APSC is working on a big study and anticipates having results by the end of the year regarding what changes will have to be made.

Congressional oversight accusation that agencies "stove piped" oversight – compartmentalized. BLM was criticized heavily because it's part of Interior. Put BLM into electrical oversight – had 76,000 items identified. Hired contractors to identify solutions, Dept. of Labor brought in an electrical inspector and BLM brought in Stone and Webster. Congress kept holding us to greater accountability. We've developed an oversight program that looks at lots of issues over time – inspections are rolled into assessment reports. Easy to find deficiencies, but hard to see whether it means APSC's facilities are defective.

Sabotage is greatest risk. Slide of risks is not in priority.
Sabotage, operator error, corrosion – Jerry started to rank.

Lois: where does looking at new technologies fit in with slide "JPO has Refocused TAPS Objectives and Priorities"?

Jerry: under Planning. We've been working with APSC since 1996. One thing we've been doing is enhanced leak detection at river crossings. Some things we can't talk about, classified information – satellites can collect classified information.

Lois: how would slack line be addressed? Leak detection will get harder and harder as throughput declines

Jerry: yes, especially with vibration.

Dan Lawn: people in Thompson Pass are the ones who brought issues to APSC's attention re: vibration in 1996. How are citizens involved in this process? They are the observers, they are out there. We see things more clearly than people who are stationed 300 miles away. How do we take advantage of what citizens see?

Jerry: configuration management. In today's world, need to be able to design a piece of equipment, document the design, make sure it does what it needs to do,

Dan: when we experienced 2002 earthquake, we went back and looked at design specs. And found out that TAPS was under-designed by some areas. When you talk about designing for the "real event," you might find after the fact that circumstances didn't exactly match the predicted conditions and that you need to go back and re-design.

Jerry: requirement for PIGing is in Federal ROW grant and State lease, not in regulations. Have come to agreement with APSC that we run smart PIG every 3 years and cleaning PIGs every 5 years. New regulations since 2001 with DOT, new regulations with DEC in last 10 years. Stipulations were written BEFORE agencies had certain regulatory requirements, e.g. stipulations required de-ballasting seawater certain ways before Alaska had state requirements about coastal waters.

Start-up After Quake slide. Dan Lawn commented that APSC's original design called for half as many VSMs as the State ultimately required, and during the Denali quake about half of them fell down.

Operations Control Center (Anchorage) monitors line 24/7 – many more sensors for pressure, temperature, hydraulic profile. Contact Matt Carle to ask about visiting OCC.

Post 9/11 reality – security is a much more critical process now. Law enforcement may restrict access to a site now because of safety and that can stall spill response. APSC does have a lengthy repair and restart process in place.

Mike Wrabetz, BLM (see OSCP General Overview.ppt)

Stipulation 2.14, Contingency Plans – owners must have a plan by which they can detect spills, stop the spread, clean up the spill, tactics . . . Federal Right of Way Grant does not specifiy what those minimum requirements are. Grant specifies "best practicable technology". Applicants must submit annually a plan for BLM approval – this is unique and not the same for other agencies. DEC is on a 5 year cycle and has a public involvement process – BLM does not have a similar public involvement process (?).

Highest probability is a low volume spill, lower probability spills are high volume spills.

DEC was much more specific in developing a planning standard volume for different scenarios. BLM and DEC through JPO work very closely together on this – don't foresee a conflict arising.

Plan oversight – oil spill response requires trained people and equipment. One of BLM's primary functions is making sure there's sufficient equipment and personnel. DEC counterparts to Mike W and Bonnie are Graham Wood and Bill XXX. In Valdez there's John Engle, Joe Hughes (BLM), in Fairbanks – Sean Swanson and Reid Smith, maybe 20 % of their time. Mike says there's a matrix in the plan on training conducted. Communications come up again and again under "lessons learned" on oil spill response.

New technology: pipeline clamp. Also, inflatable culvert plugs – canvas . . . . lots more effective than sandbags or rocks to block off culverts.

Matt Carle: there's a part of every drill during which visitors can participate. Visitors are welcome to attend the drill during which APSC is going to practice applying the new clamp. May 21 on Chatanika (??) River.

Bonnie Friedman: highlight part of Contingency Plan that deals with risk. Four risk assessments conducted since 1990. Agencies required DNV risk assessment because of strategic reconfiguration. In oil spill contingency plan, agencies required APSC to come up with 14 scenarios (initially 12) to model spill response. Response planning standard is capability to respond to 52 barrels spilled on land into water at Minton Creek.

Slide on BLM monitoring, surveillances and assessments. BLM receives quarterly contractor training reports.

Bill Flanders, Office of Pipeline Safety and Hazardous Materials Administration, Community Representative for Alaska (see PHMSAGlennallen Rev 4 2010.ppt).

Kuparuk is becoming a bigger and bigger percentage of what goes through TAPS.

NTSB hasn't been to AK for eight years. Made some recommendations that weren't looked at til' after Bellingham pipeline explosion. Most corrosion is below ground, external. Jerry says often it's in wet ditches. Temperature is another big driver in corrosion – since oil is cooling off in the pipe, corrosion growth has slowed.

Integrity management assessment – Standard inspections on Alyeska are usually on an annual cycle. Integrity management and Standard Inspection reports are publicly available on the PHMSA Stakeholders Communication web page.

Judy: in 2009, ran cleaning PIGs several times before we ran the smart PIGs.

Spill response plan: detailed analysis done by JPO (BLM/DEC). We have to work together. DOT probably has more expertise in PIGing.

Dan Lawn: if the original standard was leak-tight and now we allow a 1" hole, who decided that was ok?

Bill Flanders: federal regulations CFR 49, part 195.420 don't address leak tightness but do require that valves be maintained in good working order. No crystal clear regulation that's enforced.

Jerry Brossia: complete analysis is done on valve failures because it's a critical system.

Kristin Carpenter: so they check every year?

Bill Flanders: No. They just stroke them.

Jerry Brossia: If they don't leak much, we check them every seven years.

Lois Epstein, LNE Engineering and Consulting (see 05.04.2010.TAPS.draft#5.pptx) on Regulatory Parameters of TAPS 101.

BLM oversight enforcements: first a letter, then a notice, then issue a finding (law allows notices of deficiencies, findings which require corrective action, and special requirements which are formal modifications to terms of lease).

Mineral Leasing Act: would need changes to this law to change or alter types of enforcement allowable by the BLM Authorizing Officer.

Anne Browne: each agency has its own statutory authority. "Best available technology" is a list right now, so there may be things that haven't made it on to the list.

Lois: PHMSA web page on Stakeholder Communication may be used as a model for JPO.

Jerry (?): in 1990, the BLM embarked on enhanced cathodic protection -- $25 million invested into cathodic protection. Growth rate of corrosion is slowed down. The temperature is dropping and that slows corrosion down.

Mike Wrabetz: instrumentation has improved too – one PIG can perform more than one function so need to do fewer PIG runs.

Criteria for corrosion is based on 2 million barrels flow rate (which is not the original flow rate) – should that still be the criterion?

Anne Brown: noted the challenge of unmanned pump stations, and that SPCO is also working now on in-state and export natural gas pipelines.

Dan Lawn: how you make unannounced inspections when the staff is no longer based at many pump stations, as before, on a full-time basis?

Richard Fineberg, Research Associates (see Fineberg TAPS Briefing 100503.ppt)

For another view of Alyeska's low flow studies, see report by Jerry Modisette, former NASA engineer (presented in TAPS property tax litigation).

Operational issues:

- Strategic Reconfiguration
- Low flow studies
- Corrosion and in-line inspection (pigging) procedures

    - Anne Brown: the 2006 BP North Slope spill could have been caused by a change in an additive being used without assessing what the new additive would do.
    - Bill Flanders: 40 mils/year of internal corrosion, 20 mils/year of external corrosion. Important to analyze PIG run data and over-lay with previous PIG runs to determine active corrosion areas.
    - Dan Lawn: internal corrosion occurs 2 – 5 times faster than external corrosion.
    - Elmer: I worked at PS 8, we PIGed every 3 – 4 days. If you deviated by one day, the wax build-up was tremendous, about 20 barrels full.
- Valve maintenance and replacement: Valve maintenance: should we be re-visiting the seven and 15 year valve review cycle? What about the testing criteria for testing one valve and operating valves on either side of that one?
- Automated pump stations and pipeline control systems are placing great reliance on computers and communications, while removing persons familiar with TAPS problems and initial spill responders from the pipeline.

Overlap of ownership of pipeline and oil transported in the pipeline: very important and not very well understood. For example, the historic and forecasted value of TAPS for property tax. TAPS isn't a stand-alone facility. Property tax increase would be a fraction of tariff (perhaps $ .25 per barrel). Also, the cost to heat the oil to reduce low-throughput problems would only be a small fraction of the price of the oil being transported.

Dan Lawn: the owner vs. operator issue is illustrated by the example of Dan Hisey being let go after he exposed needed repairs.

Owner's share of net profit is nearly $20/barrel. With declining throughput the desire to maximize revenue puts the state and the owners in a sensitive spot.

Synthesis and next steps: Would decision making be improved by independent citizen oversight?

Lois: seems like an obvious "yes" – always good to have checks and balances.

Dan Lawn: pipeline was designed well.

C.D.: independent oversight could look at risk – how good are our responses now?

Lucus: independent oversight could be "best available technology".

Ruth: I think it would be useful to have a group that's not burdened with a lot of paperwork. The oversight agencies are stuck under a mountain of paperwork. One of the benefits of an independent group might be the ability to take a different approach.

C.D. could help avoid "stepping on toes."

Cliff: I want to add a "yes" in support of citizen oversight. Difficult for an agency to make a decision because agencies might fear budget cuts from the legislature.

Independent oversight committee could help with "translating" complex issues for citizens, provide a service.

Matt Obermiller: look at strengths and weaknesses of PWS RCAC.

Elmer Marshall: facilitate a contingency base station and crew in Chitina, similar to Rampart. Chitina is the last chance to catch oil before it enters the canyon.

Lois: I'm skeptical that if it's a big spill, a Chitina response station could be effective.

David Solomon: it's all about education. We get a lot of tourists, I got a question from one woman "how does that barrel get down the pipeline?"

C.D.: prevention is key. Rapid containment, need to form a local citizens response crew.

Elmer: PS 11 is very thinly manned.

Lucus: we shouldn't confuse citizen response with citizen oversight.

David Solomon: doesn't Stevens Village have trained responders?

Dan Lawn: how can you assure that volunteers are available? Would need to compensate people in some way.

C.D.: our whole valley runs on volunteers.

Lucus: but with volunteers in other functions, you know the equipment is going to work (e.g. an ambulance). Need to know that in spill response situation.

Lois: Cook Inlet RCAC and PWS RCAC hire engineers. We could narrow areas of concern, e.g. leak detection, corrosion, valves, and retain engineers to do some analysis. See the Pipeline 101 section on PHMSA's web site. University in (?? Canada?) does some pipeline training.

Ruth: PWS RCAC has had some successes. They must have said, (1.) we want X and Y; and then figured out (2.) how do we get there? So what do WE want? Raising heat, is that a step that would help? Cold restart problem: is too much water in the line? Need to stop the cheating by operators.

Cliff: we shouldn't kid ourselves about the potential for damage from a catastrophic spill. And the key word is "independent".

Matt Obermiller: I want someone at the table who represents my interests, but now my interests only get addressed as part of the agencies' jobs. Our role is to work on getting tighter standards, set a higher bar.

Dan Lawn: no one is auditing the agencies.

Ruth: I see 2 – 3 tracks:

1. What can citizens do now without a lot of funding?
2. Should we be pursuing something similar to PWS RCAC that would be government sanctioned?

Cliff: an oversight committee could recommend changes to regulations and standards

Kate: an oversight committee could use volunteers to be yes on the ground – e.g., if you're out checking a trapline, could a person make some observations?

P.O. Box 1560 · Cordova, AK · 99574 · (907)424-3334 (ph.)/(907)424-4318 (fax)
www.copperriver.org · e-mail: crwp@copperriver.org

TAPS Today: Trans-Alaska Pipeline System Operations and Management Issues And Their Economic Drivers

Briefing for TAPS Stakeholder Workshop
Copper Center, Alaska, May 5, 2010, 2:30 p.m.

Prepared for
Copper River Watershed Project

By
Richard A. Fineberg, Principal Investigator
Research Associates
P.O. Box 416
Ester, Alaska 99725

Slide A2

Game Plan for This Discussion:

A. Operational Issues

Keeping Oil in the Pipe – Safely

B. Management Issues

Prevention: The Name of the Game

C. Oversight Issues

Who's Got the Football?

D. Economics

Follow the Money

Slide A3

A. Operational Issues – 1. Strategic Reconfiguration

Since early 2004, TAPS has been implementing the Strategic Reconfiguration project, which consists of (1) reducing number of pumping stations to 4 (able to handle approximately 1.1 million bpd, down from the 1988 peak of 2.1 million bpd), (1) replacing jet-engine powered pumps at remaining pumps stations with electric pumps capable of delivering varying pumping power and therefore better able to handle varying and low throughput, (3) conversion to automated pipeline control, de-manning pump stations (each of which had an operator who reported to the Operations Control Center at Valdez) and placing pipeline control entirely in the hands of the OCC, now located in Anchorage.

- **When the SR project began in 2004, Alyeska planned completion by the end of 2005; project not done yet; finish is now delayed until 2011, when Pump Station #1 conversion will be completed.**
- **Management of change is always an operational problem. (Are new facilities in place? If so, have new operating instructions replaced old procedures? How do new systems interface with facilities still under the old system?)**
- **Extension of SR project has placed TAPS at increased risk of operations errors. (Example: January 2007 fire at Pump Station #9 occurred as workers rushed to complete wiring for the first pump station to convert to electric pumps and automated operations.)**

Slide A4

A. Operational Issues – 1. Strategic Reconfiguration (Continued)

Since early 2004, TAPS has been implementing the Strategic Reconfiguration project, which consists of (1) reducing number of pumping stations to 4 (able to handle approximately 1.1 million bpd, down from the 1988 peak of 2.1 million bpd), (1) replacing jet-engine powered pumps at remaining pumps stations with electric pumps capable of delivering varying pumping power and therefore better able to handle varying and low throughput, (3) conversion to automated pipeline control, de-manning pump stations (each of which had an operator who reported to the Operations Control Center at Valdez) and placing pipeline control entirely in the hands of the OCC, now located in Anchorage.

- **When TAPS now relies on its electronic control system rather than employees formerly located in Valdez and at pipeline pump stations (now de-manned), will operations problems (emergencies requiring immediate shutdown) and maintenance issues (requiring long-term planning and funding for remediation) be identified in a timely manner?**
- **In 2002, when the 30-year state and federal TAPS lease and right-of-way agreements of 1974 were being evaluated for renewal, Alyeska was already making plans to initiate SR. But the TAPS renewal Environmental Impact Statement did not consider SR long-term impacts. Instead, the EIS regarded plan elements as separate maintenance projects that (in theory) could be reviewed on its own under the renewed agreements.**

Slide A5

A. Operational Issues – 2. Low-Flow Studies

The ability of electric pumps to handle reduced throughput (down to 200,000 bpd, according to one press account) was a major impetus for Strategic Reconfiguration. A low-flow investment study group was established in 2008 to assess and study the technical issues related to low throughput; results are expected to be completed by the end of 2010. Problems operating at low throughput are said to require investment that may not pay for itself when spread across the reduced number of barrels per day. Information has been held relatively tightly. Low-Flow problems stem from cooler temperature of oil coming into the pipeline, longer distances between pump stations (where the oil is reheated by pumping) and slower travel rates at reduced throughput (allowing heat to dissipate). Potential problems include:

- **Ice formation and wax deposits form more readily as oil, flowing more slowly, cools, creating (a) increased potential for pipeline blockages and (b) new corrosion problems for TAPS (internal corrosion, similar to the problems BP experienced on the North Slope in 2006).**
- **As satellite oil fields with heavier oil than that of Prudhoe Bay come on line, TAPS oil is also more viscous now than before.**
- **Pipeline operating temperature could drop below freezing, creating geotechnical problems for below-ground pipe (*e.g.*, frost heave).**

Slide A6

A. Operational Issues – 2. Low-Flow Studies (continued)

The ability of electric pumps to handle reduced throughput (down to 200,000 bpd, according to one press account) was a major impetus for Strategic Reconfiguration.. A low-flow investment study group was established in 2008 to assess and study the technical issues related to low throughput; results are expected to be completed by the end of 2010. Problems operating at low throughput are said to require investment that may not pay for itself when spread across the reduced number of barrels per day. Information has been held relatively tightly. Low-Flow problems stem from cooler temperature of oil coming into the pipeline, longer distances between pump stations (where the oil is reheated by pumping) and slower travel rates at reduced throughput (allowing heat to dissipate).

- **Information on low-flow studies has been tightly held and carefully released to support industry demands on the State aimed at enhancing the industry revenue from TAPS operations (*e.g.*, softer position on TAPS tariff and property tax assessments).**
- **Alyeska now says that TAPS operation below 500,000 bpd is problematical. However, an expert report says that with added heat at specific locations, as necessary, the system can operate down to 40,000 bpd.**
- **An associated problem that warrants careful, independent technical review is the Cold Restart requirement, which Alyeska has studied for many years but has not resolved.**

– Research Associates, May 5, 2010 (Draft)

Slide A7

A. Operational Issues – 3. Corrosion and In-Line inspection (Pigging) Procedures

Pipelines face threats from two distinct types of corrosion (the loss of metal due to a chemical or electrochemical reaction): (1) external corrosion, which attacks the outer wall of the pipe, usually through breaks in protective coating; and (2) internal corrosion that forms rapidly under wax and sludge buildup on pipeline walls, often with the assistance of sulfate-reducing bacteria. Alyeska has fought external corrosion on TAPS for two decades by identifying pockets of corrosion and monitoring the rate of pipeline wall loss through in-line inspection (ILI) with "smart" pigs and, when confirmed by pipeline corrosions digs, repairing corroded locations with sleeves. Alyeska formerly sent cleaning pigs through the line once a month; now cleaning pigs are run weekly.

- **BP's difficulty identifying and mitigating internal corrosion was demonstrated by its 2006 North Slope oil spill that led to the temporary shutdown of the nation's largest oil field.**
- **As recently as 2008, Alyeska told government officials that TAPS did not have mainline internal corrosion problems (an assertion contradicted by its own records, according to federal pipeline monitors). However, it is now recognized that low throughput on TAPS creates the very conditions that can foster internal corrosion of mainline pipe and valves.**
- **Because internal corrosion is liable to occur much faster than external corrosion, Alyeska must devise faster methods for identifying and mitigating corrosion problems.**

A. Operational Issues – 3. Corrosion and In-Line inspection (Pigging) Procedures (Continued)

Due to increased wax buildup, in recent years cleaning pigs have frequently been damaged and smart pig runs have frequently failed.

- **The TAPS pigging system, developed through experimenting, with frequent revisions as pig technology developed and improved, calls for ILI every three years (now conducted using a "combo" pig that identifies corrosion wall loss, dents and pipe movements in a single run); it still takes many months to read and interpret the results.**
- **Alyeska preceded its 2009 "smart" pig runs with one month of cleaning pig runs at 4-day intervals and is installing a new pig trap at Pump Station #8 (which has been closed for a decade) to remove an ILI pig and insert a clean one before wax buildup renders its results unusable.**
- **Will the updated external corrosion system prove capable of detecting faster-forming internal corrosion in a timely manner?**

Slide A9

A. Operational Issues – 4. Valve Maintenance and Replacement

To block or control the flow of oil, TAPS has 178 valves – 95 block valves (62 remote-control gate valves, 9 manual-control gate valves), 24 isolation valves at original pump stations) and 83 check valves that drop automatically to prevent back-flow. Alyeska boasted during construction its design called for more valves per mile than any other pipeline in the world. But valve closure at the wrong time or in the wrong sequence can cause serious damage by over-pressuring the upstream side or causing sudden movement due to pressure differential. Effective valve control and valve maintenance are vital to safe operations.

- **Since 1998, six mainline valves have been replaced and one has undergone major repairs.**
- **To deal with aging valves (some of which allowed leak-by into the valve body or leak-through to the adjacent portion of the line that was supposed to be isolated when tested between 1998 and 2000), Alyeska instituted a schedule to retest valves that were not sealing properly in seven years; all other valves were placed on 15-year testing cycle. (Since TAPS valves had a 30-year design life, it was assumed some would not be performing optimally after 20 years; the 15-year test cycle is based on one-half of the valve's original design life.) Test anomalies and gaps in the public record follow:**
- **One RGV that was replaced was not on the 7-year list.**

Slide A10

A. Operational Issues – 4. Valve Maintenance and Replacement (Continued)

To block or control the flow of oil, TAPS has 178 valves – 95 block valves (62 remote-control gate valves, 9 manual-control gate valves), 24 isolation valves at original pump stations) and 83 check valves that drop automatically to prevent back-flow. Alyeska boasted during construction its design called for more valves per mile than any other pipeline in the world. But valve closure at the wrong time or in the wrong sequence can cause serious damage by over-pressuring the upstream side or causing sudden movement due to pressure differential. Effective valve control and valve maintenance are vital to safe operations.

- **The unlisted RGV was later identified as a noisy valve. Of seven other RGVs listed as noisy, one has been retested (it sealed successfully).**
- **Three other check valves and one RGV that passed the original leak test (and therefore are not on the 7-year list) are now reported as having audible leaks.**
- **Of nine block and check valves identified with leak-through below the arbitrarily determined maximum allowable limit: 6 are reported as performing better on re-test in 2007 (due to a change in sealing lubricant); one showed no change; re-test data was not available for 2.**
- **Corrosion (40% wall loss) was found on the body of a valve whose performance improved.**

A. Operational Issues – 5. Automated Pump Stations and Pipeline Control Systems

In pipeline parlance, the controlling computer at the Operations Control Center (OCC) and the communications system between the OCC and the pump stations and valves constitute the main components of the SCADA, or Supervisory Control and Data Acquisition system. With pump stations automated and the OCC moved from the TAPS terminal at Valdez to Anchorage, the SCADA system is more important than ever. Without staff based at pump stations, will the TAPS operators be able to assure safe operations?

- **When the TAPS leak detection system has never detected a leak, is confidence in the automated SCADA system justified?**
- **When field personnel, no longer based at pump stations, view the pipeline through the windshield, will those engaged in maintenance identify potential problems or be invested in assuring that identified local problems are resolved?**
- **Do remote pipeline managers have sufficient knowledge of local conditions on the pipeline to identify potential problems or respond in a timely manner to emergency situations?**
- **Without input from personnel based on the pipeline right-of-way, how will remote pipeline managers acquire sufficient information about local conditions to apprehend and assess the impacts of natural external threats such as seismic events, floods and climate change?**

Slide B1

B. Management Issues – 1. Prevention v. Response

"Keeping oil in the pipe" isn't just a slogan.
The name of this game is prevention.

JOINT PIPELINE OFFICE
Weekly Report 1/24/07
For additional information contact Rhea DoBosh at (907) phone 257-1338, fax 257-1397

JPO Oversight of Trans-Alaska Pipeline System (TAPS) – Compliance Monitoring

TAPS Oil Discharge Prevention and Contingency Plan (OSCP) Review – The Bureau of Land Management (BLM)/JPO has issued their annual approval of the OSCP for the year 2007 approval period. The approval addresses the general requirements for the annual review and the specific approval requirements. . . .

You may be wondering where spill response fits in my outline. By the time I present, I'm sure we will have talked at some length about response training, preparation and drills. But I have not reviewed a C-plan intensively since late 2003 (the plan on the right) and I know that some of you have worked on the problem of how to respond to a spill when containment in the fast-moving streams that cross TAPS and flow east into the Copper River is an extremely difficult problem. I therefore do not presume to tell you how to proceed on this issue. But I do know, from nearly 40 years working both sides of this issue, that **prevention** is pivotal, that economics drive Alyeska's performance and if we don't deal with underlying management issues we haven't a ghost of a chance of making response work.

Alaska Department of Environmental Conservation

Division of Spill **Prevention** and Response

Industry Preparedness Program

Trans Alaska Pipeline System (TAPS) Pipeline

Oil Discharge Prevention and Contingency Plan

Strategic Reconfiguration Amendment

Final Findings Document

December 31, 2003

Slide B2

B. Management Issues – 2. The Keys to Prevention

"Keeping oil in the pipe" isn't just a slogan. The name of this game is prevention. There are two keys to prevention.

- **One of the keys to prevention is to identify problems in a timely manner – and to address them. Time and again we have seen this failure as a root cause of problems on TAPS.**

- **A second key is a well-funded maintenance program that is focused on reducing risks and relatively independent of cost considerations.**

- **Unfortunately, Alyeska management policies seem to be driven by a short-sighted and poorly grounded cost-cutting mentality. *(If time permits, I'll give a few examples of economic pressures coming from TAPS management with the next slide. To explain why the cost-cutting mantra is poorly grounded, I'll provide an overview of North Slope production and TAPS economics in Section D. below.)***

Slide B3

B. Management Issues – 3. Personnel Issues

Over the years, TAPS management has struggled with the problem of making sure that workers are free to speak out when they have questions about the appropriateness – and particularly the safety – of the assignments they have been assigned. This problem created headlines in 1991, when Alyeska set up an industrial espionage program to try to identify and close off worker leaks to Congress. In 1993 Alyeska intimidation and harassment of its quality control staff led again to congressional hearings, an independent federal audit of TAPS management practices and the establishment of an employee concerns program. Oil industry jobs are relatively high paying; when a worker runs counter to his or her boss, there is often great pressure to get in line and shut up. If a problem comes to public attention, the complaining source is liable to be readily identifiable.

- **During the current recession, as Alyeska management tries to cut costs to match declining TAPS throughput, I believe this problem is at least as bad as – and probably worse than – it has ever been. (While my current experience is anecdotal, a clear public example is the Alyeska effort last winter to retire veteran Fairbanks-based employees and transfer their positions to Anchorage, where they would be filled by a younger and less experienced – and less expensive – work force.)**
- **(In addition to the episodes summarized above, similar pressure on workers were evident during the closure of Pump Stations 2, 6, 8 and 10 in 1996-1998; cost-cutting orders from the TAPS owners surfaced and was made public in 2002.)**

Slide B4

B. Management Issues – 3. Personnel Issues (Continued)

Over the years, TAPS management has struggled with the problem of making sure that workers are free to speak out when they have questions about the appropriateness – and particularly the safety – of the assignments they have been assigned. This problem created headlines in 1991, when Alyeska set up an industrial espionage program to try to identify and close off worker leaks to Congress. In 1993 Alyeska intimidation and harassment of its quality control staff led again to congressional hearings, an independent federal audit of TAPS management practices and the establishment of an employee concerns program. Oil industry jobs are relatively high paying; when a worker runs counter to his or her boss, there is often great pressure to get in line and shut up. If a problem comes to public attention, the complaining source is liable to be readily identifiable.

- **Safe operations are greatly enhanced when workers feel free to air their concerns without intimidation, harassment or the threat of losing their jobs.**

- **A significant difference between current and past employee concerns problems on TAPS is that at present both the TAPS and JPO employee concerns programs appear to be languishing.**

Slide C1

C. Oversight Issues – 1. The Regulatory Framework: How Is It Working?

It is generally (but not always) the case that industry complies with the letter of statutory requirements. Concerned citizens therefore need to know how well the legal framework serves to protect the public interest, whether there are gaps in that framework, and whether the inter-agency oversight system is functioning effectively.

- **Government agencies appear increasingly reliant on industry reports that are not confirmed by on-site surveillance.**
- **The Joint Pipeline Office (JPO), a state-federal umbrella group that provides coordinated TAPS oversight, appears to be fragmenting. *(Federal agencies are moving to mid-town Anchorage, while state agencies remain at the downtown facility that formerly housed most JPO personnel.)***
- **A critical review of the state's failed risk assessment of oil & gas infrastructure by an independent national peer review panel appointed by the NRC's Transportation Review Board suggests state oversight may be dysfunctional.**
- **Some observers believe that vigorous state enforcement of environmental law is vitiated by fear that raising the cost of compliance will make Alaska less attractive than other developing regions. *(See Section D. for counter arguments.)***

Slide C2

C. Oversight Issues – 2. The Regulatory Framework: Information Needed

It is generally (but not always) the case that industry complies with the letter of statutory requirements. Concerned citizens therefore need to know how well the legal framework serves to protect the public interest, whether there are gaps in that framework, and whether the inter-agency oversight system is functioning effectively.

- **Agency responses to requests for information range from denial (sometimes citing national security restrictions) to provision of large quantities of information that require technical background to digest.**
- **Concerned citizen requests to industry for substantive information often go unanswered.**
- **The state's gap analysis, launched in 2007, has not been made public.**
- **With the decline of media reporting, concerned citizens may wish to take steps to secure better information about industry operations and government oversight, as well as access to facilities to confirm the validity of the information they are able to obtain.**

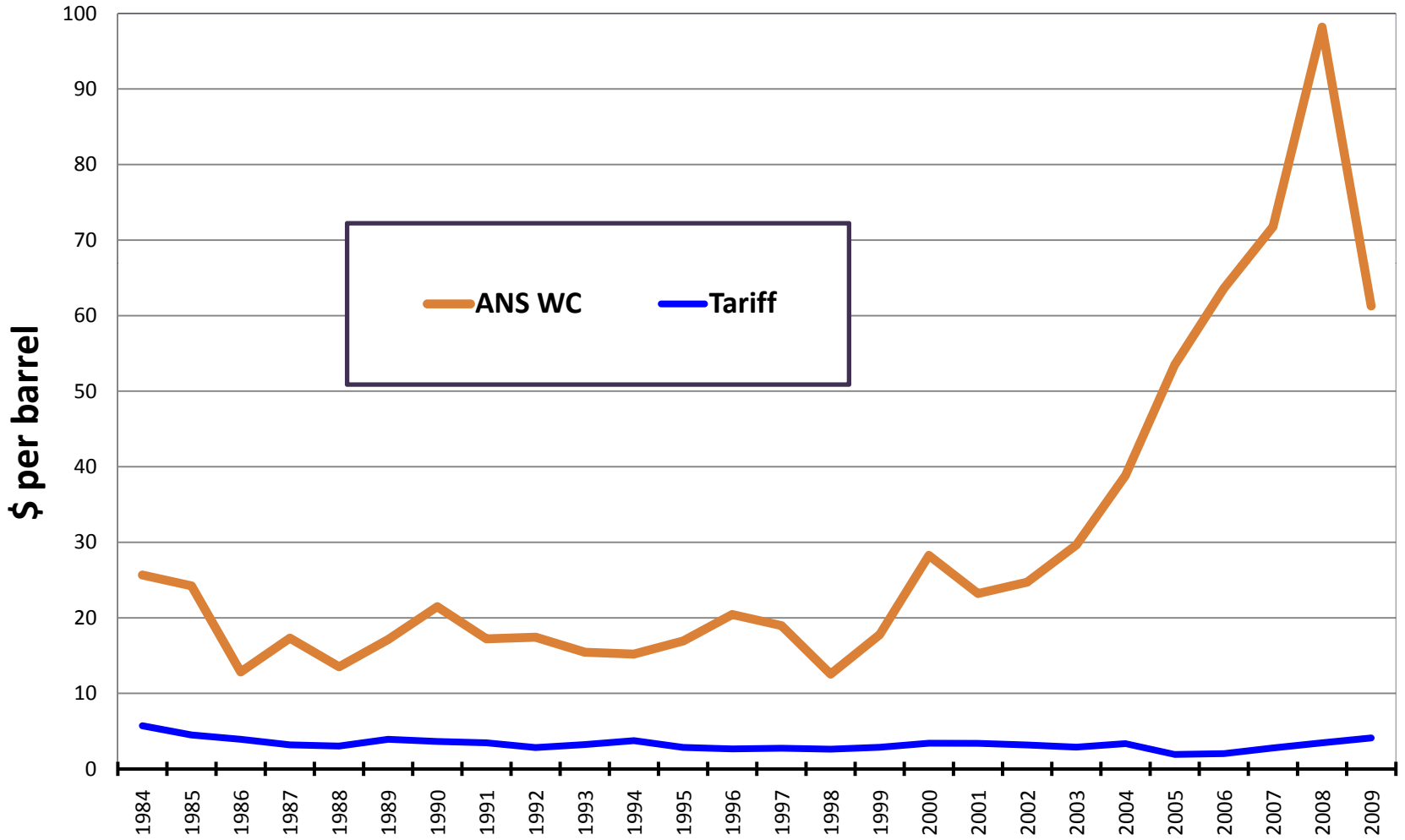
Slide D1

D. TAPS Economics – 1. Overlapping Ownership and Higher Oil Prices

The three companies that control more than 95% of North Slope production – BP, ConocoPhillips and ExxonMobil – also own more than 95% of TAPS through their shared subsidiary, the Alyeska Pipeline Service Company. Due to this highly unusual economic arrangement, even when prices plummet the owners, due to their overlapping ownership, have the benefit of a guaranteed profit on TAPS. Moreover, throughout the life of TAPS the owners have filed and defended higher – rather than lower – TAPS tariffs (shipping charges), even though they claim that as shippers, they want lower tariffs.

- **Over the last decade, long-term oil prices nearly tripled. Despite declining throughput, the industry's total profits on production and TAPS today are approximately equal to their profits in 2000, when oil prices were approximately $35.00 per barrel (inflation-adjusted) significantly above the 1991-2000 decade average.**
- **The present TAPS tariff of $4.10 per barrel constitutes roughly five percent of the market price of oil at $80 per barrel. *(See next slide.)***
- **I estimate that the Dept. of Revenue's forecast price of $75/bbl. yields an after-tax producer profit of nearly $20.00 per barrel.**

TAPS Tariff vs Crude Oil Price



Slide D3

D. TAPS Economics – 2. Argument Continues over Pipeline Tariffs and Property Tax Assessments

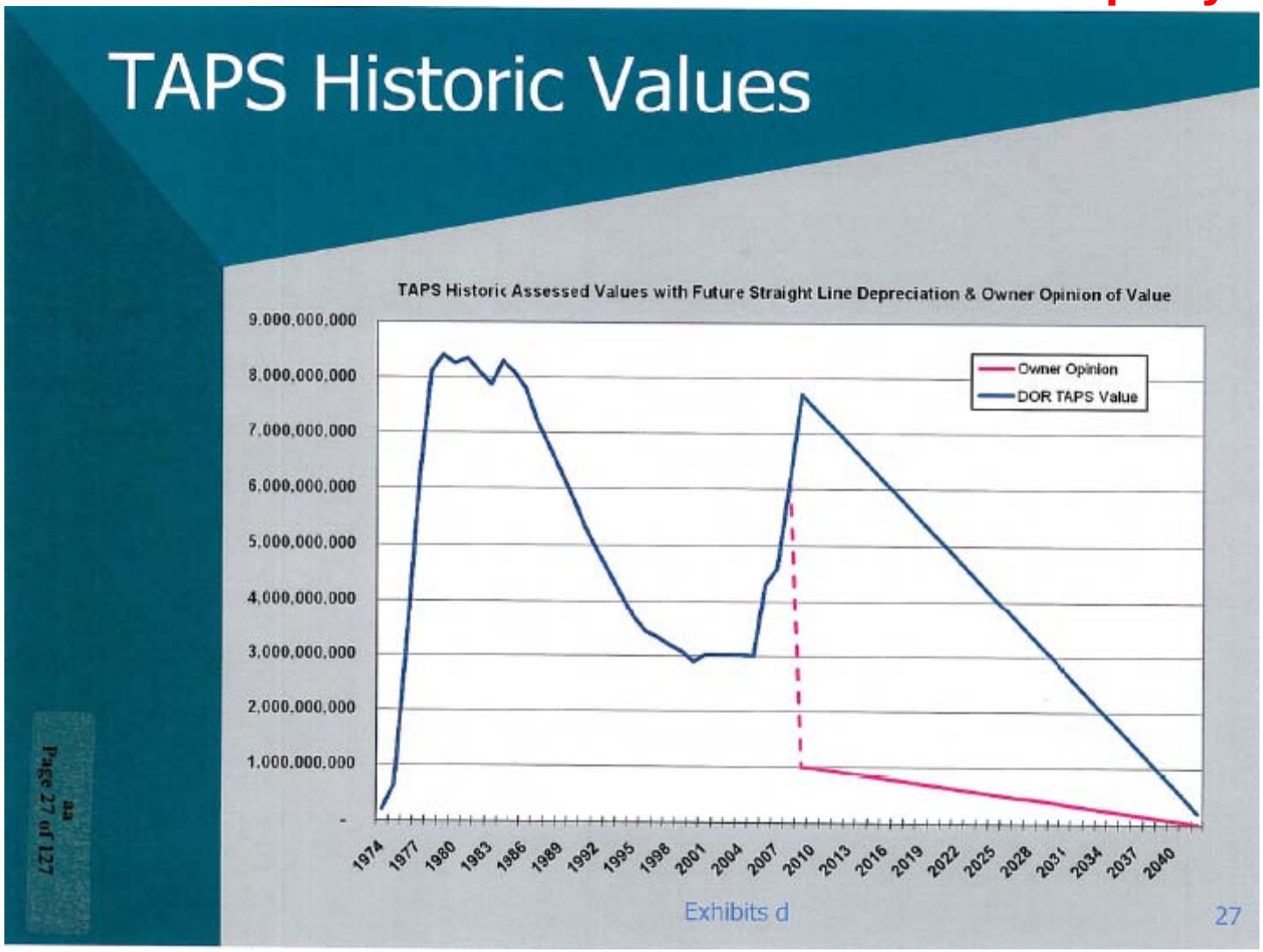
Pipeline tariffs are but a small fraction of the per-barrel price of oil; property tax payments are an even smaller subset of the tariff. Nevertheless, the money is apparently worth fighting over. The three companies that control more than 95% of North Slope production and a similar share of TAPS battle with the state over both property taxes, which have risen in recent years, and pipeline tariffs, which have come down. For the first three decades of operation, the industry charged more than the just and reasonable tariff for oil shipped on TAPS (counter-intuitive, but it is a fact). A strong case can be made that during this period the pipeline was undervalued for property tax purposes.

- **Because shipping charges are subtracted before state production and income taxes and royalties are calculated, by overcharging themselves the TAPS owners could reduce their state payments on production – and handicap their independent North Slope competitors, who have to pay the higher tariff, (including a reasonable profit for the pipeline owners) out of pocket.**

- **Meanwhile, the TAPS owners fought – and continue to fight – for lower state property taxes, which are levied at 2% of the pipeline's assessed valuation. TAPS used to be assessed on the basis of its income stream, as if the pipeline were a stand-alone facility. But the state assessors recognize that the highest and best use of TAPS is for shipping valuable North Slope oil to market. *(See next slide for TAPS property tax valuation.)***

Slide D4

Historic and Forecast TAPS Valuation for Property Tax



– Alaska Dept. of Revenue, "Trans-Alaska Pipeline System Appeal of 43.56 Property Tax Assessment," May 19, 2009, p. 27.

– Research Associates, May 5, 2010 (Draft)

Slide D5

A. TAPS Economics – 3. Paradox Explained – and Roughly Quantified

The flat spot in the chart between 2000 and 2004 reflects an agreement among the TAPS owners, the state and municipalities to value TAPS at at $3.0 billion, which would generate $60 million in property taxes. But the assessed valuation is now climbing, as property tax administrators have finally caught up with the TAPS owners, who continue to argue vociferously for lower property taxes (even as they defend higher tariffs). Here are some simple calculations:

- **At present throughput levels of 0.65 million bpd, if TAPS were still assessed at $3 billion, the pipeline property tax would generate $60 million, paid through the tariff at about $0.25/bbl. An assessment increase to $9 billion, would bring the TAPS property tax to $180 million, or about $0.76/bbl, increasing the tax and the tariff by about $0.50/bbl. (In the end, the owners would not pay the entire $180 million; the state would be contributing on the order of $54 million through reduced royalty, production tax and state income tax payments.)**

- **At the present throughput level of 0.65 million bpd, a $0.50/bbl. increase in the TAPS tariff would generate approximately $120 million that could be spent (say) on additional safeguards. (Of this amount, the state would be contributing on the order of $36 million through reduced royalty, production tax and state income tax payments.)**

– Research Associates, May 5, 2010 (Draft)

QUESTIONS OR COMMENTS?

The TAPS Legal Framework: Strengths and Weaknesses

Trans-Alaska Pipeline Citizens Oversight Stakeholder Workshop (Copper Center, AK)
May 5, 2010

Lois N. Epstein, P.E.
Anchorage, AK

LNE **Engineering and Policy**

TAPS Oversight Authorities

1. Trans-Alaska Pipeline Authorization Act (TAPAA, 1973) and Federal Right-of-Way Grant

2. Alaska Lands Act and State Right-of-Way Grant
   - Alaska Statutes 38.05
   - State ROW grant at http://www.jpo.doi.gov/SPCO/SPCO.htm
   - Similar requirements and enforcement methods to federal lease

The Trans-Alaska Pipeline Authorization Act

- 43 USC §§1651-1656
- Authorized ROW through federal lands
- ROW renewed in 2002 for 30 more years without significant changes

The Trans-Alaska Pipeline Authorization Act, continued

- Mandates federal oversight of all TAPS activities
- May modify the ROW grant at any time to protect the public interest

Comparing TAPS Authority to Permitting Authority

TAPS

- Allows modifications of requirements at any time
- Changes in requirements not always known by the public
- ROW public process completed for 30 years
- Not enforceable by third parties

Permits

- Regular, required review (e.g., every 5 years) of requirements
- Mandatory public input
- Some ability for third party enforcement

Joint Pipeline Office

- BLM and DNR co-manage pipeline
  - Alaska BLM Director appoints Authorized Officer
  - Commissioner of DNR appoints State Pipeline Coordinator
- MOA between agencies of the JPO http://www.jpo.doi.gov/Index Page files/Memorandum of Agreement.pdf

Right-of-Way Grant

- Contains requirements and stipulations
- Stipulations are part of the Grant (¶4.a.4)
  - 59 Environmental Stipulations
    - Pollution control
    - Buffer strips
    - Erosion
    - Fish passage
    - Fish and wildlife protection
    - Material sites
    - Clearing, restoration
    - Contingency planning

Enforcing the ROW Grant

JPO (Authorized Officer) has largely unfettered, unreviewable discretion to determine whether the pipeline owner is in compliance with the terms of the Right of Way Grant. Examples:

- AO decides if suspension of activities is required (¶25A)
- AO decides amount of rehabilitation necessary (¶13)
- AO can exempt the pipeline owner from stream crossing and fish passage requirements (2.4.3)
- AO decides if control and clean-up efforts will be taken over (2.14.4)
- AO decides whether to allow and mitigation required for dredging, draining, disturbing stream beds (2.8.1)
- AO approves devices and materials used for oil spill control (2.14.2)

Types of Oversight Exercised

- Notices and orders
  - Less formal notification that Alyeska needs to improve response or take further action to correct "serious deficiencies"
- Findings
  - Require corrective action
- Special Requirements
  - Formal addition of requirements to terms of lease
  - 12 special requirements have become part of lease stipulations (e.g., restoration performance requirements added)

Prevention and Response Planning

- Oil Pollution Act of 1990 does not preempt state regulation of oil spills
  - 33 USC §1321(j)
- Alaska C-plan requirements:
  - AS 46.04.030
  - 18 AAC 75
    - C-plans must incorporate spill prevention
    - DEC must approve C-plans
    - Must use “Best Available Technology”

SPCO Required Reporting

SPCO Annual Reporting Requirements for Pipeline Owners (in addition to lease-specific requirements)

- Results of the pipeline owners' surveillance & monitoring during past year.
- Pipeline owners' performance under the right-of-way lease, including stipulations.
- A summary of all events, incidents and issues which might or did adversely impact pipeline system integrity, the environment, or worker or public safety, and a summary of the lessee's response.
- A summary of all oil and hazardous substance discharges including date, substance, quantity, location, cause, and cleanup actions undertaken. Minor discharges below agreed upon thresholds may be grouped into monthly total amounts, provided the number of separate incidents is reported.
- Any additional information requested by the State Pipeline Coordinator.

Enforcement

PHMSA's Pipeline Safety Enforcement Program is a key component of our oversight mission.

The Pipeline Safety Enforcement Program is designed to monitor and enforce compliance with pipeline safety regulations and confirm operators are meeting PHMSA expectations for safe, reliable, and environmentally sound operation of their facilities.

On this website PHMSA offers a variety of reports detailing its enforcement activity. These reports are offered on both nationwide and operator-specific bases.

Nationwide Enforcement Activity
A high-level summary of PHMSA's overall enforcement activity.

Enforcement Actions
A summary of the various enforcement actions that have been undertaken by PHMSA.

Enforcement Case Status
The status of various types of enforcement cases by the year they were initiated.

Civil Penalty Case Status
The status of enforcement cases involving civil penalties.

Enforcement Information for Specific Operators
The national-level reports above are also provided on an operator-specific basis.

See the menu in the left-hand sidebar for other enforcement reports.

Rights of Third-Parties

ROW Grant ¶35

The parties hereto do not intend to create any rights under this Agreement that may be enforced by third parties for their own benefit or for the benefit of others.

Items for Discussion

- Are stipulations reviewed and revised appropriately?
- Are important concerns addressed in a timely manner by the agencies?
- Should third-parties have a role in review and enforcement?
- Should JPO provide more information to the public on its activities and actions?
- How can JPO and the public ensure the use of technological advances?
- Would decision-making and public participation be improved by independent oversight?

The Story of a Troubled Tank:
Analysis of Alyeska Pipeline Service Company Pump Station #9 (PS9) Pressure Relief Tank Overflow Spill, May 25, 2010
(Background, Causes and Follow-Up)

_____

Prepared for the Copper River Watershed Project

By

Richard A. Fineberg, Principal Investigator
Research Associates
PO Box 416
Ester, Alaska 99725

August 24, 2010

Introduction

This report is focused on the series of operational mistakes that caused the overflow of the Trans-Alaska Pipeline System (TAPS) relief tank at Pump Station #9 (PS9) May 25, 2010, the background, institutional factors and proximate causes leading to this mishap, and the post-spill investigation by the TAPS operator, the Alyeska Pipeline Service Company.

The report was initially posted on-line at this researcher's web site August 24, 2010, along with a hyperlink providing public access to a redacted version of the Alyeska internal investigation report. (The company internal investigation report, completed one month after the spill but held confidential by Alyeska, was released to this researcher by the Alaska State Pipeline Coordinator's Office in response to a public records request.)

In addition to the redacted Alyeska internal investigation report, this report contains twelve hyperlinks. The hyperlinks are listed with the Table of Contents and are accessible on-line through this copy of the report.

At this time concerned observers have been told that Alyeska is making serious efforts to strengthen company incident investigation procedures and follow-up efforts. It should be noted, however, that Alyeska launched a similar improvement effort after mishaps at the same station and relief tank three years ago, in January and March 2007. Moreover, one year after the 2007 incidents, Alyeska officials claimed the 2007 post-incident improvement effort to be successful. The 2010 incident investigation report and this analysis clearly demonstrate the importance of assuring independent oversight and follow-up on TAPS.

– Richard A. Fineberg
October 21, 2010

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The Story of a Troubled Tank:
Analysis of Alyeska Pipeline Service Company
Pump Station #9 (PS9) Pressure Relief Tank
Overflow Spill, May 25, 2010
(Background, Causes and Follow-Up)

Review of the Alyeska Pipeline Service Company's closely held **internal investigation report** on the May 25 oil spill at Trans-Alaska Pipeline System (TAPS) Pump Station #9 (PS9) reveals a disturbing picture of chronic problems on the aging, partially revamped pipeline that carries upwards of 550,000 barrels of oil per day (bpd) from the northern edge of the continent on an 800 mile journey across Alaska to reach tankers headed to the West Coast.

About 5,000 barrels (210,000 gallons) of crude oil overflowed the pressure relief tank (TK-190) at PS9 when the automated TAPS control system released an estimated 33,000 barrels from the pipeline during an emergency shutdown. The spill was set in motion by cascading events that began when the pipeline's critical control systems crashed at PS9 due to the failure of an uninterruptible power supply (UPS) battery system that was supposed to be rock-steady. The spilled oil remained within the lined retaining walls of the station's tank farm compound, but the significance of the event transcends the limited environmental consequences of the spill itself and revolves around this question: Was this spill an anomaly, or was it a harbinger of future mishaps on the line?

TAPS resumed shipping three days after the spill and presently carries an average of 550,000 barrels per day (bpd) with a gross market of more than $40 million for roughly 3% of the nation's daily liquid petroleum consumption.[1] Meanwhile, this writer's review of the background to the May 25 spill reveals new facts and troubling questions:

- When pipeline was restarted May 28, the pipeline operators did not know what caused the UPS system to fail, leading to the spill and shutdown. As a **condition of restart**, the federal Pipeline and Hazardous Materials Safety Administration (PHMSA) required Alyeska to send a special oversight group to PS9, a normally automated facility, to watch the pipeline 24 hours a day.

[1] Aug. 19, 2010 ANS production = 619,436 barrels, avg. price (8/1 – 8/20) = $77.41; total domestic daily consumption, July 2010 = 19,063,000 barrels. See: Alaska North Slope production and price: Alaska Dept. of Revenue, "ANS Oil Production," accessed Aug. 20, 2010 at http://www.tax.alaska.gov/programs/oil/production/ans.aspx?8/1/2010 and "Crude Oil Prices, Bloomberg," accessed Aug. 20, 2010 at http://www.tax.alaska.gov/programs/oil/dailyoil/dailyoil.aspx. U.S. daily consumption: U.S. Energy Information Administration, "Petroleum Trade: Overview," Monthly Energy Review, July 2010, p. 41 (Table 3.3a; "Product Supplied").

- Nearly three months later, TAPS is still operating with the cause of failure unresolved (insofar as is publicly known), and with the same special watch team in place. The prolonged, temporary staffing of the normally unmanned pump station is an indication of the unease that hangs over the aging, reconfigured pipeline as information on the spill slowly comes to light.

- According to Alyeska's closely held internal investigation report, the pipeline company failed to address a string of separate warnings and lessons from prior incidents that should have alerted the pipeline operators to potential risks during the planned maintenance work during the May 25 shutdown that went awry. The investigation report levels frank criticism at Alyeska management for these oversights.

- In both press releases and a company-wide internal message July 1 summarizing the internal review, Alyeska failed to present clear and complete descriptions of the May 25 events and relevant past incidents. Alyeska's selective release of information has deflected public attention from a series of troubling mishaps, the latest of which appears to have been triggered by the pipeline company's own operating, maintenance and management deficiencies.

- Two salient questions emerge from this analysis: If nobody had been present May 25 at PS9, a normally automated facility, when and how would this spill have been detected? Does Alyeska's troubled electrification and automation makeover, formally sanctioned in 2004 and now in place at three of the pipeline's four operating pump stations, increase the pipeline's vulnerability to a major spill?

Concerns about the safety of TAPS operations take on added significance in the glare of the fire and explosion that wrecked BP's Deepwater Horizon oil platform five weeks before the PS9 spill. BP, the major owner of TAPS with a 46.93% share,[2] supplied Alyeska with its current President, Kevin Hostler. The Alyeska president, who came to the pipeline company in 2005, announced his

[2] BP, with a 46.93% share of TAPS, is joined on the pipeline by ConocoPhillips (28.32%), ExxonMobil (20.34%), Koch Industries (3.08%) and Unocal Pipeline Co. (1.36%.(Facts) Together, these three transnational corporations own 95% of the pipeline and control approximately the same percentage of North Slope production. Alyeska Pipeline Service Company, *the facts: trans alaska pipeline system, 2007*, p. 6. Together, the three transnationals own 95% of the pipeline and control approximately the same percentage of North Slope production (production shares estimated from Alaska Dept. of Natural Resources data).

planned retirement July 7, while congressional staffs were investigating worker complaints that Alyeska's repressive and cost-cutting environment jeopardizes safe operations.[3]

The congressional **staff memorandum** cited in the preceding paragraph provides additional perspective on TAPS and other pipeline issues, while this writer's May 5, 2010 **briefing on TAPS issues**, prepared three weeks before the spill, will introduce readers to the range of challenges that Alyeska faces. Additional information to help readers evaluate Alyeska's previously unreleased incident investigation report on the May 25 mishap follows, presented in four steps: (1) inquiry into initial accounts of the May 25 incident; (2) review of PS9's critical position as the final pumping station in the pipeline's reconfigured, automated operating framework; (3) examination of mishaps at PS9 that preceded the events of May 25, which may be understood as inadequately addressed warning signs; and (4) consideration of Alyeska's work environment, as experienced by employees. Taken together, these steps lay the groundwork for a summary and analysis of Alyeska's previously unreleased incident investigation report and subsequent concluding comments.

1. "Power Failure:" Explanation or Mask?

In each of four **press releases** issued between the day of the spill (May 25) and pipeline restart three days later, Alyeska steadfastly asserted that the spill occurred when a power failure caused PS9 pressure relief tank valves to open "as they are designed to do." The press releases and daily fact sheets provided little substantive information on the cause and nature of the power failure and the cascade of events it set in motion, leading to the unrecognized oil discharge into the secondary containment area surrounding the 55,000-barrel tank. This account seeks to fill the gaps.

As reported, the May 25 spill occurred during a planned, 6-hour maintenance shutdown at PS9, after workers shut off the primary power feed from the local utility. The shut-off was the first step in a scheduled test of the station's emergency fire response system; the workers apparently assumed that the station's emergency power system for critical controls would come on immediately, as described in an **Alyeska brochure** on the pipeline's pump stations.

But that didn't happen.

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[3] See: Subcommittee on Railroads, Pipelines, and Hazardous Materials Staff, "Summary of Subject Matter – Hearing on 'The Safety of Hazardous Liquid Pipelines (Part 2): Integrity Management'," July 14, 2010, pp. 5-9. (Memorandum to Members of the Subcommitee on Railroads, Pipelines, and Hazardous Materials, Committee on Transportation and Infrastructure, U.S. House of Representatives.)

When the UPS system that was supposed to provide emergency backup power for the station's critical communication and control systems did not deliver, the planned safety test turned into an actual emergency. Personnel on site for the planned maintenance tests were unable to restart the main power system and could not figure out the reason the UPS system did not work.

Meanwhile, the resulting break in electronic communications with the pipeline's remote operations control center (OCC) triggered an automatic diversion of oil from the main pipeline (already idling for the planned maintenance shutdown) to the pressure relief tank. The oil diversion from the main pipeline continued, unrecognized, until the relief tank was observed overflowing, about 40 minutes after the worker-initiated power failure. It took another 1-1/4 hours for workers to stop the overflow diversion by manually closing the relief valves that had opened automatically.

Alyeska officials have been reluctant to divulge information – if they possess it – that might shed critical light on the events of May 25. The pipeline company declined to release its June 22 internal investigation report, *TK-190 Overfill Incident Root Cause Analysis Report And Post Accident Review*, shielding the document from public review by stamping every page "[c]onfidential and proprietary information protected from public disclosure." The Alaska State Pipeline Coordinator's Office, responding to a public records request under Alaska statutes, released the company investigation report to this writer August 4, withholding ten attachments for security purposes and protection of trade secrets, as well as the names of persons interviewed. The SPCO release came two days after Jason Leopold published information about the report, with direct quotes from its findings, in the second of his *Truthout* investigative reports on TAPS problems.[4]

A major surprise in Alyeska's internal investigation report was that the investigating team had conducted a Technical Failure Analysis (TFA) devoted to the UPS systems and a protective breaker within the UPS system for critical controls that was discovered – apparently sometime after the spill – to have tripped open, cutting off the theoretically uninterruptible power supply. The investigation report also noted that an external switch, apparently placed on the control system outer panel to show the breaker's position, was shielded by a protective guard that may have prevented the switch from functioning, and that PS9 maintenance records showed outstanding

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[4] Jason Leopold, "Confidential Report Blames BP Executive For Distress at Alyeska Pipeline," *Truthout*, August 2, 2010 (accessed Aug. 20, 2010 at http://www.truth-out.org/BP-Executive-Turned-Alyeska-Pipeline-Into-Deeply+Distressed-Company61927); and "Dangerous Cost Cuts at Alyeska Pipeline: 'Yet Another Example of How BP Runs Things'," *Truthout*, July 6, 2010 (accessed Aug. 20, 2010 at http://www.truth-out.org/alyeska-pipeline-yet-another-example-how-bp-runs-things61097).

work orders to replace weak UPS system battery cells.[5] During testing, the investigating team found the UPS system was functioning correctly and therefore "was not able to specifically determine the physical failure cause;" in sum, "no specific root cause [could be] identified."[6]

An opaque summary Alyeska's investigation report findings transmitted to all employees by Operations Vice President Mike Joynor in a **July 1 e-mail** made no mention of: (a) the TFA line of inquiry; (b) that investigation's focus on the UPS emergency system for critical communication and control systems; or (c) the recommendation for additional testing and attention to "[a]ny known maintenance issues."[7] This e-mail acknowledged that a backup power system failure led to the communications beak between PS9 and the pipeline's supervisory control systems – a big step forward over Alyeska's earlier press releases, but still providing no details.

The June 22 investigation report makes clear what Joynor's July 1 summary did not**:** When the pipeline was restarted three days after the spill (May 28), the exact cause of the failed emergency power supply for the critical control systems at PS9 was unknown. It should be noted that by the time Joynor issued his opaque July 1 summary, speculation about what Alyeska was not telling the world was already a hot topic among the small universe of interested observers, including concerned Alyeska employees.

The mischief created by the absence of clear and well-documented public information about the causes PS9 spill was evident two weeks later at a July 15 congressional hearing on pipeline safety issues in Washington, DC. At that hearing, Alaska Congressman Don Young used a rather bizarre interpretation of the breaker information discussed above as he tried to convince his colleagues that the spill was not a big deal. The congressman offered this explanation of the spill:

> "There was a human error factor – uh, there was a breaker that was forgot not *[sic]* to be checked . . . oil that did spill at a pump station was contained as it was designed, and it worked excellently."[8]

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[5] Alyeska Pipeline Service Company, *TK-190 Overfill Incident Root Cause Analysis Report And Post Accident Review (TK-190 Overfill Incident Review)*, June 22, 2010, pp. 8, 11 and 12 and Appendix 8 (*Technical Failure Analysis*), pp. 1-4.

[6] *TK-190 Overfill Incident Review, pp. 4 and 11.*

[7] Technical Failure Analysis, p. 4

[8] Subcommitee on Railroads, Pipelines, and Hazardous Materials, "'The Safety of Hazardous Liquid Pipelines (Part 2): Integrity Management'" (Hearing), July 15, 2010 (hearing accessed July 15, 2010 at *http://transportation.edgeboss.net/wmedia-live/transportation/15905/100_transportation-tnilive_070118.asx*).

No big deal? To buy into Congressman Young's position, one must overlook at least three important points that follow from the information in Alyeska's closely-held incident investigation report:

- Since the breaker worked properly when tested under various circumstances, some undiscovered factor must have been creating problems; what made the breaker trip open in the first place?
- If the purpose of the UPS system is to provide seamless emergency power when needed, why would anyone design a UPS system with a protective breaker that could take it out of service, without a backup system or plan to ensure uninterrupted power?
- Given the vulnerability of the UPS system – and, in train, the pump station's critical control and communication systems – to this single point of failure: what program deficiencies permitted the pipeline company to allow installation of a protective guard that (a) prevented the external breaker from working properly and (b) made the breaker more difficult to troubleshoot, without ever discovering the problem it had created?

In any event, Congressman Young's statement must have astonished persons who recognize the necessity of carefully checking both equipment and procedures to assure safe operations. The congressman's explanation was tantamount to saying, "So what if the pilot skipped pages on his pre-flight safety check?" The congressman's excursion demonstrates that when it comes to TAPS operations, seemingly simple answers frequently point the way to more important questions with broader implications.

Breaker confusion was just the tip of the iceberg. Before considering the submerged issues that Alyeska's incident investigators confronted and reported, background on TAPS facilities and operations will be useful.

2. PS9 and Strategic Reconfiguration (SR)

During its salad days in the late 1980s, when TAPS carried two million bpd of North Slope crude oil, PS9 was the eighth of ten pipeline pump stations. To relieve pipeline pressure during transient conditions and shutdowns Alyeska made use of the 55,000-barrel pressure relief tank at each of the pump stations along the 800-mile TAPS route between Prudhoe Bay and Valdez, along with . a much larger pressure relief facility on the south flank of the Brooks Range at PS5 – a facility that never pumped oil but has protected the pipeline on its descent from Atigun Pass since 1977.

Keeping pace with the decline in North Slope production, Alyeska has closed six pumping units since 1996, taking the pressure relief tanks at each station out of service. On the morning of May 25, PS9 provided the only relief tank on the pipeline between Valdez and the relief tank at PS5.[9] In the aftermath of the May 25 spill, the tank at PS9 is now out of service.[10]

With fewer pressure relief tanks, safe transport on TAPS is now more dependent than ever on its critical communications and control systems to identify changing hydraulic conditions and respond with proper sequencing and timing of valve opening and closure.[11]

Today, with throughput at less than one-third the historical peak, PS9 is also the pipeline's fourth and final pump unit, pushing North Slope oil across the last 250 miles of TAPS, over the Alaska Range and into the pipeline terminal at Valdez.[12] Under a massive, multi-year project known as Strategic Reconfiguration (SR) that began in 2004, at three of the four current pumping units on TAPS Alyeska has replaced jet engine-powered pumps with new electric pumps (more efficient and capable of handling today's lower throughput) and has installed new control systems that are supposed to be fully automated.

PS9, the SR flagship, was the site of Alyeska's first pump station conversion.[13] When the SR project was formally announced, Alyeska said the project would be completed by the end of 2005 at an estimated cost of $250 million,[14] but things did not go as planned: It was 2007 before Alyeska was able to put its flagship reconfigured and fully automated pump station into operation. The pipeline company now anticipates completion of SR at the fourth and final station – PS1 at Prudhoe Bay – in 2013. In the intervening years, the project cost has more than tripled.[15]

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[9] *the facts: trans alaska pipeline system, 2007*, p. 34.

[10] Michelle Egan, Communications Director, Alyeska Pipeline Service Company, Aug. 5, 2010 (e-mail).

[11] For a brief description of operations factors, see Alyeska Pipeline Service Company, *Operating the Trans Alaska Pipeline*, June 1988, pp. 15-16.

[12] *the facts*, 2007, *passim.*; Alyeska Pipeline Service Company, "Pipeline Facts" (on-line), at *http://www.alyeska-pipe.com/Default.asp* (accessed Aug. 20, 2010)

[13] Alyeska Pipeline Service Company, "Strategic Reconfiguration" (on-line), at http://www.alyeska-pipe.com/sr.html (accessed Aug. 20, 2010).

[14] Alyeska Pipeline Service Company, "Pipeline Reconfiguration Project Overview: Pump Stations and Control Systems Upgrade -- Project Completion by End of 2005," March 2005, pp. 2, 4; "$250 Million TAPS Upgrade Approved: Alyeska starting biggest TAPS project since construction," *Alyeska Monthly* (on-line newsletter), March 2004; and "Pipeline Facts" (on-line), *ibid.*

[15] PS1: Alan Bailey, "Trimming back: 60 jobs at Alyeska to go in 2010 as pipeline oil flow continues to decline; pump station 1 electrification to be delayed by one year," *Petroleum News*,

In addition to the fact that the cost and scheduling estimates were so far off the mark, a broad range of implementation problems call the planning for this project into question.[16] Of particular relevance here is the fact that the May 25 spill marked the third time in four years that Alyeska encountered problems associated with a diversion of pipeline flow to the relief tank at PS9 during an unplanned shutdown. The two prior events at the PS9 relief tank were:

- the brief but intense fire on January 6, 2007, mentioned above, which began when an improperly deployed portable heater ignited gas vented from the relief tank during an unplanned pipeline diversion, that roared over the PS9 tank farm (but quickly subsided); and
- a breakdown of the newly-installed pipeline control system two and a half months later, on March 22, 2007, during which the TAPS operations control center (OCC) temporarily went blind and lost communications with PS9, resulting in an ungoverned relief tank diversion.

These two events will be discussed in the following section.

3. Near Misses: The Unusual History of the Tank at PS9

The January 2007 fire occurred when workers brought a portable heater into the tank farm and set up a temporary structure in order to work at a temperature of 25 degrees below zero. An electrician was checking valve wiring that had been modified for the new Safety Integrity Pressure Protection System (SIPPS), a component of the automated control system. In violation of basic safety procedures, the portable heater was placed beneath a relief tank vent and the electrician was working without adequate radio contact with the pump station control room, a few hundred yards away. The Joint Pipeline Office (JPO) report on the tank farm fire also noted the absence of an on-site alarm system that would have enabled workers to evacuate the tank farm area whenever a relief event was beginning. These unsafe working practices almost immediately caught up with Alyeska when the new SIPPS system sent an erroneous signal from 150 miles south of the pump station, automatically triggering an unexpected shutdown event. The pipeline controller tried unsuccessfully to warn the electrical worker as the relief tank began to fill,

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Nov. 15, 2009. Costs Tripled: In 2007 the Alaska Department of Revenue reported that the estimated expenditure for SR was approximately $750 million (Alaska Department of Revenue, *Fall 2007 Revenue Sources Book*, p. 44).

[16] See: Richard A. Fineberg, *Trans-Alaska Pipeline System Strategic Reconfiguration: A Narrative Case Study*, June 4, 2009 (prepared for the Alaska Forum for Environmental Responsibility and the Alaska Wilderness League; submitted to the Alaska Department of Environmental Conservation regarding the State of Alaska Oil & Gas Infrastructure Risk Assessment Project; accessed Aug. 20, 2010 at ; accessed Aug. 20, 2010 at http://www.dec.state.ak.us/spar/ipp/ara/documents/Fineberg%20Comments%201%20of%204%20(Revised).pdf).

expelling flammable gasses that were quickly ignited by the improperly placed temporary heater. The fire that erupted high over the tank farm went out five minutes later, when the relief valves were closed: a terrifying near miss that might have destroyed the station.[17]

PHMSA, the U.S. Department of Transportation's pipeline safety unit, found Alyeska to be in violation of a slew of safety procedures at the PS9 tank farm that day and hit the company with a proposed penalty of $506,000 – the largest the agency issued in 2007 against any pipeline operator.[18] Three years later, Alyeska is still contesting this proposed penalty. Its lengthy (308 page) and rather lame litany rejecting PHMSA's proposed penalty assessments, filed in February 2008, Alyeska claims, among other things, its radio communications were adequate and should not be penalized because the legal standards for portable radio communications are not explicit.[19]

The new, fully automated pipeline supervisory control system at PS9 was activated shortly after the fire at the PS9. On March 22, 2007, the new system malfunctioned. Alyeska was still in the process of "running in" new pipeline pumps and control equipment on that day. Although the technical language of that day's incident report is difficult to decipher, the parallels to the event at the same site three years later are unmistakable: On March 22, 2007, the OCC lost communication with PS9, an event that initiated an automatic pipeline shutdown and oil diversion from the mainline into the relief tank, while the OCC – which was supposed to be in complete control of the automated system – was temporarily blind and could not tell what was happening at the pump station.[20]

The incident report on the March 22, 2007 shutdown contained at least three references to possible warning and alarm system inadequacies. This problem had surfaced two months earlier

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[17] See: Alyeska Pipeline Service Co., "Pump Station 9 Tank Vent Fire Root Cause Incident Investigation & Executive Summary – Final Report," March 9, 2007;" and Joint Pipeline Office, "Investigation of the January 6, 2007 PS 9 Tank Farm Fire," March 7, 2007 (prepared by Ray Ellevan [Alaska Dept. of Labor Safety Liaison]; Technical Report Number ANC-07-E-001).

[18] U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), *Notice of Probable Violation, Proposed Civil Penalty and Proposed Compliance Order* ("NOPV;" CPF 5-2007-5041), p. 12; and *Notice of Amendment* (CPF 5-2007-5042M), Nov. 27, 2007 (letters from Chris Hoidal [Director, Western Region, PHMSA] to Mr. Jim Johnson [Pipeline Vice President, Alyeska]).

[19] Alyeska Pipeline Service Co., "Re: Notice of Probable Violation CPF No. 5-2007-5041" (letter from Joseph P. Robertson, P.E. [JPO/DOT Liaison Director, Alyeska] to Chris Hoidal [Western Region Director, PHMSA], with attachments [308 pages], including Response to Notice of Probable Violation #9); as of Aug. 22, 2010, PHMSA enforcement records indicate case still open.

[20] Alyeska Pipeline Service Co., "March 22, 2007 Pump Station 09 Shutdown Incident," submitted to the Joint Pipeline Office April 17, 2007. See also John Governale, "Site Visit top PS-9 for Post Startup Oversight of Pipeline Strategic Reconfiguration Project, 5-6 April 2007," April 10, 2007 (TAPS Technical Report; JPO No. ANC-07-E-012).

in the near-miss fire event and arose again three years later with the May 25 relief tank overflow.[21]

Alyeska's report on the March 22, 2007 incident also discussed the relief tank overfill issue. At that time, the report noted, technicians were on site while the new system was being put into place; they halted the flow to the relief tank before it could overflow. Nevertheless, the 2007 investigation report expressed concerns about future occasions, when no one would be at the fully automated facility. Considering the implications of the fail-safe diversion to the relief tank, the investigators questioned the design strategy but noted that a future situation in which the OCC would not be able to observe and stop the overfill was "highly unlikely." The report, however, made no recommendation on this issue. [22]

In the January-February 2007 issue of *Alyeska Monthly*, President Hostler, referring to the death of an employee in 2006, acknowledged that, "[b]y our standards, we did not have a good year. . . . We will not tolerate poor safety performance on TAPS." But two months later Hostler proclaimed that "[e]very day our professional workforce continues to deliver high safety and quality standards

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[21] "March 22, 2007 Pump Station 09 Shutdown Incident," p. 3.{"insufficient warning methods"), p. 9 ("There was no alarm to OCC indicating the faulted condition."); and p. 18 ("Alarm management is currently under review for the SR project. . . . The number of alarms available in the SR system configuration is quite large. There are a large number of automatic diagnostic features . . . that can flood the operator with too much information.").

[22] "March 22, 2007 Pump Station 09 Shutdown Incident," pp. 21-22:

> Worst Case Scenario for Tank Overflow
>
> If there had been no one at PS09 and if OCC had not recognized the abnormal situation through other means, the relief event could conceivably have continued, and after approximately 70 minutes from the start of the relief event, the tank would overflow. The overflow would no longer be measured and accounted for as tank inventory in the Leak Volume Balance detection system, soon afterwards the leak detection system would have alerted the OCC controllers that a loss was occurring on the pipeline. The overflow would be contained within the tank farm dike area. The dike would have provided an additional 6-hour of containment at this relief rate.
>
> This scenario is very unlikely after implementation of the recommendations from this report.
>
> Design Strategy:
>
> The design strategy for this type of malfunction was to allow the oil to relieve in the tank until the station was recognized through other means by the OCC controller, who would then close the RGVs in the event the relief could not be stopped either by raising the set point or closing the RB block valves. This situation is highly unlikely, but the strategy is to overfill the tank which is contained within a dike area if absolutely necessary instead of risking the integrity of the pipeline by closing the relief valves at the wrong time."

to maintain integrity in all business practices."[23] In November 2007, the month that PHMSA issued its proposed penalty on the PS9 tank vent fire, in the hard-copy version of the year-end (November-December 2007) *Alyeska Monthly* newsletter, Hostler stated that the occurrence of the fire was "unacceptable," noting that "[w]e launched the Unified Plan to improve upon [work practices . . . and] identify improvement areas for safety, integrity management and risk management on TAPS." [24]

The **Unified Plan**, Alyeska management's response to problem indicators that included the two relief tank incidents at PS9 early in 2007, coordinated nearly two dozen Management Action Plans (MAPs) dealing with people, processes and facilties,[25] Some of these initiatives will be discussed later in this analysis.

4. Cost-Cutting and Open Work Environment Issues

[Alyeska's investigation report of the May 25, 2010 spill incident provides a measure of the pipeline company''s success (or lack thereof) in addressing TAPS problems. Problems at PS9 – presented here as probable warning flags unheeded and the results of the pipeline company's long-running struggle to implement the SR program – intersect another set of TAPS issues: employee concerns and the pipeline owners' predilection for cost-cutting. This report does not assert direct links between specific fiscal and management pressures and the May 25 spill.

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[23] Kevin Hostler, "Committed to Improving Safety on TAPS" (President's Message), *Alyeska Monthly*, Jan. / Feb. 2007(http://www.alyeska-pipe.com/InTheNews/Monthlynews/2007/Feb/Feb2007_presidentsmessage.asp), and "Open Work Environment on TAPS" (President's Message), *Alyeska Monthly*, April 2007 (*http://www.alyeska-pipe.com/Inthenews/Monthlynews/2007/Apr/Apr2007_presidentsmessage.asp*).

[24] Kevin Hostler, "Moving Into the New Year" (President's Message), *Alyeska Monthly*, Nov. / Dec. 2007 (hard copy). The article with this statement was pulled from the internet version of the newsletter and replaced with a repeat copy of the previous month's "President's Message," in which Hostler talked instead about how much he enjoyed the opportunity to visit rural Alaska. See: "Visiting Rural Alaska" (President's Message), *Alyeska Monthly*, Nov. / Dec.. 2007 (*http://www.alyeska-pipe.com/InTheNews/MonthlyNews/2007/Oct/Oct2007_presidentsmessage.asp*, and *http://www.alyeska-pipe.com/Inthenews/Monthlynews/2007/Nov/Nov2007_presidentsmessage.asp*).

[25] See: Kevin Hostler, "Unified Plan developed to improve safety, integrity management on TAPS" (President's Message), *Monthly News*, Jan. 2008 (accessed Aug. 20, 2010 at *http://www.alyeska-pipe.com/Inthenews/Monthlynews/2008/Jan/Jan2008_presidentsmessage.asp*) and Alyeska Pipeline Service Company, "Unified Plan Presentation to TAPS Oversight & Regulatory Agencies," Nov. 28, 2007.

However, it is clear as a general principal that cost-cutting measures are liable to have corrosive effects on safety – and on reports, which are not written in a vacuum. Before considering Alyeska's internal investigation report on the May 25 spill, readers may wish to consider the following background information on Alyeska's work environment.]

While cost cutting on TAPS has been frequently source of employee concerns, in the last year this pressure has become so intense that Alyeska worker appeals were somehow turned over to the BP ombudsman for investigation.[26]

At the July 15 hearing of the U.S. House Transportation and Infrastructure Committee's Subcommittee on Railroads, Pipelines and Hazardous Materials in Washington, DC (the same session at which Congressman Young sounded off about checking breakers) an Alyeska plan to economize by moving TAPS workers from Fairbanks to Anchorage was a focus of interest. Once again Congressman Young was off base as he tried to convince congressional colleagues that Alyeska is a separate entity that operates independently from BP. Speaking of the pipeline company, the congressman said: "[i]t's a separate entity in title, by itself. It does run itself by itself."[27]

A **2002 letter** from the head of the TAPS owners committee to the Alyeska president, turning down project financing requests and asking instead for across-the-board budget reductions, demonstrates that Congressman Young is mistaken on this issue. Then, as now, a senior BP official was speaking to another member of the BP team, on loan to Alyeska from the parent company. This kind of misinformation flourishes in many circles in the 49th state, where, all too often, the industry – dominated by the three companies that control more than 90% of both North Slope production and TAPS – calls the tune.

Documentary indication of BP's cost-cutting proclivities in Alaska would not have surprised State Representative David Guttenberg of Fairbanks. Invited to testify before the U.S. House subcommittee, Rep. **Guttenberg outlined his concerns** with this issue:

> My involvement in this issue began in December 2009 when I received word that Alyeska was planning to transfer a group of employees from Fairbanks to Anchorage. I was told that the engineers, technicians and scientists proposed for transfer are critical to monitoring and maintaining the integrity, public safety and environmental compliance of the Trans-Alaska Pipeline System (TAPS).

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[26] See, for example: Jeff Richardson, "Alyeska plans to transfer Fairbanks jobs," *Fairbanks Daily News-Miner*, Feb. 21, 2010; and Dermot Cole, "Alyeska Move to Anchorage won't pencil out, critic charges," *Fairbanks Daily News-Miner*, c. Feb. 21, 2010.

[27] "'The Safety of Hazardous Liquid Pipelines (Part 2): Integrity Management'" (Hearing).

> The proposed transfer raised alarm bells with me for two reasons: First, those were good jobs moving out of my community. Second, what standard did Alyeska use to determine that moving personnel responsible for the pipeline safety and integrity 350 miles away from the pipeline would be prudent and responsible? My initial thought was that it makes sense for these positions to be located in Fairbanks because it is a transportation-hub centrally located on the pipeline right-of-way. When something goes wrong or needs to be checked out on the pipeline, these employees can get to the problem location quickly. Anchorage is nowhere near the pipeline. In just about every scenario, it is quicker for these employees to reach the pipeline from Fairbanks.
>
> When I began speaking out publicly, several Alyeska employees contacted me and confirmed my concerns. It was explained to me that many in the company shared my sentiment, but attempts to express those concerns were squashed at the highest levels by senior managers who feared retaliation for going against the mandate of Alyeska's president. At that point it became clear to me that Alyeska's "open-working-environment" was not working at all, allowing poor decisions to go unchecked that could have severe consequences for the state of Alaska.[28]

In December 2009, Alyeska President Kevin Hostler made no bones about his cost-cutting mind-set when he came to Fairbanks to explain to employees and the Fairbanks community Alyeska's plans to consolidate offices and transfer workers to Anchorage. According to the *Fairbanks Daily News-Miner*:

> Hostler characterized the changes as part of a broad response to rising costs, including property taxes, and falling oil volume in the pipeline.
>
> With throughput on the line expected to keep falling, the company's marginal costs — the costs of operation per barrel of oil — are expected to keep going up, Hostler said.
>
> "We're trying to be as efficient and effective as we can," Hostler said, calling the restructuring a "wake-up call" to a statewide economy that leans heavily on the oil business.[29]

Underscoring the TAPS owners' obsessive interest in economizing is the fact that the TAPS owners did not authorize funding for the SR project until they were convinced that investment in the project would boost the rate of return on pipeline expenditures.[30] Many observers, including

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[28] "Testimony of Alaska State Rep. David Guttenberg," Subcommitee on Railroads, Pipelines, and Hazardous Materials, "'The Safety of Hazardous Liquid Pipelines (Part 2): Integrity Management'" (Hearing), July 15, 2010.

[29] Christopher Eshleman, "Alyeska to trim union role, Fairbanks offices," *Fairbanks Daily News-Miner*, Dec. 3, 2009, p. A1.

[30] See: Jerry Allison (Alyeska) and Pat Flood (Conoco-Phillips), "Pipeline Elecrification: Analysis of Risks and Cost Probability Distribution," Dec. 2003. (This Alyeska Pipeline Service Company document found that "[e]conomic risks are substantially greater for inertia than for electrification, with an estimated base case after tax net present value on investment of 27% for electrification of four pump stations.)

this writer, believe the industry's penchant for cost-cutting creates an unhealthy work environment that exacerbates the difficulties of ensuring safe operations on the aging pipeline.

5. Alyeska's Internal Investigation Report (Summary and Analysis)

[The Alyeska internal investigation report offers a fascinating look at pipeline operations, the challenges Alyeska faces and the manner in which the company meets those challenges. The investigating team, working in this pressure cooker, delivered a report that contains facts and critical observations that some corporate managers and other die-hard defenders of Alyeska might not welcome. To appreciate how the internal investigation team has handled its task, in addition to understanding the context of this undertaking one must struggle through technical terminology, arcane methodology and issues and frequently awkward construction. To facilitate understanding of the incident investigation report, the following summary analysis and comments are offered.]

The Alyeska internal investigation report employed two distinct approaches: The narrowly focused Technical Failure Analysis (TFA), discussed at the outset of this article, was not able to determine a specific cause of the identified breaker problem. On the other hand, the companion Root Cause Analysis (RCA), whose broader purpose was to identify potential management deficiencies, developed two root causes, three contributing causes and recommendations for addressing each. Here is a brief summary of the RCA results:

- Root Cause #1 dealt with technical and design issues. The technical issues were narrow in focus, including electrical system issues such as the unexplained breaker that tripped open and the failure of alarm systems. The design issues were much broader in scope, focusing on subjects such as the overall design basis for SR, the use of relief tanks and the configuration of valves during pipeline shutdowns.[31]

- Root Cause #2 asserted that Management Action Plans (MAPs) intended to implement past investigation recommendations have failed to arrest a pattern of significant incidents occurring on the pipeline. This finding also noted organization-wide inadequacies in

[31] *TK-190 Overfill Incident Review,* p. 12.

communicating reports and recommendations and applying lessons learned to major maintenance activities and pipeline shutdowns.[32]

- Contributing Cause #1 described less than adequate situational awareness in responding to abnormal situations on the part of both the maintenance team on site at PS9 May 25 and the OCC staff in Anchorage.[33]

- The two remaining contributing causes identified weaknesses in shutdown preparation procedures and the standards, policies and administrative controls for the shutdown.[34]

Further discussion of these findings follows.

Root Cause #1 – Design Less Than Adequate (LTA). One of the subjects flagged for further work by Root Cause #1 of this investigation is the TFA's unsuccessful quest to explain what caused the failure of the PS9 emergency power system, discussed above. Whatever shakes out of this investigation, this much is clear: Alyeska has been less than forthcoming publicly about the unexplained and unexpected failure of the pump station's UPS system for critical control and communication systems. According to the **Alyeska brochure** describing a reconfigured pump station:

> If primary power [supplied at PS9 by the Golden Valley electric utility] fails, emergency power will run life safety systems (fire and other critical systems such as critical controls, SCADA, telecommunications, and security systems) until backup power can be brought online. . . . critical systems will have up to 4 hours of emergency power via an uninterruptible power supply (UPS) system, which can be extended by a small 65-kilowatt (kW) diesel generator. [35]

Information from the background on TAPS issues presented in preceding sections bears directly on many elements of Alyeska's multi-faceted investigation report. Consider, for example, the timing of the current investigation report recommendation for a broad review to validate the overall SR design: How did the massive and long-running SR project, now in its seventh year and in effect over much of the line, arrive at this late date without having addressed the design deficiencies uncovered May 25? Were past reviews adequate and kept up to date? These

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[32] *TK-190 Overfill Incident Review,* pp. 12-13.

[33] *TK-190 Overfill Incident Review,* pp. 13-15.

[34] *TK-190 Overfill Incident Review,* pp. 15-17.

[35] Alyeska Pipeline Service Company, *Strategic Reconfiguration Power Generation System* (accessed July 14, 2010 at http://www.alyeska-pipe.com/Strategic%20Reconfiguration/Power_Generation_System.pdf; referenced on p. 3, above).

questions warrant further attention, but the immediate task is to summarize and understand what the investigators saw, reported and recommended.

Leaving the festering electrical system problems, the report's recommendation of design review for another SR component – the use and capacity of the breakout (relief) tanks – raises similar concerns. Despite the fact that the current investigation report includes the March 22, 2007 overfill near-loss as one of six "significant incidents . . . [that] demonstrate a trend of operational discipline deficiencies similar to those involved with the TK-190 overfill," facts and concerns about this prior incident critical to the present inquiry were not provided. What the May 25, 2010 incident investigation offered was a summary list of 18 key recommendations, lumped together from the six past incidents dealing with a variety of issues; two of those incidents were from other facilities and two were not concerned with relief tank overflow.

The current investigation report stated that "[t]hese recommendations appear to have been completed within the context of each individual incident in question and were believed to have been effective toward mitigating likelihood and consequences of further incidents."[36] If relevant past recommendations had, in fact, been effective, would the events of May 25 have transpired, and would new reviews be necessary at this time?

On point in this regard are two background items from the investigation report on the March 22, 2007 near-miss that stand out among the relevant information that did not find its way into Alyeska's current investigation report: (1) The conclusion to the report on the incident three years ago questioned the philosophy of the fail-safe system which allowed a possible relief tank overfill as protection against over-pressuring the mainline. As noted earlier, that report did not make a specific recommendation on this issue. (2) In the same discussion, however, the 2007 report estimated that if an overflow situation were recognized by persons present at the automated facility (if anyone happened to be there at the time), or at the remote OCC, they would have 70 minutes to address this highly unlikely situation;[37] incident chronology indicates that when the unlikely relief tank overfill occurred three years later, the tank began to overflow in about 40 minutes.[38]

Regarding the fail-safe mechanism that kicked into action when the UPS system crashed and PS9 lost electronic contact with the OCC, the press releases Alyeska issued the week of the spill steadfastly maintained that the valves that opened automatically to divert oil to the relief tank at

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[36] *TK-190 Overfill Incident Review,* p. 9.

[37] "March 22, 2007 Pump Station 09 Shutdown Incident," pp. 21-22.

[38] *TK-190 Overfill Incident Review,* pp. 7-8.

PS9 functioned as designed. Some veteran observers question the design philosophy of the Alyeska operating system. "Fail safe [equipment] should not put you in an unsafe condition," says veteran pipeline safety engineer Richard Kuprewicz of Redmond, Washington. "This would suggest that the entire line needs to go through a hazard review."

In addition to studying the difficulties the pipeline operators encountered under SR and the problem of shutting down the pipeline without overflowing the relief tank at PS9, the incident investigation has also called for "review of the philosophy and operating practice regarding the configuration of the mainline valves (RGVs and BLs) during shutdowns." [39] In a rational world, one would think the system hydraulics and contingencies that affect pipeline shutdowns would have been fully considered before Alyeska and the TAPS owners started closing pump stations in 1996 and formally launched the SR automation program in 2004.

The final recommendation under Root Cause #1 is a plan to ensure implementation of upgrades at PS9 to incorporate improvements now in place at PS3 and PS4. This recommendation can best be understood in the context of SR history outlined earlier in this assessment. When the SR program was sanctioned and work began in 2004, Alyeska management anticipated installation would be completed by the end of 2005. In fact, the project proved so much more complicated and time-consuming than anticipated that it was 2007 before Alyeska put its first reconfigured pump station – PS9 – into service. In order to take advantage of knowledge that would be gained during the implementation process, management decided to perform the next installations (PS3 and PS4) in sequence. Now that PS3 and PS4 are reconfigured and running with newer electrical and automation equipment, PS9 has to catch up.

Root Cause #2 – Previous Incident MAPs & Lessons Learned LTA. The salient conclusion of this root cause is that "a pattern of significant incidents" continues on TAPS, despite "Management Action Plans (MAPs) intended to implement recommendations identified during investigations" and other "efforts . . . to address previous incidents and learn from work experience." The investigation report describes in less than flattering terms the organizational environment in which this pattern of significant incidents continues. According to the investigation report:

- "Lessons Learned are routinely conducted throughout the organization for activities that include major maintenance completion, pipeline shutdowns, spill drills and incident response," but "[a]s an organization, we are not optimizing our opportunities to learn."

[39] *TK-190 Overfill Incident Review,* p. 12.

- "Personnel are working hard to complete all requirements and remain in compliance, but the completion of actions intended to prevent incidents and the opportunities to learn from work activities have not been effective in influencing the culture or behaviors."
- Remedial actions tend to be case-specific and lacking in follow-up to assure implementation and company-wide dissemination. "The Operations Incident Review Board has not been meeting as routinely as intended and has not effectively communicated incident learning's [*sic*] throughout the organization."
- "There is usually no continuity between the Incident Investigation Team and the MAP Development Team."

To deal with these observations, the investigating team made the following recommendations:

- Ensure PS9 incident and future incident investigation team representation during MAP development and implementation;
- Enhance incident investigation and loss prevention manuals "to provide direction and detail on MAP purpose, accountabilities, Investigation Team/MAP continuity, development, communication, tracking, and validation. . . . Also, provide guidance to the Operations Incident Review Board to incorporate knowledge sharing and a learning culture;" and
- "Improve methods to provide easy and reasonable access to incident investigation reports, Lessons Learned, risk assessments, and hazard analysis . . . . Establish expectations for personnel to utilize the tools to foster a culture of knowledge sharing and learning throughout the organization."[40]

The investigation report asserts subpar performance by portions of the Alyeska management structure involved with incident investigation, giving especially low marks to the MAP processes and making a bid for investigation team representation in MAP development and implementation proceedings in order to improve those undertakings.

Although these recommendations are constructive, past history suggests that they do not, in and of themselves, guarantee success. The **Management Action Plans** launched in 2007 in response to events that included the January fire and the March communications loss and shutdown at PS9 were initiated with similar hopes. For example, in plan approvals at that time, Alyeska promised to "significantly improve our Incident Investigation Process," committing to complete training on improved investigative techniques applied to serious incidents by March 31,

[40] *TK-190 Overfill Incident Review,* pp. 12-13.

2008 and assuring "a much higher level of understanding and learning from incidents."[41] Another part of the MAP initiative, approved two months later, noted that "Alyeska has identified the need to improve its Incident Investigation and Root Cause Analysis Processes," with a goal of having a robust process that results in identification of true root cause(s) associated with near-loss and actual loss incidents."[42]

Contributing Cause #1 – Situational Awareness LTA. According to the investigation report, During the May 25 incident, OCC & field personnel "did not react in a manner that supported the safety and integrity of TAPS." Apparently they failed to recognize that when OCC lost electronic communications from PS9, oil would automatically be diverted to the relief tank, setting up conditions for the overflow that occurred. "This lack of action and preparedness prevailed in spite of a communication in 2009 which noted the fire system testing 'will not shut down the station unless the relief system UPS is not up to snuff'." The investigators also noted that "situational awareness was identified in the previous PS09 Piping Overpressure Event report and the fact that it was identified again as an issue during this incident provides direct linkage to Root Cause #2."[43]

It should be noted that in discussing this contributing cause the investigation report has quietly referred to two clear warnings in 2009 about issues that directly contributed to the May 25 incident:

- The pipeline over-pressure event at PS9 in July;[44] and
- In October 2009, PS3 workers identified the importance of close coordination with OCC and the risks of the UPS system failure when conducting fire system testing work and sent out an advisory e-mail discussing the potential problem.[45]

The investigating team recommended that Alyeska deal with this contributing cause by instituting a panoply of fixes that includes:

- enhancing process safety management training'
- improving situational Awareness training programs;

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[41] Alyeska Pipeline Service Company, "Management Action Plan – in response to Common Cause Assessment From Serious Incident Reports (Conger & Elsea – June 25, 2007)" October 5, 2007," pp. 4, 6.

[42] Alyeska Pipeline Service Company, "Management Action Plan – for Incident Investigation and Root Cause Analysis Process Improvements Initiative," Nov. 20, 2007, p. 2.

[43] *TK-190 Overfill Incident Review,* pp. 13-14.

[44] *TK-190 Overfill Incident Review,* p. 13.

[45] *TK-190 Overfill Incident Review,* p. 10.

- assessing industry best practices to improve management of OCC alarms; and
- enhancing investigation and lessons learned processes by incorporating a focus on situational awareness deficiencies.

Both the statement of the cause and the proposed actions make sense. The warnings cited above provide additional support for the assertion that the significance of the May 25 incident is not the spill itself, but the cause it gives for concern with Alyeska's performance, illustrated by the multiple institutional failures that were evident at PS9.

Contributing Cause #2 – Safe Operating Committees LTA. The crux of this issue is the absence or inadequate performance of Safe Operating Committee exercises in preparation for the May 25 shutdown and fire safety testing at PS9. The recommendation: establish clear guidelines regarding occasions for and conduct of this standard preparatory procedure.

Contributing Cause #3 – Standards, Policies, and Administrative Controls (Procedures) LTA. The report identified a number of other procedures, standards, policies and administrative controls that require improvement to resolve inconsistencies and improve communications during shutdowns. The recommendation is simple: Determine what's right, and do it.

6. Conclusions

The environmental, social and economic consequences of the Alaska spill are in no way commensurate with the Gulf catastrophe, which killed 11 people and unleashed the ongoing environmental disaster on the Gulf of Mexico. Nevertheless, BP's heavy-handed assertion of an owner's prerogative on TAPS and the pipeline's recurrent problems bear striking similarities to the conditions that led to the Gulf Deepwater disaster. Mounting evidence – much of it compiled and chronicled recently by investigative reporter Jason Leopold of Truthout.org – confirms TAPS employee concerns that a repressive, cost-cutting work environment jeopardizes safe operations.

Meanwhile, the recurrent near-miss mistakes at PS9 summarized in this article call into question Alyeska's ability to manage its operations in a manner that will deliver safe operations. The record suggests that there are huge potential risks of more serious events to come if Alyeska continues to fail to get things right on TAPS.

Some observers may take comfort in the fact that the Alyeska investigation report on the May 25 spill at PS9 candidly acknowledged that, "[d]espite the efforts made to address previous incidents and to learn from previous work activities, there continues to be a pattern of significant incidents

occurring." [46] However, as noted in this analysis, the investigation report recommendations to address current problems at PS9 give cause to recall promises made after similar near-miss events at the same troubled station and tank in 2007.

In this regard, it must be noted that the names of the two senior Alyeska signatories to the current investigation report – Senior Vice President of Operations Joynor and Director of Health, Safety and environmental Quality Rod Hanson – appear on other relevant documents. Both are signatories to a 2007 MAP document, quoted above, approving a promise to "significantly improve our Incident Investigation Process."[47] Hanson is also the signer of the second 2007 MAP plan approval referenced above, while Joynor sent the watered-down July 1, 2010 e-mail to all employees less than ten days after signing the current incident investigation report.

It is not clear from the available record whether Alyeska management team deserves more commendation for candor than criticism for failure to deliver. But the presence of the same names at both ends of this tunnel of mishaps calls attention to the small number of persons responsible for the company's large number of challenges. The possibility that a very small cadre of people maintain an effective choke-hold on decision-making at Alyeska may help explain why the pipeline company experiences seemingly perpetual difficulties establishing and maintaining a truly open work environment and a safe pipeline.

In any event, Alyeska's record stands in marked contrast to the company's carefully nurtured public image of a company whose "environmental program is infused in everything we do," a company that "proactively minimizes environmental impacts."[48]

The similarities between the 2007 and 2010 statements urging improvement to incident investigation and follow-up efforts suggest that Alyeska may be reinventing a wheel that, to date, has not rolled smoothly toward an open work environment, where robust discussion fosters safe operations. The pipeline company's reluctance to disclose information indicates flat spots in the wheel. However understandable Alyeska management's desire to avoid embarrassment may be, the company's withholding of its findings is not consistent with the spirit of the investigating team's recommendations which advocate access to incident investigation reports and related materials.

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[46] *TK-190 Overfill Incident Review,* pp. 12-13.

[47] "Management Action Plan – in response to Common Cause Assessment From Serious Incident Reports (Conger & Elsea – June 25, 2007)" October 5, 2007," p. 4.

[48] Alyeska Pipeline Service Company, "Alyeska's Environmental Program," http://www.alyeska-pipe.com/environment.html (accessed Aug. 18, 2010).

Despite the problems at PS9, during the first two months after the spill TAPS carried an average of about 550,000 barrels per day (bpd) – roughly 100,000 bpd less than the pipeline's pre-spill throughput.[49] With oil trading at an average price of about $75 per barrel during this period, every day the Alaska crude oil flowing through TAPS brings in more than $40 million in gross revenue – and an estimated $11 million in net profits. Due to their overlapping interests in TAPS and North Slope production interests, most of this money goes to BP and two other companies – ConocoPhillips and ExxonMobil. Together, these three companies take in upwards of 90% of the industry's net profits from the North Slope and TAPS. The state of Alaska takes in an even larger share than industry's – on the order of $15 million per day. [50]

The role the aging pipeline across Alaska plays in this economic dynamo (frequently considered on this web site in past **pipeline tariff analyses**), will receive further attention at a later date. For the moment, it will suffice to note that at today's oil prices total TAPS costs account for approximately **six percent** of the gross revenue generated by North Slope crude oil; this small percentage includes a guaranteed profit for TAPS owners on pipeline investment and operating costs as a regulated utility. Under these circumstances, one might think the industry would spare no expense to guarantee safe transport of oil. But there remains a curious contradiction between (1) the essential role TAPS plays in this highly profitable economic enterprise and (2) the apparent risks Alyeska and the pipeline owners take with its cargo – and with Alaska's environment. This dissonance demands further inquiry.

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[49] See: Alaska Department of Revenue, "ANS Oil Production," accessed Aug. 20, 2010 at http://www.tax.alaska.gov/programs/oil/production/ans.aspx?6/1/2010, etc.

[50] ANS profit estimated from: Alaska Department of Revenue, *Revenue Sources*, Fall 2009, Fig. 4-7, "Basic Data Used for ANS Oil & Gas Production Taxes," p. 34.