Attachment A

Alyeska Pipeline Service Company
Strategic Reconfiguration Program

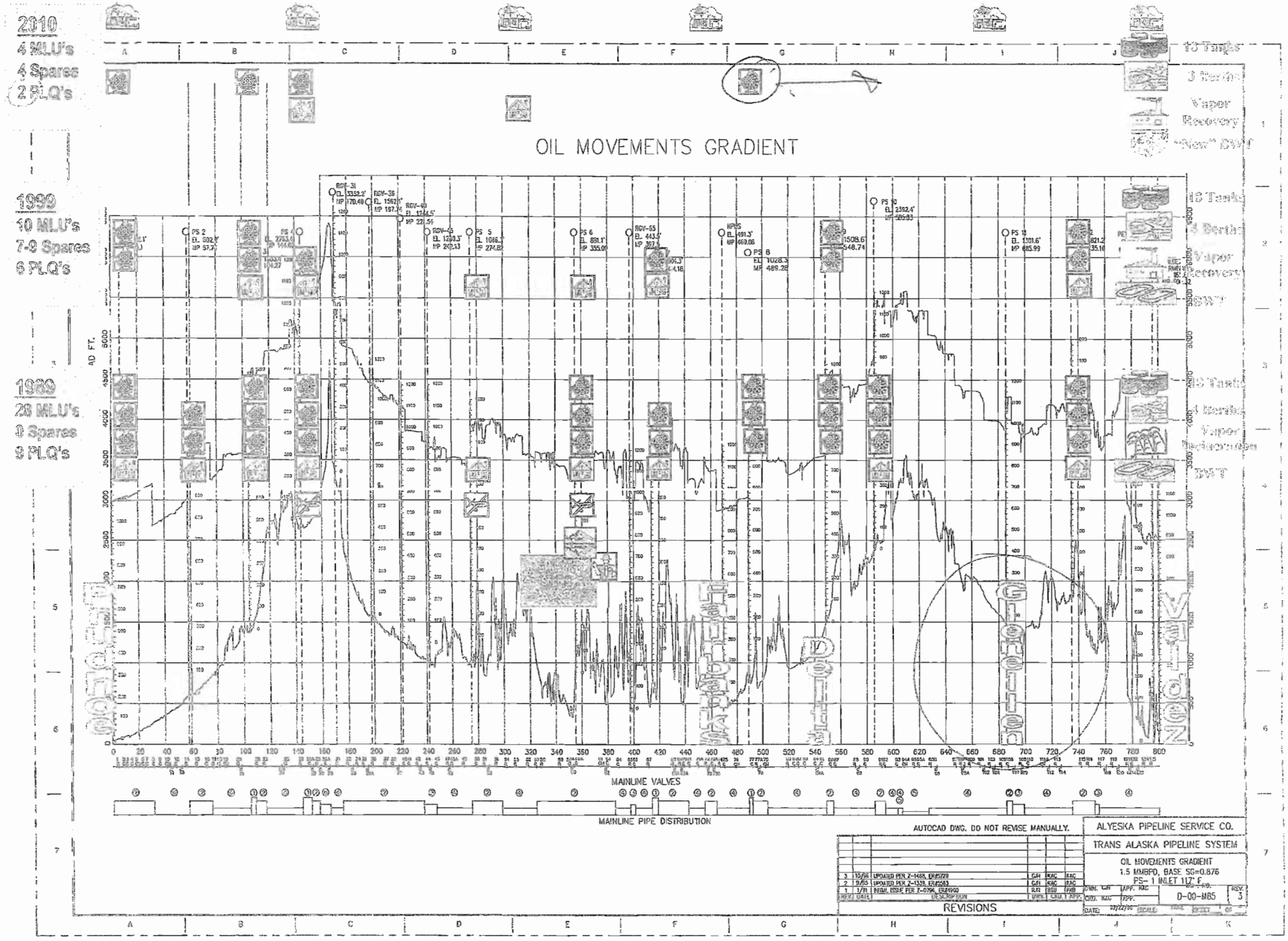
April 26, 2001

Presentation Objectives

- Provide a global overview of the Strategic Reconfiguration Program
- Provide status of Strategic Reconfiguration efforts
- Address questions and identify issues
- To consider:
  - Two Unit Operation - ok
  - Removal of Berth 1 in 2003 -
  - Owner Participation in Berth 3 risk assessment
  - Participation in a Joint Industry Project on Pipeline Cold Restart with Institute Francais du Petrole

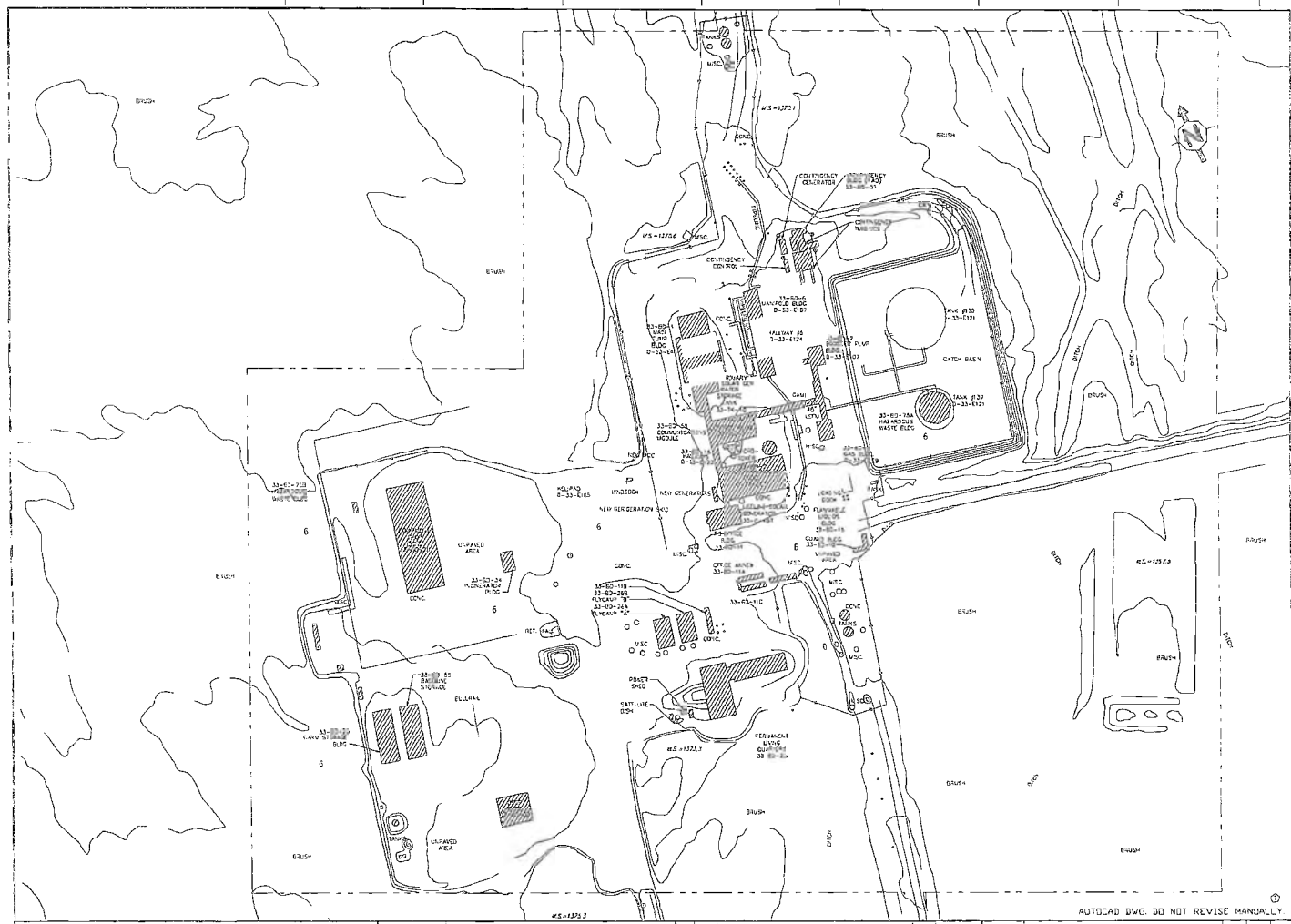
Strategic Reconfiguration Vision

- **Build into TAPS the flexibility to readily adapt to changes in product, throughput, technology, support infrastructure, and resource availability so that the optimal return on investment can be obtained.**


2010
4 MLU's
4 Spares
2 PLQ's
1999
10 MLU's
7-9 Spares
6 PLQ's
1989
28 MLU's
0 Spares
9 PLQ's
OIL MOVEMENTS GRADIENT
10 Tanks
3 Berths
Vapor Recovery
"New" DWT
18 Tanks
4 Berths
Vapor Recovery
DWT
18 Tanks
1 Berth
Vapor Recovery
DWT
40 FT.
MAINLINE VALVES
MAINLINE PIPE DISTRIBUTION
AUTOCAD DWG. DO NOT REVISE MANUALLY.
REVISIONS
ALYESKA PIPELINE SERVICE CO.
TRANS ALASKA PIPELINE SYSTEM
OIL MOVEMENTS GRADIENT
1.5 MMBPD, BASE SG=0.876
PS-1 INLET 117° F.
D-00-M85
REV. 3

Future Pipeline Physical Configuration

- Four Pumping Stations: PS1, PS3, PS4 & PS9
  - One operating pump and one full spare pump
  - One operating generator and one spare generator
- Two contingency cold restart facilities: PS7 & PS12
  - Tank, crude-heating process, and pumps to provide 250,000 bpd
  - Mainline valve to allow suction from and discharge to the mainline
- One relief facility: PS5
- Maintenance and OSCP centers: PS1, PS4, PS5/6, Fairbanks, Glennallen and Valdez



ALYESKA No.	PLUG No.	REV DESCRIPTION
(TANK AREA)		
TK-135	33-TK-1	CRUDE O.
TK-137	33-TK-2	TURBINE
	33-E-7	SUCTION
		SUCTION
		SUCTION
	33-UA-1	TANK TUR
(OUTSIDE OF SHOP BLDG.)		
W-77	33-D-3	DEGUSSA
	33-P-13	SERVICE
	33-P-16	SERVICE
	33-PK-10	RAW WATER
	33-E-3A	
	B.C.	
	33-TK-15	GASOLINE
	33-F-17	DIESEL FUEL
(SHOP & WAREHOUSE BLDG. 33-BD-9)		
	33-PX-7	UTILITY A
		REFRIGER
33-LLG-1	33-G-2	LIFELINE
	33-P-11	INCINERATOR
	33-PK-12	WASTE WATER
		LIGHT PUMP
	33-PK-13	RAW WATER
		HEAT PUMP
W-1	33-H-1A	HEATER (DIESEL
W-2	33-H-1B	HEATER (DIESEL
	33-D-2	DEMINERALIZER
	33-G-2T	FUEL FILTER
	-1PG	UNIT
	33-G-2T	DEMINERALIZ
	33-FX-17	PUMP
	-2PG	
	33-FX-20	SACKHOUSE
		BREAK
	33-P-B1	DEMINERALIZ
	33-P-B9	DEMINERALIZ
	33-PK-18	RAW SERVICE
(LOCOMOTIVE PUMP BLDG. 33-CD-2)		
33-DP-1	33-P-1	SCRAPER PUMP
33-TFP-1	33-P-7	FUEL FILTER
	33-FZ-6	FUEL FILTER
		WATER SHED
33-SP-3	33-P-13	SUMP PUMP
	33-D-8	UTILITY WA
(MAIN PUMP BLDG. 33-CD-1)		
33-MP-1	33-P-2A	MAIN PUMP
33-MP-2	33-P-2B	MAIN PUMP
33-MP-3	33-P-2C	MAIN PUMP
	33-D-6	UTILITY A
33-UF-1	33-P-2AT	MAIN PUMP
33-UF-2	33-P-2BT	MAIN PUMP
33-UF-3	33-P-2CT	MAIN PUMP
	33-P-2AT, BT,CT-1FA	FUEL COUPLING
33-SP-1	33-P-11	SUMP PUMP
	33-P-2AT, BT,CT-2PX	GAS COM
	33-P-2AT, BT,CT-3PX	LUBE FILTER
	33-P-2AT, BT,CT-4PX	LUBE OIL
(MANIFOLD BLDG. 33-BD-8)		
33-SP-2	33-P-12	SUMP PUMP
	33-D-7	UTILITY A
	33-HU-1	HYD. FOUN
(GAS BLDG. 33-BD-4)		
33-FS	33-G-1	FILTER/SEPA
-1GS		SKID
33-E-	33-E-	GAS HEATER
1GS&GB	1GS&B	WATER SHED
W-92	33-D-4	ELECTRICAL
	33-D-10	UTILITY A
(CONTROL BLDG. 33-CD-3)		
33-G-1,	33-G-1A, CB	GENERATOR
	33-G-1AT, CBT	GENERATOR
G-2	33-G-1AT	FUEL FILTER
	-1PG	UNIT
(ENCLOSED HALLWAY, 33-BD-16)		
	33-FX-9	SERVICE EQU
	33-FK-10	SUMP PUMP

NOTES:

1) ALL DRIVERS NOT IDENTIFIED ARE ELECTRIC MOTORS.
2) BRIDGE CRANES (MANUAL OPERATED).

ALYESKA PIPELINE SE

TRANS ALASKA PIPELIN

PUMP STATION No.
SCENARIO B RETROFIT

DATE	JGH	APP	LWE
CKD		APP	B-FI
DATE: 12-5-2000		SCALE: 1"=100'	

NUMBER	TITLE

GENERAL NOTES

REFERENCE DRAWINGS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.
0	12/00	MINIMUM EQUIPMENT CONCEPTUAL STUDY	JGH		

REVISIONS

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

REVISIONS

Future Terminal Physical Configuration

- 18 crude storage tanks
- Single Terminal control room
- New BWT system -
- Wax control process
- Power Vapor Recovery
- 2 or 3 operating berths

Strategic Reconfiguration Philosophy

- Reconfiguration is based on our vision of future operational requirements
  - Coordinate with issues of the day
  - Validate current work with future requirements
- Maintain or build flexibility in the system to react to changes in the operation or business environments
- Justify that upgrade/modifications will obtain an adequate rate of return

Strategic Reconfiguration Projects

Year	2001	2002	2003	2004	2005	2006	2007	
Cold Restart	$8.0							
Rampdown Station Removal								
PS2	$11.0	$5.0	$3.0					
PS8		$5.0		$7.0	$3.0			
PS10			$8.0	$5.0	$3.0			
PS6				$4.0	$7.0	$5.0		
PS 12 Rampdown					$4.0			
PS12 Removal					$5.0	$7.0	$7.0	
Control System Upgrade	$8.0	$25.0	$24.0	$13.0	$5.0			
Fire & Gas Detection/Suppression		$4.0	$4.0	$4.0	$4.0	$4.0		
Super Pump Installations PS3 & PS4	$0.5	$0.2	$0.2					
Facility Modifications								
2nd Spare Unit Removal				$0.5	$0.5	$0.5	$0.5	
Pump Unit Separation				$3.0	$3.0	$3.0	$3.0	
Manifold Bulding Removal				$2.0	$2.0			
Power Generation Modifications				$3.0	$2.0			
PS1 Producer Power Intertie			$3.0					
PS1 Electric Fuel Gas Comp				$2.0				
PS1 Electric Booster Pump			$2.0					
Launcher/Receiver PS9			$4.0					
Berth 1 Removal		$1.0	$3.5					
BWT Process Modifications		$0.5	$3.0	$2.5				
Power Vapor/Waste Heat				$0.5	$3.0	$5.0	$5.0	
PS11 Regional Center				$3.0				
Oil Spill Techonolgy								
Impact Detection	$0.2	$0.5	$1.5					
External Detection	$0.2	$2.0	$2.0					
Trench/Diversion			$3.0	$3.0	$3.0			
Total Per Year	$19.9	$43.2	$61.2	$52.5	$44.5	$24.5	$15.5	$261.3

(Additional sheets from this attachment available on request.)

Attachment B

From:
Sent: Monday, November 11, 2002 4:14 PM
To:
Subject: FW: KYP #02-090 - Organizational Announcement

Reserve your seat in a life boat and grab your life jacket as the Titanic is about to set sail. Hazelwood got his Ship Captain's papers back.

-----Original Message-----
From: Keeping You Posted
Sent: Monday, November 11, 2002 4:01 PM
To: DL, All Alyeska
Subject: KYP #02-090 - Organizational Announcement

This message is from David Wight, President & CEO.

Strategic Reconfiguration is continuing to gain momentum. Additional information about the organization, which was promised in an earlier e-mail, has now been determined and can be shared. As previously announced, John Barrett is the Strategic Reconfiguration Program Manager reporting directly to me. In this capacity, John will be a part of Alyeska's Executive Team.

A functional organization for the Strategic Reconfiguration team has been developed and approved, and the selection process to fill these positions will begin immediately. Some project personnel will report directly to John and others will work as Strategic Reconfiguration team members from within their existing organizations. The positions that will be reporting directly to John are as follows:

- Project Manager - Pump Station Reconfiguration
- Project Manager - SCADA, Telecommunications, & Control Systems
- Manager - Safety, Health, Environment, & Permitting
- Manager - Project Controls

As mentioned above, other Alyeska personnel will be teamed with the Strategic Reconfiguration project to ensure seamless coordination within the company. For example, Bill Howitt will be the Operations Representative and Vance Schwantes will be the Business Representative. Bill and Vance will continue to report to Dan and Art, respectively, while providing the necessary link to their organizations and the Strategic Reconfiguration project. Additional coordination will be achieved through regular communications with the Program Development, Planning and Evaluation, Project Management, and Regulatory groups. A functional organization chart is attached.

The reconfiguration effort is an exciting project that will deliver some of the significant objectives of our long range strategic vision for the company. We have established an aggressive timeline for the first phase of this project and will make staffing decisions for the reconfiguration team as soon as possible.

SR Funtional Org Chart.ppt

********** END OF NOTE **********

Attachment C

OIL SPILL CONTINGENCY RESPONSE UNDER STRATEGIC RECONFIGURATION

White Paper

Revision 1

July 24, 2002

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OIL SPILL CONTINGENCY RESPONSE UNDER STRATEGIC RECONFIGURATION

White Paper
Revision 0
July 8, 2002

EXECUTIVE SUMMARY

This paper assesses the feasibility and impacts of consolidating Oil Spill Contingency Plan (OSCP) response bases to match, or complement, the maintenance centers proposed under Strategic Reconfiguration. The paper also lays out many of the improvement options available to enable maximum efficiency in future OSCP response, and it describes the additional investigation and engineering efforts needed to that end.

The existing response bases were not specifically selected to meet response performance or planning criteria. Rather, the OSCP response bases were generally co-located with operating pump stations, locations that are not correlated to spill risk. Assets have thus remained deployed in an inconsistent manner with respect to distance and the existence of sensitive waterways in response areas. The issue at hand is whether OSCP assets can be redeployed in a way that can simultaneously improve the efficiency and consistency of spill response, and improve the economic viability of TAPS.

The paper concludes that redeployment satisfying these concerns is both feasible and desirable from a response effectiveness and economic standpoint. The approach would take APSC from the current response base locations (nine total) to the following future consolidation:

- three regional response centers (at Prudhoe Bay, Fairbanks, and Valdez/SERVS), augmented by
- three satellite response centers (PS-4, PS-5 and Glenallen, which might not require special OSCP manning in winter but would have enhanced manning in summer),
- one Baseline response center (the one at PS-9 would remain), and
- one response center at Rampart (for Yukon River spill response).

The major shift is toward response areas in existing communities or developments, and generally away from bases located at Alyeska pump stations.

The consolidation would result in net increases in travel and response time to potential spill sites from the new response bases, as compared with the old base locations. About 28% of the pipeline length would be impacted by direct increases in ground travel time. However, collateral effects of response base consolidation would extend the area affected by response time changes. These effects are such that 60% to 70% of the pipeline would have increased effective response time (or ERT, defined as the time required for a "critical mass" of responders and equipment to arrive, enabling containment to be executed) under this proposal. The maximum increase in ERT would be about 2.5 hours, at a location between PS-5 and Fairbanks. The average ERT change is much less, and in some areas would be improved significantly under reconfiguration.

This increased response time is, however, minor and of concern only for spills into waterways and spills which occur close enough to waterways that the oil would enter the water before any response could occur, either under the new or old base configuration. The change could easily be offset by simple manning enhancements to assure that the ERT would actually decrease for sensitive areas such as river and stream crossings.

The proposal requires a net manning increase of 20 full-time-equivalent (FTE) personnel relative to the number of existing responders. These additional 20 persons would be assigned as full-time professional responders with duties specifically geared to support OSCP readiness and improvement (described in Appendix B of the report). The proposal does not eliminate current Maintenance Coordinator (MC) or Baseline responders; the full-time responders would be work and train in concert with these existing resources.

ISSUE/PROBLEM IDENTIFICATION

The Alyeska Strategic Reconfiguration initiative is aimed at changing field physical facilities to reduce obsolete and excessively redundant equipment, to modernize equipment and control systems to renew the asset, improve operability and reliability, and to streamline future maintenance.

From an economic perspective, the full benefits of Strategic Reconfiguration can be realized only if life support infrastructure can be reduced, because its existence is a primary driver behind many or most operations and maintenance activities. Accordingly, as a key element of the reconfiguration strategy, systems would be redesigned such that the need for on-site O&M manning at remote stations would be reduced, allowing de-manning of facilities in certain cases.

However, in order to de-man these facilities, it is also necessary to modify the OSCP, which currently requires responders to be present there on a full-time basis. To that end, Alyeska must develop a plan showing how oil spill contingency response on TAPS can be managed effectively with a smaller number of response bases than currently required by OSCP. Then Alyeska's regulators must agree to that plan.

This paper will provide such a plan by addressing the following issues:

1. What constraints and considerations govern the future placement of oil spill response bases?
2. In light of those constraints, is it feasible to provide oil spill response from a smaller number of response bases?
3. What locations of OSCP response bases appear consistent with economic drivers behind Strategic Reconfiguration?
4. What are the tradeoffs and consequences of consolidation to these locations? Do the positive consequences outweigh the negative from a public policy standpoint?
5. What personnel qualifications, manning level, and level of responder dedication, should apply?
6. What further improvements should be made to the system to maximize long-term oil spill contingency response efficiencies?
7. What further engineering and research is needed to assure that improvements are done in an optimal manner with regard to long term costs and cost avoidance through risk avoidance?
8. Finally, what steps would be necessary in order to gain regulatory acceptance of OSCP reconfiguration?

Issue 1: GOVERNING CONSTRAINTS

There are two interrelated constraints, and one important consideration, against which the oil spill response reconfiguration proposal must be evaluated.

a) *REGULATORY CONSTRAINT:* The first is purely regulatory. Federal and State contingency plan requirements dictate that 100% of oil spilled to water (up to the RPS as prescribed by segment-specific calculations) be recovered within 72 hours of spill notification. No reconfiguration of response basing would be permissible that would degrade Alyeska's ability to meet the RPS.

b) *EQUIVALENCY CONSTRAINT:* The second constraint is more pragmatic. The OSCP is subject to periodic review and conditional approval by Alyeska's regulators. The current OSCP requires that a minimum of seven people be present at every operating station. In addition, OSCP manning must be maintained at two non-operational facilities – Pump Stations 6 and 11 – using Baseline personnel. These requirements must be modified if the economic benefits of reconfiguration are to be realized. Such a modification would require approval of the Joint Pipeline Office, and would be subject to public comment. As a practical matter, it is reasonable to assume that any plan would need to provide *equivalent* or *better* overall response in critical areas, relative to what can be achieved under today's OSCP configuration. We call this the "equivalency constraint."

   It is important to note that neither the regulatory RPS constraint, nor the relative-equivalency constraint, invokes specific *performance* criteria. In particular, the RPS approach to on-water spills dictates that containment and recovery equipment be available and capable of performing at a

derated capacity (relative to nameplate capacity). It also implies that deployment occur in a timely manner such that the cumulative performance can produce RPS-level recovery within 72 hours. However, both industry and regulators understand that under real spill conditions involving on-water spills, there is a low recovery efficiency. Complete cleanup and recovery would not normally be completed within 72 hours, nor would the recovery of a large spill on water ever approach 100%, even though the RPS is met. The reasons for this are beyond the scope of this paper; however, it is important to understand that the response-planning standard that APSC must meet is not a response *performance* standard.

c) *PUBLIC PROCESS CONSIDERATION:* Finally, consideration of OSCP changes could complicate the Right-of-Way Renewal process or its aftermath. It is therefore essential that any consideration of OSCP changes with regulators be coordinated through the Right-of-Way Renewal effort. Due to the sensitive nature of the subject and timing, Strategic Reconfiguration cannot obtain clear guidance from the JPO at this time as to what is acceptable and what tradeoffs would be required. However, it is reasonable to assume that the constraints outlined above provide a basis for future negotiation. In light of what is at stake, in terms of both the Strategic Reconfiguration initiative and future corporate/public relationships, we assume that an implied equivalency constraint would apply to any changes in OSCP deployment. That is to say, we assume that a reconfiguration of OSCP response capabilities must enable equivalent or better response (in terms of response timing, deployment and recovery rates) relative to what can be achieved at present, under critical (high consequence) spill conditions.

Issue resolution summary:
This paper is based on the understanding that two basic constraints govern OSCP reconfiguration. The first constraint is that the reconfiguration will continue to support compliance to the relevant RPS requirements. The second constraint, which envelopes the first, is that the reconfiguration must provide an equal or better response relative to what is now possible, for spills to water.

Issue 2: FEASIBILITY OF CONSOLIDATING RESPONSE BASES CONSISTENT WITH CONSTRAINTS

For purposes of analysis, response time is the main variable at play when examining response base changes. For an analysis to be meaningful, it is necessary to break down total response time into its constituent parts, and then to examine how an effective response (in terms of containment and recovery) must be carried out in a coordinated manner from different locations. In this manner, we will find that greater spacing of response bases need not result in a net degradation of total effective response time.

Total effective response time (ERT) is defined as the time required, following spill detection, to assemble sufficient personnel, materials and equipment (i.e., a "critical mass") at the spill site, such that containment tactics can then be executed effectively. ERT can be modeled as the period of time it takes to perform a sequence of activities. This sequence includes notification, rallying (to return response personnel from the right-of-way to the response base), equipment preparation, travel to the site and on-site deployment. Parallel to the rallying and equipment preparation is reconnaissance, done to verify the existence of or extent of a spill; reconnaissance may drive response time in some instances.

ERT is driven by the time it takes to achieve "critical mass" which, in turn, varies according to the type and location of a spill.

For a summer spill – which we consider to be the worst-case from a response standpoint, due to potential mobility of the oil – the key determinant is whether the spill is contained on land, or whether it enters bodies of water.

For land spills in summer, containment tactics are generally greatly simplified, and adequate space usually exists to achieve containment without aggressive entry into hazardous vapors. "Critical mass," in this case, can be achieved with one Baseline crew, consisting of an MC, operator, laborer and teamster, with some support from local technician staff.

Attachment D

BLM/AK/PT-03/005+2880+990

Final Environmental Impact Statement

Renewal of the Federal Grant for the Trans-Alaska Pipeline System Right-of-Way

Volume 3: Sections 4.1 through 4.6

U.S. Department of the Interior
Bureau of Land Management

November 2002

also result from importation of additional gravels or soils to reestablish original grades or to serve as pipe bedding material. After repairs are complete, the ROW is regraded and revegetated. Many of the above-noted impacts can be minimized by performing most gas line repair work in the winter.

Impressed current systems located at PS 1, 2, 3, and 4 and also at several remote impressed current rectifier sites provide cathodic protection for the fuel gas line. Continued adequacy of cathodic protection is determined by annually monitoring 74 test stations along the gas line. Maintenance and repair of the cathodic protection system is based on a risk assessment performed in accordance with DOT OPS requirements. Impacts are similar to those discussed in Section 4.2.2.5.2 for TAPS cathodic protection systems. However, the majority of the impacts may be realized at the pump stations rather than along the gas line ROW.

4.2.2.6 Planned and Potential Upgrades

4.2.2.6.1 Pipeline Replacement or Reroutes. Recurring corrosion problems or the continued potential for pipeline settlement are the primary reasons for segment replacement or reroute. Replacement of main-line pipe sections is rare since most pipe repair work can be accomplished by installing full-encirclement pipe sleeves over damaged sections. Replacements or reroutes are performed only when this method of repair is infeasible or when evidence suggests that settlement or corrosion will recur because of uncontrollable circumstantial factors. Ongoing refurbishment of pipeline coatings and cathodic protection systems reduces pipeline repairs or replacements. Four pipeline reroutes/ replacements have occurred since 1977: (1) 3,600 linear feet at MP 200 near the Dietrich River in 1985, (2) 234 linear feet at MP 166 at Atigun Pass in 1987, (3) 200 linear feet at PS 3 in 1990, and (4) 8.5 mi from MP 157 to MP 165 near the Atigun River in 1991.

Impacts from pipeline replacements are similar to impacts from corrosion digs but at a much greater scale. Pipeline replacements are major construction projects that approach original construction impacts in scale for a localized area. Costs range from $1 million to $10 million per mile. Because of pipeline integrity monitoring, major reroutes because of corrosion are not expected during a 30-year renewal period. If they were to occur, pipeline reroutes would invoke the controls and requirements of numerous grant stipulations in much the same manner as original construction. Any reroute would be preceded by extensive design and planning activities, all of which would be subject to JPO review and approval.

4.2.2.6.2 Valve Vaulting. APSC is currently engaged in a systemwide project to install vaults around all buried main-line valves. The vaults are intended to facilitate future inspection and maintenance of these valves. Valve vaulting involves excavation to expose the valve, deepening the pipeline trench immediately below the valve to allow for installation of pre-formed concrete slabs or corrugated metal pipe to serve as the walls and cover for the vault. While the valve is exposed, it is inspected for signs of external corrosion, and the surface is repaired and recoated with epoxy as necessary. Some nominal length of pipeline on either side of the valve is also exposed during excavation and also undergoes inspection and repair as necessary. No interruption of oil flow is required to accomplish valve vaulting. APSC estimates that vaulting will proceed at a rate of 5 per year, and that the project will be completed by 2003 (Malvick 2002).

Impacts from valve vaulting activities would be similar to those encountered during corrosion digs. However, the scale of a vaulting operation with respect to manpower, equipment, and material needs is slightly larger than that of an individual corrosion dig, and impacts have the potential to be proportionally larger. Most of the work is expected to take place on the established workpad; however, adjacent areas within the ROW may also be used for temporary staging. Excavation dewatering and increased potential for siltation because of ground disturbances can have temporary localized impacts on surface water resources. Air quality impacts can be anticipated as a result of the operation of portable internal combustion units

on generators or air compressors as well as from the operation of lifting and excavation equipment. Air quality is also impacted by sandblasting that may occur to remove surface corrosion. However, such air impacts are local and of relatively short duration. Spent sand used in this blasting operation as well as the corrosion and original epoxy coating that is removed are left in the excavation as bedding material pursuant to ADEC approval (see Appendix C, Section C.6.8). Because the installed vault will occupy some space in the original excavation, no additional fill materials are anticipated to be necessary to reestablish the original grade at the end of the project. However, it may be necessary to import additional gravel to modify the access road and workpad to accommodate the heavy equipment used in lifting and positioning the pre-formed concrete or corrugated metal pipe. As with other construction activities along the ROW, vaulting will have impacts as a result of increased vehicular traffic and noise. Finally, once completed, the valve vaulting project will preempt or greatly reduce impacts from future monitoring and surveillance of buried valves as well as enhance APSC's ability to conduct these activities.

4.2.2.6.3 Planned Pump Station Upgrades and Valdez Marine Terminal Modifications. The potential for the TAPS system upgrades was identified in the ER for the TAPS ROW renewal (TAPS Owners 2001a). At the time that report was released (February 2001), numerous system upgrades or modifications had already been completed or were ongoing (e.g., rampdown of some pump stations and crude oil topping plants, enhanced communication systems, improved earthquake alarm and intervention systems, improved main-line leak detection capability, and vaulting of buried main-line valves). It is readily anticipated that upgrading the TAPS will continue to be a dynamic process that occurs throughout the operational period. Also, additional upgrades or modifications would likely occur over the period of the proposed 30-year renewal of the Federal Grant, precipitated by such factors as reduced North Slope crude oil production (and thus reduced TAPS throughput), JPO directives, technological advancements, or opportunities to enhance the overall efficiency and effectiveness of TAPS operations.

APSC has announced a conceptual engineering study of potential facility upgrades involving modifications to all but 1 of the 11 TAPS pump stations and to the Valdez Marine Terminal (APSC 2002a). The study primarily looked at altering the configurations of pump stations, including eliminating some stations, and increasing the levels of automation at which the remaining pump stations would continue to operate. Other modifications being considered included replacing existing turbine pump drivers with more fuel-efficient drivers, while also increasing overall efficiency of TAPS operations. Pump drivers can alternatively be replaced by electric motors when commercial power is available as a means of reducing overall fuel consumption (and thus operating costs). Finally, the study considers the removal of two of the four tanker berths at the Valdez Marine Terminal. No significant change is being considered for the pipeline itself.

It is important to note that the proposed system upgrade exists at this time only as a preliminary engineering conceptual design study. More extensive engineering and numerous logistical details still need to be developed and approved before the plan can be executed. Further, all aspects of the study must be reviewed and approved by appropriate JPO agencies before the Authorized Officer authorizes APSC to proceed. It is assumed that any authorization to proceed would be issued only after APSC had demonstrated to the JPO's satisfaction that the requirements of all applicable Federal Grant stipulations would be satisfied both during the modifications and thereafter. It is further assumed that the JPO would apply its broad management authority to impose additional special stipulations as it has done on 11 previous occasions to ensure that the full intent of the Federal Grant is met (see Section 4.1.1 for a discussion of the JPO's specific and broad authorities). It is also assumed that planned upgrades would not occur if the Federal Grant is not renewed.

Although preliminary, in its current stage of development, the study provides a sufficiently

detailed reference point against which to develop at least a qualitative analysis of its attendant environmental impacts and to compare those impacts with the analogous impacts of the existing TAPS facilities being considered for modification. That qualitative impact analysis is provided below. Where warranted and possible, more extensive, quantitative analyses of environmental impacts are given (see Section 4.3). Because the conceptual study of upgrades is preliminary, many engineering decisions have yet to be made. In many instances, absence of these decisions precludes a quantitative analysis of the impacts of the change. For example, APSC has proposed substituting existing turbine pumps with more efficient pumps. It is easily anticipated that such a substitution will result in reduced air emissions and fuel consumption. However, until substitute pump and driver models are selected, quantitative comparative analyses against the impacts of existing pumps is not possible. In such instances, the end point of the upgrade action is not sufficiently defined at this stage to allow for more detailed analyses of both short- and long-term impacts.

Details of Proposed Changes. Infrastructure changes are being proposed for all pump stations except PS 5 and for the Valdez Marine Terminal. However, the extent of the modifications differs at each pump station. At some, only the crude oil main pumps and some minor equipment may be modified. At others, in addition to replacing crude oil pumps, additional infrastructure will be removed or modified, electrical service will be modified, and automated controls will be installed. Finally, at those pump stations currently in a ramped-down status, all of the pump station infrastructure may be removed and replaced with a simple pipe segment interconnecting the main-line pipe. RGVs may be installed in these new segments to preserve overall flow control and facilitate spill response. These stations would, therefore, cease to be pump stations. More specifically, infrastructure changes being considered by APSC include the following:

- Replacement of existing electric power systems and pumping systems at PS 1, 3, 4, 7, 9, and 12, including the installation of new fuel gas-fired turbine generators and electric driver pumps at PS 1, 3, and 4 and, because commercial electric power is potentially available, installation of new electric motor-driven pumps at PS 7, 9, and 12;
- Removal of most existing aboveground physical facilities at PS 3, 7, 9, and 12, converting these pump stations to fully automated operations;
- Removal of all pump-station-related infrastructures at currently ramped-down PS 2, 6, 8, and 10 and installation of interconnecting pipeline segments and RGVs; and,
- Removal of tanker Berths 1 and 3 at the Valdez Marine Terminal.

Table 4.2-1 displays the overall changes to power systems and equipment that would occur in this upgrade at PS 1, 3, 4, 7, 9, and 12.

The study anticipates that all of the above actions could begin within two to three years once a final workplan becomes available and that these actions would be completed over a period of several years (assuming all necessary approvals and permits could be secured without unanticipated delays). With appropriate planning and scheduling, APSC anticipates that physical modifications to the pump stations can be accomplished with minimal disruption to pipeline operations or oil flow. In essence, modifications to pump stations would result in stoppage of oil flow in approximately the same manner as maintenance shutdowns that already periodically occur.

The following additional assumptions are applied as bounding conditions for the identification and analysis of impacting factors from the proposed upgrades:

- Appropriately modified corrosion control systems and thermal control features will be installed and maintained at the modified pump stations to protect any remaining facilities or equipment.

TABLE 4.2-1 Planned Pump Station Upgrades

Pump Station	Power Sources		Facility Infrastructure	
	Existing	Upgraded	To Remain	To Be Added
1	8 operating fuel gas-fired turbines 8 spare fuel gas-fired turbines	Electric motors with 1 new gas turbine One spare power generation set and electric motors	Most existing equipment and structures	Nothing
3[a]	5 operating gas turbines 2 spare gas turbines	Electric motors with 2 new gas turbines	Main piping manifold, gas building, relief system, and booster pump	New electrical and instrumentation module for control and power distribution
4	4 operating gas turbines 3 spare gas turbines	Electric motors with 2 new gas turbines	Most existing equipment and structures	New electrical and instrumentation module for control and power distribution
7[a]	2 operating liquid-fuel turbines 2 spare liquid-fuel turbines	Electric motors with 1 liquid-fuel turbine	Main piping manifold, relief system, and booster pump	New electrical and instrumentation module for control and power distribution
9[a]	2 operating liquid-fuel turbines 2 spare liquid-fuel turbines	Electric motors with 1 liquid-fuel turbine Tie-in to commercial power or a secondary generator for standby power	Main piping manifold, relief system, and booster pump	New electrical and instrumentation module for control and power distribution
12[a]	1 operating liquid-fuel turbine 4 spare liquid-fuel turbines	Electric motors driven by commercial power One standby generator powered by liquid-fuel internal combustion engine	Main piping manifold, relief system, and booster pump	New electrical and instrumentation module for control and power distribution

[a] PS 3, 7, 9, and 12 will be converted to fully automated operations.

- Ancillary capabilities at pump stations would be preserved (e.g., smart pig capture and launching facilities at PS 4 would remain fully functional and facilities for the storage of refined fuels for vehicles and aircraft would remain in place at some pump stations).
- A separate contractor (or contractors) would perform the necessary physical alterations; work could occur simultaneously at more than one location.
- Razing of existing structures (if called for) will involve removal of all buildings and foundations and other engineered systems (e.g., foundation refrigeration systems) to a nominal depth of 2 ft below ground elevation.
- All work at the pump stations will be accomplished within the existing footprint (i.e., the paved or gravel roads and work pads at the pump stations) or adjacent to previously disturbed areas. Further, no new real estate parcels would be involved in the completion of this upgrade. Except for those minor disruptions to the workpad associated with structure removal, the gravel work pad and all access roads will remain undisturbed.
- Building components (e.g., structural elements, concrete, cinder block, and sheet metal) and infrastructure systems (e.g., heating, ventilation, and air-conditioning [HVAC]; plumbing; and electrical equipment) will be salvaged to the greatest extent practical; materials that cannot be recycled will be managed in generally the same manner as wastes from routine operations.
- The accumulation of dismantled equipment or structures will be kept to the minimum time periods necessary to accomplish efficient transport to salvage or disposal facilities.
- Existing TAPS or commercial housing facilities will be used to the extent practical to support the construction workforce. The contractor would construct and maintain temporary housing facilities and workforce support systems (e.g., cafeterias) when adequate housing is not available within a reasonable distance from the worksite.
- Work to remove the berths at the Valdez Marine Terminal will involve the use of both land- and water-based construction equipment.
- Work to remove the berths at the Valdez Marine Terminal will involve removal of the oil transfer arms, the VOC control, ballast water transfer plumbing, the piers, and all above- and below-water structural elements but will not involve dredging of sediments.

Although the physical modifications called for in the plan are extensive at the local level (i.e., at some of the pump stations), all of the proposed modifications collectively would not constitute a "reconfiguration" of the pipeline. Therefore, the proposed upgrade is considered to be a reasonably anticipated action within the context of the proposed action and is not sufficiently distinguishable from the proposed action to rise to the level of a separate alternative.

General Discussion of Impacting Factors Associated with Planned Upgrades and Modifications. Anticipated environmental impacting factors related to the execution of pump station upgrades and Valdez Marine Terminal modifications can be identified for both the short term (i.e., the "construction" periods during which physical modifications are taking place)[1] and the long term (i.e., from routine operation of the modified facilities thereafter). However, long-term impacts from modifications to pump stations that had been previously ramped-down will represent only marginal changes to the impacts those pump stations are now contributing during routine

1 Here, the term, "construction," includes any or all of the following activities: dismantling of equipment and structures, reorientation of equipment, installation of new equipment, and installation of pipeline segments and RGVs, where necessary.

operation, since many of the impacts associated with operating pump stations had already ceased at these locations at the time of ramp-down. Over the short term, impacts will be equivalent to, or less than, those encountered during initial facility construction.

The most extensive impacts anticipated are localized, short-term impacts associated with the wholesale removal of existing equipment at pump stations that will be eliminated (PS 2, 6, 8, and 10) and the installation of pipeline segments and RGVs to interconnect the pipeline segments entering and leaving these former pump stations.[2] Similar impacts of generally smaller dimensions can be anticipated from the less extensive removal or reorientation of equipment contemplated at PS 3, 4, 7, 9, and 12. The least impact from dismantling and reconstruction will occur at PS 1 at which very little equipment changes will occur. Pump Station 5 is not included in this upgrade plan and will remain physically unaltered from its current condition. Similarly, at the Valdez Marine Terminal, the greatest impacts will be short term, occurring during berth and pier dismantlement. Long-term impacts associated with the use (or presence) of those piers will be very small.[3]

Changes to Short-term Impacting Factors Associated with Physical Modifications. Air pollution impacts during this period include increases in the amounts of air pollutants released (1) from the combustion of fossil fuels in various commuting and construction vehicles, portable power generators and heaters, incinerators used for the disposal of nonhazardous construction wastes and domestic solid wastes, and support equipment, and (2) from the operation of comfort heating and cooking equipment operated to support the construction workforce. Increased amounts of fugitive dust will result from increased vehicular traffic as a result of such activities as mobilization/demobilization of construction crews and equipment, commuting of construction personnel (when housing cannot be established at the work site), minor disturbances to the gravel work surface during building/ foundation removals,[4] the transport of new TAPS equipment to the work sites, and the transport of dismantled equipment and building components to salvage or waste disposal locations. Localized noise impacts could also be associated with all of the above activities.

The access roads leading to the pump stations and the Valdez Marine Terminal are likely to be suitable for the conveyance of heavy construction equipment, new TAPS equipment, and dismantled equipment and structures, and no major road alterations are anticipated. Because the disruption to the gravel pad will be minimal, large amounts of fill or new gravel are not expected to be necessary, except at those locations where new pipeline segments will be installed below ground (i.e., where new gravel will be required as bedding material). In addition to installing new pipeline segments, minimal amounts of new gravel may be required to re-establish grade in those areas where foundations or subsurface structures (e.g., refrigeration systems) had been removed. It is assumed that any new gravel needed will be obtained from existing (and closest) material sites.

Potable water usage will increase due to consumption by construction personnel. Proportional increases in amounts of sanitary wastewater will also result. Potable water will also be required to clean equipment. Industrial wastewaters that result from this cleaning will likely need to be transported elsewhere for treatment and disposal. It is anticipated that all construction-related water demands can be satisfied by using existing wells or surface waters; however, modified water withdrawal permits may be required. Modifications to the line-wide EPA-issued NPDES permit which

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2 It is not clear at this time whether newly installed pipeline segments will be above or below ground.

3 In recent years, Berth 3 has been used only rarely to load oil tankers. Berth 1 had been used to berth tankers delivering diesel fuel for use at the Valdez Marine Terminal. However, those deliveries are now made by truck, and Berth 1 is no longer used (Edwards 2002).

4 However, where it is determined that new pipeline segments will be installed below ground, disturbance to the gravel pad will be more significant.

Attachment E

JOINT PIPELINE OFFICE

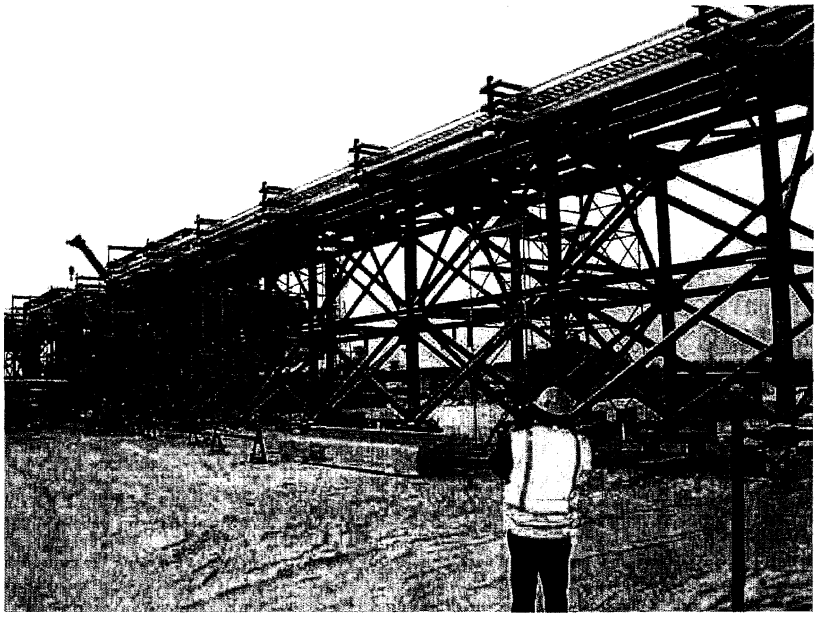
TAPS TECHNICAL REPORT
JPO No. ANC-05-E-055

Agreement and Grant of Right-of-Way and Right-of-Way Lease
Stipulation 1.7.4.3
Stipulation 3.2.1.1

Observation of the of the SR Work Completed at PS-9 due to ASPC Letter 4940, Summer 2005 Construction Pipeline Strategic Reconfiguration Project.
27 October 2005

Prepared by John Governale and Tom Finger

14 November 2005



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20051128-4

PS9 Site Visit 27 October 2005

Trip Report

Observation of the of the SR Work Completed at PS-9 due to ASPC Letter 4950 Summer 2005 Construction Pipeline Strategic Reconfiguration Project.

27 October 2005

1.0 Purpose:

The purpose of the trip was to observe the SR work at PS-9 completed or in progress as a result of ASPC letter 4940 Summer 2005 Construction Pipeline Strategic Reconfiguration Project. Tom Finger and Dave Perez accompanied me on the trip.

2.0 Scope:

This report concentrates on observations and assessments made during the visit to the project sites at PS-9.

3.0 Observations and Analysis:

The site visit to PS 9 was made on the afternoon of October 27th. The JPO Team met with the Alyeska Construction Superintendent Doug Valentine and received our site specific safety plan brief. A field survey of the project was made. We then discussed the progress of the project and future work to be accomplished. We also examined the drawings and specifications on site and the revisions that had been made to date. The FQR log was reviewed as part of this process.

The following observations were made of the A package work at PS 9:

•Most of the exterior foundation work was complete.
•The pipe and cable tray supports were installed.
•The 36" pipe installation was complete and insulated (b package scope).
•The 12 "pipe installation was complete except for the final tie in.
•The pipe rack modules had been installed except for welding of the module to the piling cap plate. This was left until the pump module could be installed and final alignment obtained.
•The 9500 gallon diesel fuel tank skid module had arrived the previous week and had been placed on the sleepers (previously constructed). It was noted that the tank skid had not been moved into final alignment and welded to the steel plates on the sleepers.
•The containment area for the fuel tank skid had been completed.
•Construction of a temporary storage facility for project material was underway.

The following are observations of the work that has begun on the B package:

•Large sections of cable tray were installed both on the new structural piping and cable tray supports and on the exterior of existing facilities. Very little cable was observed in the trays. We were informed by Mr. Valentine that as soon as the exterior cable tray installation was

complete between the pump modules and the manifold building the entire structure will be covered and heated so that the cables and wiring can be pulled.

•The substation module had arrived and had been placed inside the fenced compound. Mr. Valentine informed us that no further work would occur on the substation until next year.

•Air knifing had begun for the installation of a precast utility duct that runs from the control module behind the control room to various locations.

4.0 Conclusions and Recommendations:

The implementation of the PS-9 SR Project work appears to be progressing well. Extensive portions of the A package (General Installation Work) and parts of the B package (Contract for Existing Facilities) have been completed. It appears much of the work has been completed without the written permission of the Authorized Officer as required in section 1.7.1.1 which violates Grant Requirements.

The following items are suggested for surveillance:

•Audit the material receipts to insure structural steel was the steel specified
•Audit the material receipts for the each pipe size to insure the pipe was the type specified
•Audit the third party welding records to insure that the proper welding techniques were used and that the welder performing the weld was certified in the technique.
•Audit the welding x-rays for welding discrepancies. If the weld was found defective verify the corrective measures were taken to bring the weld into compliance.
• Audit random inspections completed by Kakivik for compliance. Insure reports reflect as built conditions and discrepancies were resolved appropriately.

5.0 Signatures:

John Governale
General Engineer

Joe Correa
T&DR Supervisor

Tom Finger
Electrical Engineer

(Additional sheets from this attachment available on request.)

Attachment F

JOINT PIPELINE OFFICE

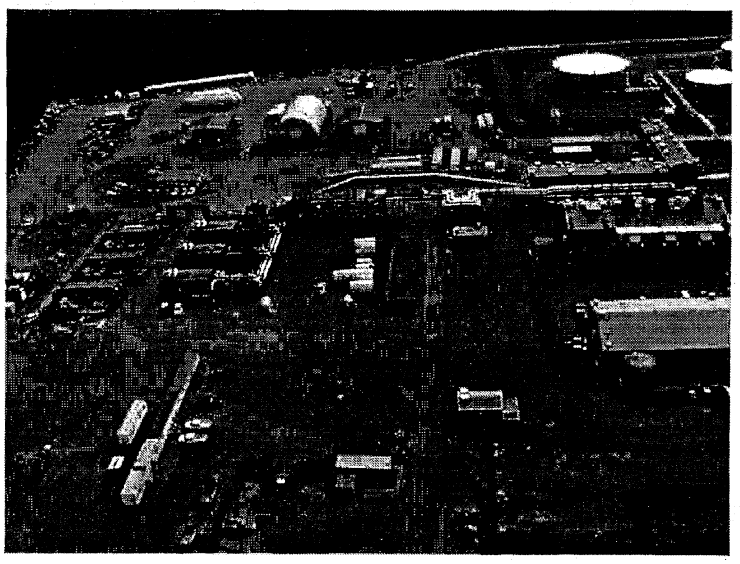
TAPS TECHNICAL REPORT
JPO No. ANC-06-E-024

Agreement and Grant of Right-of-Way and Right-of-Way Lease
Stipulation 1.7.4.3, Stipulation 3.2.1.1, Stipulation 3.2.1.2, Stipulation 3.2.2.2, Stipulation 3.4, Stipulation 3.9, Section 9 and 16

Trip Report on Site Visit and Assessment of Functional Check Out Documentation at PS-9
Pipeline Strategic Reconfiguration Project
August 24 &25 2006

Prepared by John Governale and Joe Dygas

1 October 2006



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20061010-3

PS9 Site Visit 24&25 August 2006

Trip Report

Trip Report on Site Visit and Assessment of Functional Check Out Documentation at PS-9
Pipeline Strategic Reconfiguration Project
1 October 2006

1.0 Purpose:

The purpose of the trip was to assess the SR Functional Check Out (FCO) documentation. While on site we also made an assessment of the SR construction and FCO commissioning progress.

2.0 Scope:

This report concentrates on observations and assessments made during the site visit conducted on 24 and 25 August at PS-9. During the visit we observed the SR construction work and performed an assessment of the mechanical completion binders for the three VFD modules and the three pump modules. We also reviewed the FCO at PS-9 completed or in progress.

3.0 Observations and Analysis:

Upon arrival at PS 9 the JPO Team coordinated with the Alyeska PS 9 O&M Supervisor Laura Howard concerning our visit. We then meet with Don Neff and Brian Huey of the SR construction staff. We discussed the projects adherence to the current construction schedule and future work to be accomplished. An inspection was then made on the various activities currently in progress. The staff was questioned about the water intrusion that occurred on the electric motors for the mainline pumps. We were informed that no significant damage had occurred in the windings or bearings. Heaters had been installed and energized in the motors and the permanent air intakes had been installed to prevent reoccurrence of the water intrusion. No further problems are anticipated.

After concluding our meeting and inspection with the SR construction staff, we held a meeting with Carl Coulter, Lee Thornton, and Lou Cardona of the FCO and Commissioning Group. While there we performed assessments of the six completed turn over binders for the three VFD modules and the three pump modules. During the assessment it was discovered that some redline documentation listed on the Incomplete Work List did not get transferred to the FCO data base. Lee Thornton verified the problem and sent out a corrective memo that afternoon. See JPO surveillance Report No. ANC-06-S-423 for details.

Upon completion of the assessment we discussed selected portions of the binders with the FCO and Commissioning staff. Several sections of the binders appeared to be incomplete. The items listed below are typical for all binders:

Mechanical completion certificate- there were no MC1 numbers assigned.
No mechanical, electrical, or instrument subcontractor signatures were on mechanical completion certificate.
The Inspection and Test Report Summary not signed.

Incomplete Work Lists weren't complete. Of special note was the lack of assigned priority and work assignments for some of the packages.
There were no reference drawing indexes or reference drawings.
There was no status of FQRs on FQR list (note: 2 of the packages had hand written annotations of status on some of the FQRs). It would be desirable to link the FQR with the SI that it generated.
There were no SI lists or their status contained in any of the packages.

An ASPC audit performed subsequent the JPO visit confirmed the above findings. Angela Sorrentino is developing a recovery plan to accomplish the required corrective actions.

4.0 Conclusions and Recommendations:

The PS-9 SR Project work appears to be progressing well. With mechanical completion of the six turnover packages the FCO group has become fully engaged. The turnover packages still need additional work to correct the deficiencies noted above. The redline data base has already been corrected via Lee Thornton's email. The remaining incomplete items should be completed to accurately document and close out the construction phase of the project.

It will become increasingly important to stay in communication with the FCO and commissioning group so that we will know the commissioning dates for major equipment. The JPO should be present during commissioning of all major equipment unless there are multiple identical units in which case the 1st unit should be witnessed.

5.0 Signatures:

5 Oct. 06

John Governale
General Engineer

Joe Correa
T&DR Supervisor

Joe Dygas
Physical Scientist