Alyeska pipeline

Pipeline Quick Facts

- The Trans-Alaska Pipeline System was designed and constructed to move oil from the North Slope of Alaska to the northern most ice- free port- Valdez, Alaska.
- Length: 800 miles.
- Diameter: 48 inches.
- Crosses three mountain ranges and over 800 rivers and streams.
- Cost to build: $8 billion in 1977, largest privately funded construction project at that time.
- Construction began on March 27, 1975 and was completed on May 31, 1977.
- First oil moved through the pipeline on June 20, 1977.
- Over 14 billion barrels have moved through the Trans Alaska Pipeline System.
- First tanker to carry crude oil from Valdez: ARCO Juneau, August 1, 1977.
- Tankers loaded at Valdez: 16,781 through March 2001.
- Storage tanks in Valdez- 18 with total storage capacity of 9.1 million barrels total.
- The mission of Alyeska's Ship Escort Response Vessel System is to safely escort tankers through Prince William Sound.

Last updated May 7, 2004

Basic information

- Maximum daily throughput — 2.136 million bbl., avg. (With 11 pump stations operating). Rates exceeding 1,440,000 bbl./day assume drag reduction agent (DRA) injection.
- Maximum daily throughput — 2000 (with 7 pump stations operating) — .99 million bbl., avg. Rates exceeding 1,000,000 bbl./day assume DRA injection
- Fuel required for all operations (fuel oil equivalent) — 210,000 gal/day (also see fuel requirements under Pump Stations, and Marine Terminal).
- Pressure —
    - Design, maximum — 1,180 psi
    - Operating, maximum — 1,180 psi
- Pump Station facilities in original design — 12 pump stations with 4 pumps each.
- Pump Stations operating, Nov. 1, 1998 — 7: PS 1, 3, 4, 5, 7, 9, 12. PS 5 is a relief station only. PS 11 is a security site. PS 8 placed in standby June 30, 1996. PS 10 placed in standby July 1, 1996. PS 2 placed in standby July 1, 1997. PS 6 placed in standby August 8, 1997.

Control system

- Basic function — Provides instantaneous monitoring, control of

WEB Exhibit # 9-a

all significant aspects of operation, and pipeline leak detection. Operators in the Operations Control Center (OCC) at the Marine Terminal monitor the system 24 hours a day and control oil movement through the pipeline and loading of tankers.

- Computer type — Data general MV/20000 and various PCs
- Location — Computer hardware and controllers' consoles are located in the Operations Control Center at the Marine Terminal.

Points monitored —
  - Pipeline —
    3,047 Input points
    352 Control points
  - Marine Terminal —
    1,074 Input points
    461 Control points
- Remote data acquisition units —
  - Pipeline — 14 (each Pump Station, plus the North Pole Metering facility and Petro Star Refinery)
  - Marine Terminal — 24
  - Metering — 14
- Software programming functions —
  - Data acquisition and control
  - Alarm and data processing and display
  - Hydraulic modeling
  - Leak detection
  - Historical archiving and reporting
  - Seismic evaluation

Drag Reduction Agent (DRA)

Definition — A long chain hydrocarbon polymer injected into the oil to reduce the energy loss due to turbulence in the oil.

Chronology

- **1979 —**
  - **Apr 1** — First test of DRA in TAPS at PS 1
  - **Jul 1** — (6 p.m.) — Injection initiated at PS 1
  - **Aug 19** — Initiated at PS 6
  - **Oct 15** — Initiated at PS 4
  - **Oct 22** — Discontinued at PS 1 (PS2 on line)
  - **Nov 1** — Initiated at PS 10
- **1980 — Nov 5** — Discontinued at PS 6 (PS7 on line)
- **1985 — Jan 6** — Initiated at MP 203 (in support of MP 200 Reroute Project)
- **1987 — Sep 11** — Initiated at PS 1
- **1987 — Sep 11** — Initiated at PS 7
- **1990 — Dec 18** — Installed at PS 8

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- **1991 — Oct 3 —** Demobed MP203 (declining throughput)
- **1992 — Summer** — Installed at PS6
- **1992 — Oct 1** — Decommissioned at PS7 (declining throughput)
- **1993 — June** — Test run at PS6
- **1994 — April** — Test run at PS6
- **1995 — Nov 1** — Initiated at PS6 (PS7 shutdown for maintenance, three months)
- **1996 — Jun 15** — Installed at PS7 and PS9
    - **Jul 1** — Initiated at PS7 and PS9 (PS8 and PS10 placed in standby)
- **1997 — Summer** — Installed and initiated at PS1 and MP238 (PS2 and PS6 placed in standby)
- **1999/2000** — Testing new DRA suspension technology at MP238 and PS9

WEB Attachment 6A

- **2001 — Jun - Oct,** Used to bypass PS 12

- **2002 — Sep - Dec,** Used to bypass PS 12
DRA Test Beds installed south of PS 9 at MP 554.74, MP 568.82, MP 602.66, MP 649.4, MP 709.48

Major mainline pipe repairs

- **1977 —**
    - **Jul 7** — MP 489.12 — approx. 20 ft. south of north block valve at PS 8; damage to 30° elbow and pipe from injection of super cooled nitrogen ahead of oil front during oil-in. Replaced with new elbow and two 6-ft. pups. Pipe reburied.
    - **Jul 8** — MP 489.24 — pump building at PS 8 destroyed in an explosion and fire; the pipeline was undamaged. The pump building was replaced, and recommissioned Mar. 7, 1978.
    - **September** – MP 388.00 — north of Lost Creek; two bullet indentations. Covered with 48-in. dia., 3-ft. welded split sleeve.
- **1978 —**
    - **February** – MP 457.53 — Steele Creek; 1-in. dia. hole (sabotage). Covered with 48-in. dia., 22-1/2 in. bolted split sleeve; subsequently covered with welded sleeve.
- **1979 —**
    - **June** – MP 166.43 — north side Atigun Pass; hairline crack caused by buckle. Covered with 56-in. dia., 6-ft. welded split sleeve; 19 steel supports installed. Pipe reburied.
    - **June** – MP 734.16 — 1 mi. north of PS 12; hairline crack caused by buckle in pipe. Covered with 56-in. dia., 6.1-ft. welded split sleeve; 7 steel supports installed. Pipe reburied.
    - **September** – MP 157.62 to MP 157.65 — instrument

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pig ("Super Pig") lodged in line at check valve 29. Stopple and bypass installed, valve bonnet lifted, pig removed. Pipe reburied.

- **October** – MP 166.41 — north side Atigun Pass; buckled pipe. Covered with 56-in. dia., 6-ft. welded split sleeve. Pipe reburied.

- **1980** —
  - **April** – MP 449.96 — indentation, possibly from bullet. Covered with 48-in. dia., 18-in. welded split sleeve.
  - **May** – MP 159.70 — construction damage from backhoe during monitor rod installation. Covered with 48-in. dia., 3.6-ft. welded split sleeve. Pipe reburied.
  - **June** – MP 416.00 — approx. 2 mi. south of PS 7; pipe settlement. Approx. 430-ft. excavation; 8 steel supports installed. Pipe not reburied.
  - **August** – MP 752.00 — flash flood, 900 ft. of overburden washed out; no damage. Pipe reburied.
  - **November** – MP 720.00 — pipe settlement. Approx. 200-ft. excavation; pipe lifted, concrete slurry added beneath pipe. Pipe reburied.
- **1982** —
  - **April** – MP 168.40 — south side Atigun Pass; pipe settlement. Approx. 300-ft. excavation; concrete slurry added beneath pipe. Pipe reburied.
  -
  - **August** – MP 166.03 — north side Atigun Pass; pipe buckle. Covered with 56-in. dia., 6.5-ft. welded split sleeve. Pipe reburied.
- **1983** —
  - **March** – MP 730.29 — pipe settlement. Approx. 102-ft. excavation; 9 concrete river weights removed, concrete slurry added beneath pipe. Pipe reburied.

    April – MP 200.24 — Dietrich River channel; pipe buckle. River channel redirected temporarily; approx. 125-ft. excavation; 56-in. dia., 6-ft. welded split sleeve installed; 5 specially designed steel supports installed. Pipe reburied.
  - **October** – MP 45.97 — pipe settlement. Approx. 200-ft. excavation; concrete slurry added beneath pipe. Pipe reburied.
- **1984** —
  - **March** – removal of stuck scraper pig at CV4 and relocation of pig trap from PS 5 to PS4.
  - **November** – removal of stuck pig at PS 10.
- **1985** —
  - **January** – MP 200 temporary bypass tie-in, pipe settlement.
  - **April** – MP 200 final tie-in of 48-inch permanent

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reroute. (404.7 ft. added to total pipeline length in MP 200 reroute, Apr 22, 1985) Reroute due to pipe settlement.

- **1986** —
  - **Oct 10** — Steele Creek; permanent welded sleeve installed over bolted split sleeve.
  - **Nov 18** — replaced damaged "Tee" at PS 10; "Tee" damaged by stuck scraper pig.
- **1987** —
  - **Sep 29** — replaced 234 ft. of buckled pipe, MP 166.41 — 166.43, Atigun Pass.
  - **Aug 25** — mechanical damage covered with 3 ft. welded sleeve.
- **1989** — total of 30 sleeves installed for corrosion repairs.
- **1990** — total of 86 sleeves installed for corrosion repairs.
  - **Nov 23** – dent covered by 6 ft. welded sleeve.
  - **Dec 3** – mechanical damage covered with bolted clamp, later covered with a split tee (part of Atigun Floodplain Pipe Replacement Project).
- **1991** — total 18 sleeves installed for corrosion repairs.
  - **Mar 8** – mechanical damage covered by 4 ft. welded sleeve, MP 779.47.
  - **Apr 6** – mechanical damage covered by 4 ft. welded sleeve, MP 756.80.
  - **September** – Atigun Floodplain Pipe Replacement Project completed, MP157-165.5. Permanent reroute of 8.5 miles of main line pipe. Replacement due to corrosion.
- **1993 — Jun 6** – mechanical damage covered by 3 ft. welded sleeve, MP775.
- **1994** —
  - **Jul 22** — CV9 Bypass spool replacement and drain line repair.
  - **Jul 20** — CV86 bypass and drain line repair.
  - **Sep 30** —CV74 drain line repair.
  -
- **1995**
  - **Mar 15** — Replace actuator on CV55.
  - **Jun 8**— Replace actuator on CV89.
  - **Jul 14** — RGV system leak repair.
  - **Sep 15** — Extended Chena Hot Springs Road casing.
- **1996**
  - **Apr 25** — Replace bypass line on CV92.
- **1997**
  - **Feb 8** —Install "armadillo" sleeve at Wilbur Creek. Repair due to corrosion.
  - **Jun 20** — Mechanical damage covered by 2.5 ft. welded sleeve, MP 775.75.
  - **Oct 9** — Corrosion repair covered by 4.8 ft. welded sleeve, MP 799.68.

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- **1998**
  - **Sep 25** — Replaced RGV 80 and and repaired CV122.
  - **Mar 19** — Constructed and started Tanker Vapor Control System at Valdez Marine Terminal.
- **1999**
  - **Apr 26** — Total of 2 sleeves installed for corrosion repair at MP 652.
  - **Sep 11** — Replaced RGV 60.
- **2000**
  - **May 26** — Completed reset and repair of tripped anchors at MP 170, a result of the collapse of vapor pocket after pipeline restart.
  - **June 1** — mechanical damage cover by two 2 ft. welded sleeves, MP 710.76.
  - **Sep 16** — Replaced CKV 74 and M-2 valve at PS 9.
- **2001**
  - **Sep 22** — Pipeline shutdown for mainline valve maintenance and integrity test, and performance evaluation of two 48-inch mainline remote gate valves.
  - **Oct 4** — MP 400, bullet hole repaired with hydraulic clamp. Clamp later replace with Thor plug.
- **2002**
  - **Jul 25** — Pipeline shutdown to replace RGV 39.
  - **Nov** — MP 588, repaired or replaced damaged shoes and VSM crossbeams from 7.9 earthquake on November 3.

Shutdowns

- **1977 —**
  - **Aug 2** — equipment malfunction — 40 min.
  - **Aug 15** — PS 9 sump overflow — 110 hrs., 11 min.
  - **Sep 20** — equipment malfunction — 59 min.
  - **Oct 9** — producer shutdown — 4 hrs., 14 min.

- **1978 —**
  - **Jan 5** — equipment malfunction — 1 hr.
  - **Jan 10** — equipment malfunction — 4 hrs.
  - **Jan 16** — equipment malfunction — 4 hrs., 22 min.
  - **Jan 17** — equipment malfunction — 3 hrs., 41 min.
  - **Feb 15** — sabotage, Steele Creek — 21 hrs., 31 min.
  - **May 6** — equipment malfunction — 7 hrs., 18 min.
  - **May 30** — equipment malfunction — 2 hrs., 22 min.

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- **Sep 4** — equipment malfunction — 3 hrs.
- **Dec 17** — equipment malfunction — 2 hrs., 8 min.

- **1979** —
  - **Jun 10** — Atigun Pass leak — 53 hrs., 37 min.
- **1980** —
  - **May 12** — PS 10 crude tank valve leak — 3 hrs., 37 min.
  - **Oct 17** — scheduled maintenance — 5 hrs., 16 min.
- **1981** —
  - **Jan 1** — check valve 23 leak — 15 hrs., 38 min.
- **Feb 8** — equipment malfunction — 3 hrs., 54 min.

- **1982** —
  - **Jun 7** — equipment malfunction — 2 hrs., 48 min.
  - **Dec 22** — equipment malfunction — 12 hrs.
- **1983** — 0 hrs. (no shutdowns)
- **1984** —
  - **Mar 20** — Scraper pig stuck at check valve 4 — 18 hrs./PS 4 Trap relocation, 57 hrs., 40 min.
  - **Jun 17** — equipment malfunction — 1 hr., 7 min.
  - **Oct 5** — producer maintenance — 5 hrs.
- **1985** —
  - **Jan 21** — MP 200 bypass tie in — 66 hrs.
  - **Apr 22** — MP 200 final reroute tie-in of 48-in. pipe — 20 hrs., 40 min. (404.7 ft. added to total pipeline length in MP 200 reroute, Apr. 22, 1985).
  - **Jun 26** — equipment malfunction — 42 min.
  - **October** – removed stuck pig at PS 10.
  - **Nov 9** — **PS 1 explosion and fire — 10 hrs., 15 min.**
- **1986** —
  - **Sep 26** — removed scraper pig at PS 10 — 31 hrs., 50 min.
  - **Nov 18** — replaced "Tee" at PS 10 — 16 hrs., 54 min.
- **1987** —
  - **Sept 29** — Atigun Pass pipe replacement — 24 hrs., 6 min.
- **1988** — 0 hrs. (no shutdowns)
- **1989** —
  - **Feb 26** — total power failure; PS 1- hr., 31 min.; PS 1 block line - 32 min.
  - **Oct 20** — repair corroded pipe at MP 144.2-5 hr., 16 min.
- **1990** —
  - **Mar 21** — PS 3, broken nipple valve 320 - 4 hr., 10 min.
  - **Jun 12** — PS 1, valve D2 pipe replacement - 12 hr., 39 min.
  - **Jun 12** — PS 9 isolated station, valve M2 leak- 1 hr., 34 min.
  - **Nov 20** — Corrosion repair, welding at MP 157.87 - 3hr., 17 min.
  - **Dec 15** — high inventory and power failure at Valdez Terminal - 1 hr., 42 min.

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- **1991** — 0 hrs. (no shutdowns)
- **1992** —
  - **Aug 7** — uncommanded closure of RGV 73, electric short - 1 hr., 49 min.
  - **Oct 7** — segment 11 RGV intransit indication - 35 min.
  - **Oct 16** — segment 11 RGV intransit indication - 7 min.
- **1993** —
  - **May 20** — PS3 isolated gas building, broken fitting - 9 min.
  - **Jun 22** — RGV 98A false intransit indication, MLR2 project work - 38 min.
  - **Oct 29** — loss of communication with segment 12 RGV's - 20 min.
- **1994** —
  - **Jan 24** — Isolate station at PS10 caused by leaking nipple on 26" yard check valve — 1 hr., 26 min.
  - **Feb 14** — Isolate gas building at PS1, faulty gas detector — 24 Min.
  - **Apr 15** — Replace 002 valve at Valdez and troubleshoot segement 4 RGVs — 24 hrs., 28 min.
  - **Apr 18** — Work on PS4 Systronics Master Panel — 7 hrs., 57 min.
  - **Jun 8** — Communications failure with RGV73, failed power converter — 1 hr.
    Jun 12 — Communications failure with RGV69, battery failure — 36 min.
  - **Oct 15** — Communications failure with RGV40 — 2 hrs., 20 min.
- **1995**
  - **Feb 22** — PS9 shutdown by high pressure shutdown switch — 19 min.
  - **Jun 16** — Communications failure to Segment 4 RGVs, RGVs 31-35 closed — 2 hrs., 25 min.
  - **Jul 10** — RGV 118 intransitt indication — 1 hr.,41 min.
  - **Jul 10** — Communications failure to Segment 10, RGV 95 — 29 min.
  - **Jul 11** — Communications failure with RGV 95 — 1 hr., 30 min.
  - **Sep 11** — Scheduled maintenance — 15 hrs., 45 min.
  - **Sep 12** — Completion of scheduled PS2 maintenance — 4 hrs., 51 min.
  - **Sep 18** — Communications failure with RGV 37 — 1 hr., 42 min.
  - **Nov 7** — Fire alarm in PS10 pump house building — 12 min.
- **1996**
  - **Feb 17** — Communications failure with RGV 113 — 2 hrs., 7 min.

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- **May 6** — Scheduled maintenance — 21 hrs., 45 min.
- **May 7** — PS8 valve seal repair, repair leaking PS4 M2 valve body drain valve — 7 hrs., 17 min.
- **Jul 12** — Scheduled maintenance, preparations for PS8 and PS10 standby — 10 hrs., 25 min.
- **Aug 1** — Scheduled maintenance as part of ramping down PS8 and PS10 — 8hrs., 40 min.
- **Aug 6** — scheduled maintenance as a part of ramping down PS8 and PS10 — 11 hrs., 2 min.

- **1997**
  - **Jan 12** — Communications failure with RGV 124 — 3 hrs., 24 min.
  - **Jan 13** — Communications failure at RGV 62, 65, 7 67 — 13 min.
  - **Jun 1** — False RGV indication at RGV 32-34, Segment 4 — 2 hrs., 9 min.
  - **Jun 26** — Communications failure with RGVs in Segment 12 — 5 hrs., 44 min.
  - **Jul 1** — Communications failure with RGV 31-33 — 1 hr., 45 min.
  - **Aug 1** — Scheduled maintenance for PS2 & PS6 ramp-down preparation— 17 hrs., 49 min.
  - **Aug 8** — Placed PS6 in standby — 19 hrs., 29 min.
  - **Aug 12** — False transit indication, PS11, M-1 valve — 25 min.
  - **Sep 19** — false tranisit indication, RGV 103 — 14 min.
  - **Nov 8** — Communications failure, RGV 45 — 1 hr., 17 min.
- **1998**
  - **May 18** — PS1 in-rush vapor test and vibration test of VMT incoming relief piping — 5 hrs., 9 min.
  - **Aug 5** — Segment 10 RGVs in invalid status — 24 min.
  - **Aug 14** — Communications failure, Segment 10 — 5 hrs., 4min.
  - **Sep 25** — Valve maintenance, replaced RGV 80 and repaired CKV 122 — 28 hrs., 40 min.
  - **Nov 15** — Communications failure to Segment 4 RGVs, relay failure — 3 hrs., 23 min.
- **1999**
  - **Feb 15** — Communications failure at RGV 60 — 15 mins.
  - **Feb 17** — Communications failure at RGV 105 — 1 hr., 25 mins.
  - **Feb 23** — Communications failure at RGV 32, battery failure — 2 hrs., 15 mins.
  - **Mar 20** — Communications failure at RGV 80 — 1 hr., 07 mins.
  - **Mar 25** — Communications failure at RGV 102 — 1

hr., 57 mins.
Apr 3 — Communications failure at RGV 91 — 26 mins.
- **Apr 11** — Communications failure at RGV 69 — 56 mins.
- **Jun 8** — Communications failure with all Segment 4 RGVs — 1 hr., 13 mins.
- **Jun 17** — Communications failure at RGV 91 — 34 mins.
- **Jul 5** — Communications failure at RGV 43 — 34 mins.
- **Jul 5** — Maintenance at Tea Lake, repeater loss of communication to segment 4 RGVs — 1 hr., 52 mins.
- **Sep 11** — Valve maintenance, replaced RGV 60, tested 46 mainline valves and completed 165 other maintenance tasks — 25 hrs., 49 mins.
- **Oct 16** — Communications failure at RGV 67 — 1 hr., 10 mins.
- **Nov 9** — Communications failure at RGV 53 — 26 mins.
- **Nov 13** — Planned maintenance amd autologic testing — 8 hrs., 6 mins.
- **Dec 8** — False fire alarm is PS1 booster pump building — 2 hrs., 34 mins.
- **Dec 23** — Communications failure with RGVs 62 & 67 — 36 mins.
- **Dec 25** — Communications failure at RGV 121 — 4 hrs., 16 mins.

- **2000**
  - **Feb 10** — communications failure at RGV 42 — 1hr., 24 mins.
  - **Apr 17** — PS 4 unintended stop flow / close RGV initiated due to invalid state transmitted from RGV 35A while troubleshooting power failure — 1hr., 26 mins.
  - **Apr 22** — Loss of visibility of PS 11M-1 — 43 mins.
  - **Aug 28** — communications failure at RGV 121A, battery failure — 1hr., 39 mins.

WEB Attachment 6A

  - **Sept. 16** — Planned line-wide maintenance shutdown — 29hrs., 39 mins.
  - **Oct 7** — Planned line-wide shutdown for valve leak tests — 7 hrs., 31 mins.
- **2001**
  - **Feb 26** — PS 5 false fire alarm - 1 hr., 24 mins.
  - **Apr 3** — Communications failure at RGV 32 - 2 hrs., 59 mins.
  - **Apr 18** — Work on PS 4 Systronics Master Panel - 6 hrs., 38 mins.

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- **Jun 25** — Automatic controls activated during planned failover of Scada Host Computer - 1 hr., 10 mins.
- **Aug 16** — Communications failure at RGV 60 - 1 hr., 30 mins.
- **Aug 26** — Communications failure at RGV 123 - 58 mins.
- **Sep 5** — Communications failure at RGV 124 - 2 hrs., 59 mins.
- **Sep 22** — Planned maintenance shutdown - 21 hrs., 4 mins.
- **Oct 4** — Bullet puncture at MP 400 - 60 hrs., 30 mins.
- **Oct 18** — PS 4 false fire alarm indicator - 1 hr., 57 mins.
- **Oct 28** — Backbone communication system disruption - 4 hrs., 5 mins.
- **Nov 1** — Communications failure at RGV 44 - 2 hrs., 48 mins.
- **Dec 20** — Communications failure at RGV 44 - 2 hrs., 30 mins.

- **2002**
  - **Jan 5** — Segment 10 to 11 RGVs closed due to Copper Valley Electric Association power failure - 2 hrs., 6 mins.
  - **May 9** — Communications failure at RGV 108 - 1 hr., 10 mins.
  - **Jun 11** — Communications failure at RGV 97 - 2 hrs.
  - **Jul 27** — Planned maintenance shutdown - 29 hours., 57 mins.
  - **Sep 16** — Seismic system testing - 35 mins.
  - **Oct 12** — Planned maintenance at PS 4 - 3 hrs., 20 mins.
  - **Nov 3** — 7.9 earthquake at MP 588 - 66 hrs., 33 mins.
  - **Nov 27** — Communications failure in segment 4 - 1 hr., 49 mins.

Leaks

Record of system crude oil leaks and spills of 100 bbl. or more on land or water*

	Location	bbl.	Cause
1977			

WEB Exhibit # 9-K

July 8	PS 8	300	Explosion
July 19	CV7	1,800	Construction damage
1978			
Feb 15	Steele Creek	16,000	Sabotage
1979			
June 10	Atigun Pass	1,500	Pipe settlement, hairline crack
June 15	MP 734	4,000	Pipe settlement, hairline crack
1980			
Feb 11	Terminal/V746	3,200	Leaking valve, east tank farm
May 12	PS 10	238	Tank valve
1981			
Jan 1	CV 23	1,500	Drain connection failure
1989			
Jan 3	*Thompson Pass*	1,700	Hull crack
March 24	*Exxon Valdez*	260,000	Vessel ran aground
1996			
April 20	CV 92	880	Loose thread fitting on buried piping
2001			
Oct 4	MP 400	6,800	Bullet Hole

System crude oil leaked or spilled* by year, number and amount

WEB Exhibit # 9-L

Year	*No.*	*Amount*
1977	34	93,778 gal/2,232 bbls
1978	24	672,576 gal/16,013 bbls
1979	43	233,800 gal/5,566 bbls
1980	55	149,495 gal/3,531 bbls
1981	32	63,371 gal/1,508 bbls
1982	30	1,653 gal/39 bbls
1983	17	174 gal/4 bbls
1984	32	3,260 gal/77 bbls
1985	31	1,138 gal/27 bbls
1986	40	1,607 gal/38 bbls
1987	37	172 gal/4 bbls
1988	35	600 gal/14 bbls
1989	26	10,572,207 gal/258,855 bbls
1990	31	277 gal/6 bbls
1991	54	460 gal/11 bbls
1992	55	822 gal/19 bbls
1993	65	361 gal/8 bbls
1994	44	13,610 gal/324 bbls
1995	06	90 gal/2 bbls
1996	12	34,185 gal/814 bbls
1997	05	80 gal/2 bbls
1998	05	22 gal/0.5 bbls
1999	08	16 gal/0.39 bbls
2000	06	165 gal/4 bbls
2001	15	287,980 gal/6,856 bbls
2002	09	16 gal/.39 bbls

Last updated June 23, 2004

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