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JOINT PIPELINE OFFICE

ALIGNMENT ATLAS

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Office of the Federal Inspector

Alaska Natural Gas Transportation System

605 West Fourth Street, Room 107
Pouch 6619
Anchorage, AK 99502

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June 18, 1984

Mr. Jerry Brossia
State Pipeline iOfficer
4420 Airport Way
Fairbanks, Alaska 99701

Dear Mr. Brossia:

An Alignment Atlas has been developed by the Office of the Federal Inspector for the Alaskan Leg of the Alaska Natural Gas Transportation System. The Atlas contains a listing of features, and actual or potential problems areas that would assist government reviewers and field inspectors during the regulatory and contruction phases of the project.

We would appreciate your review of this document and any suggestions you would have for additions or deletions to the document by COB July 13, 1984.

Sincerely,

Earl N. Kari
Director, Alaska Office

cc: Rhett

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MEMORANDUM

State of Alaska

DEPARTMENT OF NATURAL RESOURCES - DIVISION OF LAND AND WATER MANAGEMENT
NORTH CENTRAL DISTRICT OFFICE - 4420 AIRPORT WAY, FAIRBANKS, ALASKA 99701

TO:

Distribution List

DATE:

June 21, 1984

FILE NO:

TELEPHONE NO:

FROM:

Michael E. Vediner
Natural Resource Officer

SUBJECT:

Review NW Gasline
Alignment Atlas

Attached for your review and comment is a copy of the alignment atlas for the NWA gasline developed by the OFI. Please review and provide comments or suggestions you may have to this office by July 6, 1984.

Attachment

Distribution List:

Al Ott, ADFG, Fairbanks

Larry Dietrick, ADEC, Fairbanks

Lynn Harnisch, ADOT/PF, Fairbanks

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MEMORANDUM

State of Alaska Department of Transportation & Public Facilities

TO: Michael E. Vediner
Natural Resource Officer
Department of Natural Resources
Fairbanks

DATE: July 9, 1984

FILE NO: 300N/100nw

TELEPHONE NO: 479-4281

FROM: Lynn J. Harnisch, PE
Staff Engineer
Division of Planning
Northern Region

SUBJECT: Alaska Natural Gas
Pipeline Alignment
Atlas

The Alignment Atlas, developed by the Office of the Federal Inspector (OFI), for the Alaska Northwest Natural Gas Transmission System (ANNGTS) has been reviewed with the following comments germane to that review.

Page 9: Change item 7 to read "27-29, 153.2-164.8 and remove the sentence "To be evaluated in summer of 1984." as the area will not be reviewed. The alignment is subject to the special design.

Page 11: Add the words "design and" between "approved" and "construction" in the comments for the first item.

Page 18: Change Alignment Sheet (AS) numbers from 41-43 to 41-42 for item four, Change "Haul Road Crossing" to "Dalton Highway Crossing" and add Compressor Station No. 4 to AS 41.

Page 19: The recommendation on the bottom of the page should be modified by adding "except in the immediate vicinity of the Slate Creek Bridge to preclude damage to the bridge abutments."

Page 20: Change items 2, 3, and 4 to AS 44 and add "44, 248.4-250.6, ACR 13-13 removed the alignment objection imposed by Department of Transportation and Public Facilities (DOT&PF)."

Page 22: Change mileposts at item seven to 264.7-269.4.

Page 23: Change AS numbers to 48 for items 5 and 6.

Page 26: Add "-54" to item one and revise the second to last sentence of the last item for clarification.

Page 31: Add "Alignment crosses Dalton Highway" twice to AS 67 at MP 378.6 and 381.2.

Page 33: Change the description for item three to read "Alignment crosses Dalton Highway."

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July 9, 1984

- Page 36: Add another sentence to item two to read "Land ownership changes from Federal to State."
- Page 37: Add an item for AS 81 at MP 457.3 to read "Steese Highway Crossing."
- Page 38: Add an item for AS 83 at MP 469.1 to read "Chena Hot Springs Road Crossing."
- Page 40: Add a comment to Item 3 to read "Johnson Road Crossing."
- Page 43 Add an item for AS 93 at MP 527.5 to read "Shaw Creek Road Crossing."
- Add an item for AS 96 at MP 539.9 to read "Tanana Loop Crossing."
- Add an item for AS 97 at MP 545.9 to read "Jack Warren Road Crossing"
- Page 44: Add an item for AS 98 at MP 551.3 to read "Triple H Road Crossing."
- Page 45: Change the last three AS designations to 108.
- Page 48: Add an item for AS 114 at MP 641.4 to read "Cross Alaska Highway (West to East)."
- Page 50: Add Compressor Station number 15 at MP. 685.0 on AS 121.

Should you have any questions relative to these review comments, please contact me at 479-4281. The Alignment Atlas compilation was a large task for the OFI and will be very useful for this department, particularly for the surveillance and monitoring personnel during the construction phase of the project.

mr.

cc: Larry Dietrick, Department of Environmental Conservation,
Fairbanks
Alvin G. Ott, Department of Fish and Game, Fairbanks
Robert R. Venusti, Department of Transportation and Public
Facilities, Northern Region

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ALIGNMENT ATLAS

Introduction:

The Alignment Atlas was developed for the Alaska Leg of the Alaska Natural Gas Transportation System (ANGTS). The Atlas identifies key features and potential and actual problem areas along the alignment with which design engineers, government reviewers and field inspectors should be familiar.

The following assumptions were made in development of the Atlas:

1. that Northwest Alaskan's (NWA) Revision 3 alignment was the official alignment;
2. that NWA's preliminary Revision 4 and Alignment Change Requests (ACR's) were pending and had not been formally proposed;
3. that the Department of the Interior Right-of-Way Stipulations for ANGTS, including the approved Design Criteria, and Stipulation 1.6.1 Plans would be successfully implemented and enforced during the design and construction stages of the project;
4. that, when necessary, the construction schedule would provide for winter construction to minimize anticipated adverse environmental impacts for specific ditch modes selected; and,
5. that construction windows necessary to protect sensitive wildlife and key fish streams would be followed;

The Atlas will be supplemented with supporting mile-by-mile file information to adequately define the scope and extent of the problem and project wide reports and associated data. This information will be available at the Anchorage Office of the Office of the Federal Inspector.

This Atlas is envisioned as a living document to be updated as changes in alignment or design bases dictate.

ALIGNMENT ATLAS

F0001033

A.S.*	MILEPOST*	DESCRIPTION	COMMENTS
1- 4	1.00- 20.00		Numerous thermokarst lakes & a few tundra beaded streams in an area of continuous permafrost & ice-rich soils warrant special design & construction considerations. Adjustments to design should be considered to avoid disturbances to waterfowl & shorebird nesting activities and reduce fisheries impact.
1- 27	3.2- 150.0	Unit Operators Gathering Line	Land ownership from here to M.P. 62.51 is essentially State, but North Slope Borough can be expected to have input (see F0001030 - April 13, 1984 Summary of Land Ownership Along ANGTS, and Mile-by-Mile Listing). Due care and caution for working around the Alyeska Pipeline Service Company (APSC) fuel gas line should be exercised from here to M.P. 150. It closely parallels both sides Dalton Hwy. and proposed NWA Right-of-Way (ROW).
1	3.3	Putuligayuk River	
1	4.9	Spine Road Crossing	
2	9.4	Grayling Gulch	
3	12.5	Unnamed Lake	
4	17.9	APSC Access Road Crossing	

* NWA Alignment Sheet (A.S.) and Mileposts (M.P.) Numbers.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
4	22.0	APSC Access Road Crossing	
5	24.2	APSC Oil Pipeline Crossing	
5	26.7	Unnamed Lake	
5	27.4	Pescado Creek	
7	35.8	Telma Creek	
7	39.0	Sylvia Creek	
7	39.3	E. Fork Sylvia Creek	
8	43.9	Dalton Hwy. Crossing	
8	44.3- 44.8	Compressor Station #1	
8	45.2	Dalton Hwy. Crossing	
10	54.3- 54.6	Lake 802	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
11	62.51		End State ownership. Begin approx. 377 miles of Federal lands.
12	63.7	Dalton Hwy. Crossing	
12	67.0	Dalton Hwy Crossing	
12	67.8	Sand Creek	
13	69.7	Toolik Riv. Tributary	
13	70.2	Dalton Hwy Crossing	
14	76.5	Mark Creek	Rev. 3 alignment overlays part of Mark Creek & Sag River side channel. ACR(*) # 11-5, proposed by NWA, resolves alignment issue at Mark Creek and reflects desirable realignment to avoid the problem. Alignment shifted away from roadside to avoid overlay of Mark Creek & now makes two perpendicular crossings of Mark Creek and the side channel. Check capacity of hwy. drainage structures (see note 1).
14	76.6	Sag Riv. Side Channel	ACR 11-5 proposed by NWA, resolves alignment issue at Sag River side channel.
14	79.7	Dalton Hwy. Crossing	

(*) Alignment Change Requests proposed by NWA to be included in Revision 4 Alignment.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
14	79.7-80.4	Compressor Station (C.S.) #2	C.S. #2 located in Class "B" wetlands; area of wet sedge tundra, shallow marshes and small streams used by shorebirds. Design of this C.S. facility may require special considerations to maintain natural drainage patterns and maximize buffer to Mark Creek & associated tributaries and wetlands along the west side and NW corner of the proposed C.S. location.
14	80.4	Dalton Hwy Crossing	
15	82.3	Spoiled Mary Creek	Check capacity of hwy. drainage structure. (See Note 1).
15	83.6	Stout Creek	Check capacity of hwy. drainage structure. (See Note 1).
15	86.4	Unnamed Creek	
16	87.1	Milke Creek	Check capacity of hwy. drainage structure. (See Note 1).
16	91.5	Dan Creek	Check capacity of hwy. drainage structure. (See Note 1).
17	93.6	Lori Creek	ANGTS alignment crosses Lori Crk. at Alyeska fuel gasline crossing, at Dalton Hwy. roadside. Drainage pattern of Lori Crk already altered at this location due to the fuel gasline. Surveyed centerline intersects two beaded ponds and traverses high quality riparian and marsh habitat. Check capacity of hwy drainage structure. (See Note 1.)
17	93.8	Dalton Hwy Crossing	
17-20	95.8-109.5		Rev. 3 alignment possessed slope stability problems at Ice Cut Hill & Stump Crk. Stump Crk., and encroachment of Rudy Crk. & tributary drainage and associated riparian habitats. However, Rev. 4 alignment indicates a major alignment change (ACR 11-7) which follows a more upland route and avoids alignment problems of Rev. 3. Rev. 4 alignment should be field verified. (See below).

A.S.	MILEPOST	DESCRIPTION	COMMENTS
17	96.5	Unnamed Creek	ACR 11-7 proposed by NWA results in a crossing of this creek; no info available on this stream; appears to be two stream crossings of small drainages which drain directly into a small lake located at the headwaters of Lori Creek.
18	101.9	Arthur Creek	ACR 11-7 proposed by NWA results in a new crossing of Arthur Creek and a trib of Arthur Creek; no info available on the site-specific characteristics of these crossings.
18	102.3	Gustafson Gulch	ACR 11-7 proposed by NWA results in a crossing of the upper reach of Gustafson Gulch Creek. No info available on the site-specific characteristics of this crossing; appears to be an undefined drainage in the new crossing area.
19	105.1	Polygon Creek	ACR 11-7 proposed by NWA results in a crossing of this stream approx. one mile upstream of original crossing.
19	106.1	Poison Pipe Creek	ACR 11-7 proposed by NWA results in a crossing of this stream approx. one mile upstream of original crossing. APSC workpad contained a special insulated stream crossing.
19	106.3	Climb Creek	ACR 11-7 proposed by NWA results in a crossing of this stream approx. one mile upstream of original crossing.
19	106.9	Dennis Creek	ACR 11-7 proposed by NWA results in a crossing of this stream approx. one mile upstream of original crossing.
19	107.0	Bassett Creek	ACR 11-7 proposed by NWA results in a crossing of this stream approx. one mile upstream of original crossing.
19	108.6	Rudy Creek	ACR 11-7 proposed by NWA results in a crossing of this stream approx. one mile upstream of original crossing.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
20	110.3	Lower Oksrukuyik Creek	Surveyed x-ing for Lower Oksrukuyik Creek very skewed. More perpendicular crossing would be preferable. See note 3.
20	113.5-114.0	Compressor Station #3	
21	114.5-115.1		Surveyed centerline crosses area of Class "B" wet lands (marshy area & small pond). Slight shift (100-200') to east would avoid marshy areas & ponds.
21	115.2	APSC Oil Pipeline Crossing	
21	115.3	Dalton Hwy Crossing	
21	116.3	APSC Access Road Crossing	
22	123.4	Dalton Hwy Crossing	
22	124.0	Oksrukuyik Creek	
22	125.0	Mary Lamb Creek	
22	125.5	APSC Access Road Crossing	
23	129.7	E. Fork Toolik River	Check capacity of hwy. drainage structure. (See Note 1).

A.S.	MILEPOST	DESCRIPTION	COMMENTS
23	130.1	Toolik River	Check capacity of hwy. drainage structure. (See Note 1).
23	130.8	E. Fork Kuparuk River	Check capacity of hwy. drainage structure. (See Note 1).
24	132.1	APSC Oil Pipeline Crossing	
24	132.3	Dalton Hwy Crossing	
24	132.5	Kuparuk River	
24	132.6	APSC Access Road Crossing	
25	136.9	Dalton Hwy Crossing	
25	136.9	Yan Creek	Check capacity of hwy. drainage structure. (See Note 1).
25	137.6	Clawsod Creek	Check capacity of hwy. drainage structure. (See Note 1).
25	139.1	APSC Access Road Crossing	
25	139.3	Hallock Creek	Check capacity of hwy. drainage structure. (See Note 1).
25	139.4	Moss Creek	Check capacity of hwy. drainage structure. (See Note 1).

A.S.	MILEPOST	DESCRIPTION	COMMENTS
25	139.9	Terry Creek	Check capacity of hwy. drainage structure. (See Note 1).
25	140.0	APSC Access Road Crossing	
25	140.7	Mack Creek	Two crossings of creek, split channel. Check capacity of hwy. drainage structure. (See Note 1).
25	140.9	Ed Creek	Check capacity of hwy. drainage structure. (See Note 1).
25	141.8	Jill Creek Tributary	Check capacity of hwy. drainage structure. (See Note 1).
25	141.9	Jill Creek	Check capacity of hwy. drainage structure. (See Note 1).
25	141.2- 141.4	Compressor Station #4	NOTE: Survey Equation - M.P. 141.65 back = 140.92 ahead.
26	144.2	APSC Access Road Crossing	This is the access road to Galbraith Camp and Airstrip.
26- 27	147.5- 148.3		Surveyed alignment crosses wetland area consisting of a mosaic of small ponds & marshes. Shifting alignment slightly west would improve alignment. (See A0011046, Proposed Pipeline Alignment, May 6, 1982).
26	147.8	Dalton Hwy Crossing	High ice content, fine-grain soils at this location, resulting in possible liquefaction problem.
26	147.9	APSC Oil Pipeline Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
28	148.3	Atigun River	Potentially unstable banks exist at this crossing. There is a potential for increase in augeis.
27	150.8	Dalton Hwy Crossing	
27	151.8	Holden Creek	Check capacity of hwy drainage structure. (See Note 1). Crossing located on fan. (See Note 2).
27	152.1	APSC Access Road Crossing	
27	152.9	Leentha Creek	
27	153.1	Dalton Hwy Crossing	
27- 28	153.2- 154.7		Pipeline on uphill side of road - special design required to preclude further thaw at toe of road or at drainages. To be evaluated in summer of 1984. (See Memo to files, Jan. 30, 1984, A-0011659.)
28	154.1	Roche Montonee Creek	Crossing located on fan. (See Note 2).
28	156.0	APSC Access Road Crossing	
28	158.9	Waterhole Creek	Crossing located on fan. (See Note 2).
28	159.2	APSC Access Road Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
29	159.6	Bicycle Creek	Crossing located on fan. (See Note 2).
29	159.7	Unnamed Creek	Crossing located on fan. (See Note 2).
29	160.0	Unnamed Creek	Crossing located on fan. (See Note 2).
29	160.5	Tyler Creek	Crossing located on fan. (See Note 2).
29	160.6	Trevor Creek	Crossing located on fan. (See Note 2).
29	163.1 & 163.2	Named Creek	Two crossings. (See Note 2).
29	163.5	Whybothor Creek	Two crossings of creek in close proximity. (See Note 2).
29	163.6	Mickey's Creek	Two crossings of creek in close proximity. (See Note 2).
29	163.8	Who Creek	Crossing located on fan. (See Note 2).
29- 31	164.8- 172.0		Rev. 3 alignment possesses potential slope stability problems (very steep side slopes) which could result in siltation of Atigun River and encroachment on the river channel and small spring-fed tribs. Rev. 4 shows major reroute (ACR 12-3) which would avoid such problems.
30	166.0	Contest Creek	Crossing located on fan. (See Note 2).
30	169.3	Sten Creek	Crossing located on fan. (See Note 2).

A.S.	MILEPOST	DESCRIPTION	COMMENTS
31	172.0- 175.5	Atigun Pass	Gas pipeline located in the Dalton Hwy R.O.W. Special design required over Atigun Pass to protect highway. For safety, Alaska Department of Transportation and Public Facilities (ADOT/PF) approved construction plan required.
31	175.4	West Branch of North Fork, Chandalar River	
31- 32	175.5- 180.6		Special design required where pipeline is adjacent to and/or uphill from hwy. To be evaluated in the summer of 1984. (See Memo to File, A0011659).
32	177.5	Unnamed Creek	Crossing located on fan. (See Note 2).
32	177.6	APSC Access Road Crossing	ADOT/PF operations and maintenance site (stockpiled gravel).
32	178.3- 178.8	Chandalar Camp	ADOT/PF access roads crossed by pipeline. APSC access roads crossed by pipeline. NWA access to fly camp crossed by pipeline.
32	179.7	Dalton Hwy Crossing	
32	180.0- 181.2	Compressor Station #5	
32	180.8- 181.7		Rev. 3 alignment runs up active floodplain of Dietrick River, which would result in disturbances & potential losses of fish habitat & loss of riparian habitat. (See A0011046, Proposed Pipeline Alignments). However, Rev. 4 shows alignment moved slightly east out of the active floodplain (ACR 12-2).
32	181.6	Dalton Hwy Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
32- 33	181.7- 184.6		Several conflicting alignment problems have necessitated special design to accommodate proximity to TAPS and Haul Road and avoidance of northernmost site of spruce along the Haul Road. Current alignment may necessitate winter construction.
32- 33	181.8- 183.1	Dietrick River Floodplain	Pipeline alignment in the active floodplain of the Dietrick River.
33	183.1- 183.7	White Spruce Forest	Pipeline located on the west side of active floodplain of the Dietrick River. APSC requested special study on design through this reach.
33	184.0	Wet Foot Creek	
33	184.5	Dietrick River	Perpendicular crossing of river recommended. (See Note 3).
33	185.1	Oskar's Eddy	
33	185.2	APSC Oil Pipeline Crossing	
33	185.3	Dalton Hwy Crossing	
33- 35	185.6- 196.6		Special design required if alignment cannot be moved away from Dalton Hwy. to the east. (See A0011046, Proposed Pipeline Alignments). Alignment overlays several fish streams and riparian habitat.
33	186.0	Nina Creek	Crossing located on fan. (See Note 2.)

A.S.	MILEPOST	DESCRIPTION	COMMENTS
33- 35	186.5- 187.8	Overwintering Creek	Crossing upslope of Schroeder's Spring (important overwintering area). Chilled pipe effects must be considered. Crossing located on fan. (See Note 2).
34	188.8	Homewood Spring	
34	190.8	Nutirwik Creek	Extensive aufeis development has been historically noted. Wing dikes installed by APSC to channel water through road will be crossed. A newly constructed bridge washed out in 1983. Check capacity of hwy. drainage structure. (See Note 1).
34	191.8- 192.5	Beaver Dam Brook	Alignment is within the active channel and associated riparian community. Crossing located on fan. (See Note 2).
35	193.9	Tracy's Trickle	Crossing located on fan. (See Note 2).
35	194.2	APSC Access Road Crossing	
35	196.3	Burger's Bayou	Crossing located on fan. (See Note 2).
35	196.4	Dalton Hwy Crossing	
35	196.9	Buff Creek	Crossing located on fan. (See Note 2).
35	198.3	Steep Creek	Check capacity of hwy. drainage structure. (See Note 1).
35	198.4	APSC Access Road Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
36	200.1	APSC Access Road Crossing	
36	202.2	APSC Access Road Crossing	
36	202.3	Ugh Creek	Check capacity of hwy. drainage structure. (See Note 1).
36	203.9	APSC Access Road Crossing	
36	205.0	Snowden Creek	Historical aufeis extensive. Check capacity of hwy. drainage structure. (See Note 1).
36	205.1	APSC Access Road Crossing	
36	205.6	Dalton Hwy Crossing	
36-38	205.6-211.6		If alignment is approved adjacent to and uphill from hwy., special design to protect hwy. embankment will be required. (See memo to the file, Jan. 30, 1984, A-0011659.)
37	207.9	Disaster Creek	Historical aufeis extensive. Crossing located on fan. (See Note 2).
37	208.0	Disaster Creek Checkpoint	ADOT/PF Facility; realignment to the east has been made on Rev. 4 to avoid the existing facility.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
37- 38	208.3- 211.5	Airport Creek	Rev. 3 concerns include encroachment on headwaters of Airport Creek, adjacent wetland and Steitz Lake Inlet. We have recommended that NWA consider moving alignment to higher ground to the east or burying pipeline in the west toe to the Haul Road. (See A0011046, Proposed Pipeline Alignments).
37	209.2	Middle Fork Airport Creek	
37	209.3	S. Fork Airport Creek	
37	209.9	Steitz Lake Inlet	
37- 38	210.0	Dalton Hwy Crossing	Major alignment change indicated on Rev 4 (ACR 12-1 proposed) would avoid some wetland encroachments as noted above.
37	210.6	Brockman Creek	ACR 12-1 proposed by NWA provides crossings located downstream from Dalton Hwy. crossing and upslope of TAPS. Historical aufeis extensive.
37	211.9	APSC Access Road Crossing	
38	212.0	Unnamed Creek	
38	212.1	Dietrick River	See ACR 12-1. Crossing located between oil pipeline and highway. Crossing involves cutting through river training structures protecting the oil pipeline and the Dalton Hwy bridge.
38	212.4	Eva's Alv	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
38	212.5	APSC Access Road Crossing	
38	213.8	Dalton Hwy Crossing	
38	214.0	Millie's Meander	Alignment overlays channel.
38	214.5- 214.8	Crossing Middle Fork Koyukuk	
38- 40	215.4- 228.5		If alignment is approved against uphill side of hwy, a special design will be required to protect the hwy embankment. To be evaluated in summer of 1984. (See Memo to the file, January 30, 1984, A0011659.)
38- 39	216.0- 220.5		Shallow sub-surface ice (ice blisters) on slopes above hwy. Subsurface water occurs on permafrost <u>most</u> of the year. Aufeis and ditch problems require special attention in design, construction and construction scheduling.
38	216.2	APSC A.R. Crossing	
38	216.5	Sukakpak Creek	In spring of 1981, the corrugated metal pipe (CMP) across the haul road at Sukakpak Crk. was completely plugged with ice which persisted beyond breakup and dammed off breakup runoff from Sukakpak Crk at the haul road. Thus, high stream flows ran along the east side of the haul road for nearly 1/2 mile, before flowing through two 24" CMP's. Considerable erosion to the haul road resulted from the diverted flows. The ANGTS alignment runs along the east toe of the haul road through this area. Special design considerations are needed to avoid erosion problems from spillover of flows from Sukakpak Crk. Also, aufeis problems and ice blisters exist along uphill (east) side of the haul road through this area.
38	217.9	Stream Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
39	221.7	Linda Creek Crossing	
39	222.1	Access Road to Material Site (M.S.)	
39	222.4	Gold Creek Crossing	
40	223.1	Sheep Creek Crossing	BLM-approved road to a mine now parallels this stream.
40	223.8	Wolf Pup Crk. Crossing	ACR 12-8 proposed by NWA has improved alignment across Wolf Pup Creek.
40	224.03- 224.54		Private land owned by heirs of Arctic John Etalook. Certified Native Allotment. During construction of TAPS crossing, this private land caused problems, claims, etc. Should be carefully coordinated. (See land ownership list and summary, F0001030, 4/18/84).
40	224.2	Nugget Creek Crossing	
40	227.9- 228.6	Coon Gulch Creek	Alignment overlays Coon Gulch Creek. We have recommended NWA move alignment to west toe of the Haul Road. (See A0011046)
40	228.6	Dalton Hwy Crossing	
40	228.8	APSC River Training Structure	
40	228.8	Koyukuk River Crossing	Alignment crosses APSC river training structure; special design consideration will be necessary.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
41	229.1	Hammond River Crossing	Crossing located between haul road and TAPS.
41	230.8	Dalton Hwy Crossing	ACR 13-26 has moved crossing slightly north from Rev. 3 crossing.
41	231.0	Middle Fork Koyukuk Crossing	
41-43	231.4-236.5		If alignment is approved against uphill side of hwy, a special design to protect hwy. embankment will be required. To be evaluated in the summer of 1984. (See A0011046).
41	232.4	Minnie Creek Crossing	
41	232.6	APSC M.S. Access Road Crossing	
41	233.6	APSC Access Road to M.S. 41-4 Crossing	
41	236.0-238.0		Thermal erosion exists in drainages above hwy. Pad, construction scheduling and ditch design require special consideration.
42	237	Haul Road Crossing	
42	237.1	APSC Access Road 42-1 Crossing	
42	238.7	APSC Access Road 42.2 Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
42	239.9	Pence's Pond Creek	Check capacity of hwy. drainage structure. (See Note 1).
42	240.4	Marion Creek Crossing	Note 3 overflow channels between Pence's Pond Creek and Marion Creek. Check capacity of hwy. drainage structures. Check capacity of hwy. drainage structure. (See Note 1).
42	240.8	S. Fork Sharon Creek	
43	241.5	Mary Angel Creek Crossing	Check capacity of hwy. drainage structure. (See Note 1).
43	241.7	S. Fork Mary Angel Crk.	Check capacity of hwy. drainage structure. (See Note 1).
43	241.8	Unnamed Creek Crossing	Check capacity of hwy. drainage structure. (See Note 1).
43	243.3	Organo Creek Crossing	Check capacity of hwy. drainage structure. (See Note 1).
43	243.7	Clara Creek Crossing	Note also overflow channels crossing both north and south of main channel. Check capacity of hwy. drainage structure. (See Note 1).
43	244.4	Calf Creek Crossing	Check capacity of hwy. drainage structure. (See Note 1).
43	244.9- 245.0	Slate Creek Crossing	On downstream side of the Haul Road bridge, Slate Crk. makes a sharp meander back toward the road and runs parallel & very close to the road for several hundred feet. The alignment currently runs along west side of Haul Road through this area and is then squeezed between the road and nearby Slate Creek. Such an alignment will eliminate what small buffer there is currently between the road and the Slate Creek meander & encroach into the Creek. Constricted area; requires special design. Recommend alignment in west toe of Haul Road. (See A0011046).

A.S.	MILEPOST	DESCRIPTION	COMMENTS
43	245.1	Access Road to Cold-foot Camp	
43	246.6	Trib to Spring Slough (Spring Slough #3)	
43	246.7	Spring Slough #2	
43	246.8	Trib to Spring Slough (Spring Slough #1)	
44	247.0	Trib to E. Fork Spring Slough	
44	247.1	Dalton Hwy Crossing	Alignment crosses to east side of hwy.
44	248.1	First Creek	
44	249.1	Dalton Hwy Crossing	ACR 13-13 moves crossing about 0.7 mi. north of Rosie Creek.
44	250.1	Rosie Creek Crossing	ACR 13-13 swings alignment away from road then crosses Rosie Creek D/S, swings back to original alignment about 0.3 mi. south of Rosie Creek.
44	251.7	Dalton Hwy. Crossing	
44	251.8-251.9	Cathedral Mountain Creek Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
44- 45	252.0- 254.0		The alignment overlays Jackson Slough & Trent's Trickle. Special design required - alignment is acceptable at the toe of the hwy. embankment if design and workplan are accepted by ADOT/PF. To be evaluated in the summer of 1984. (See A0011046).
45	252.8	Jackson's Slough, East Channel #2	
45	253.1	Jackson's Slough, Cross Channel	
45	253.3	Jackson's Slough, East Channel	
45	254.1	Trent's Trickle	
45	254.1	Dalton Hwy Crossing	
45	254.8	Unnamed Creek	
45	255.2	Unnamed Creek	
45	256	N. Fork Windy Arm	Check capacity of hwy. drainage structure. (See Note 1). Historical aufeis in this drainage - construction scheduling & chilled pipe effects require special consideration.
45	257.2	S. Fork Windy Arm Creek	
45	258.3	Chapman Creek	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
46	259.5	Crossroads Creek #2	
46	259.6	Crossroads Creek #1	
46	261.3	APSC Crossing	
46	262.7	APSC Access Road Crossing	
46	263.3	Dalton Hwy Crossing	ACR 13-15 has changed crossing alignment slightly and moved pipe farther east from highway.
46	264.4	S.F. Koyukuk Riv Crossing	
47	266.0-269.0		ACR 13-14 moves line to east side of Dalton Hwy for approx. 5 miles. APSC expending large effort on thermal/hydraulic erosion control. Special consideration required. Reroute of line above hwy should be considered. The Rev. 3 alignment along the west side of the Haul Road overlayed the E. fork of Abba Dabba Crk & traversed riparian and wetland areas associated with several other small streams in this area. Rev. 4 shows alignment shifted to the E. side of the road (ACR 13-14) as environmentally preferred.
47	266.3	APSC Material Site Access Road Crossing	
47	266.4	Abba-Dabba Creek	
47	267.1	E. Fork Abba-Dabba Crk	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
47	267.6	Elwood Creek	
47	269.3	Grayling Lake Inlet	
47	269.4	Dalton Hwy. Crossing	ACR 13-14 alignment rejoins Rev. 3 alignment on west side of Hwy.
47	269.7	Ward's Wallow	Pipe alignment thru deep pot hole adjacent to hwy. Realignment should be considered or special design (chilled pipe effects) required.
47	270.3	Dalton Hwy. Crossing	
47	270.4	Inlet to Grayling Lake	
48	271.3	APSC A.R. to M.S.	
48	273.7	Compressor Station #7	
48	274.8 278.7		ACR 13-9 extends alignment from S. side of C.S. #7 to S. side of Douglas Creek.
48	275.8	APSC Access Road to Material Site	
48	276.0- 276.3	Jim River Crossing	The Rev. 3 alignment across the Jim River possessed environmental problems associated with unnecessary crossing of clear water side channels in addition to the main river, and traversing a wide stretch of mature river bottom forests. Rev. 4 depicts an acceptable re-route, approved by OFI.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
49	277.0- 278.0	Douglas Crk Crossing	ACR 13-8 proposed, changeing alignment for Douglas Creek Crossing. Historical aufeis in this area.
49- 50	279.0- 284.0		Alignment east of Prospect Airport.
50	284.2	Unnamed Creek	
50	285.4	Prospect Creek	
50	285.7- 286.6		Alignment overlays unnamed stream and associated riparian drainage for approximately 3800', in an area of potential thermal erosion problems. Recommend shift in alignment to avoid the drainage. (See A0011046).
51	289.6	N. Fork Little Nasty Creek	
51	289.7	Little Nasty Creek	Historical aufeis problems.
51	290.0	S. Fork Little Nasty Creek	
51	291.1- 292.0		ACR 13-3. Line shifted easterly on steep hillside just north of N. Fork Bonanza Creek.
51	292.2	N. Fork Bonanza Creek	
51	293.1		Alignment crosses high quality wetland system used by waterfowl (Oxbow Lake) and descends down a steep 30-foot embankment into the wetland area. Special design recommended.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
51	293.2	Oxbow Lake System	
51	293.5	APSC Access Road to Material Site	
52	293.6-293.8	S. Fork Bonanza Creek and Tributary	
52	293.8-294.1		Alignment encroaches close to a meander of the S. Fork Bonanza Creek for approx. 1,000'. To avoid meander, we have requested the alignment be shifted closer to APSC pipeline. Special design recommended. (See A0011046).
52	296.3	APSC Access Road to Material Site	
52	297.6	Pung's Crossing Creek	
52	299.7	APSC Access Road to Material Site Crossing	
53	300.7	Alder Mountain Creek	
53	302.4	Fish Creek	ACR 13-27 designated from 301.4 - 302.4 changes alignment, but does not show on Rev. 4.
53	302.8		Alignment overlays about 450' of a trib to Fish Crk and associated riparian habitat, on the S. side of Fish Creek. We have recommended alignment modification to allow perpendicular stream crossing at the base of the hill, and avoid an isolated stand of trees crossed by the alignment. (See A0011046).

A.S.	MILEPOST	DESCRIPTION	COMMENTS
53	303.0-306.0		North sloping areas exhibit active solifluction problems. Construction scheduling, ditch stability, etc., should be considered.
53	304.0	Middle Fork Fish Crk	
53	305.1	S. Fork Fish Creek	The alignment overlays approx. 100' of the S. Fork Fish Creek, between two large actively eroding meanders and steep hillside on the N. side of the Creek. We have recommended shifting alignment upstream to a straighter reach of stream and make a more perpendicular crossing. Rev. 4 indicates an ACR 13-28 across this area, but does not show the alignment change.
54	308.5	Netsch's Crk Trib #3	Rev. 3 alignment would entail destruction of several hundred feet of riparian habitat at Netsch's Creek Trib #3. Rev. 4 depicts an alignment revision (ACR 13-10) which satisfactorily addresses our concerns.
54	308.8	Netsch's Creek Trib #2	
54	309.1	Netsch's Creek Trib #1	ACR 13-10 adjusts alignment between M.P. 308 and 309 for better crossing of Netsch's Creek.
54	309.7	Access Road to Old Man Camp	
54	310.8	Access Road to Old Man Airstrip	
54	311.0	Kanuti River Crossing	
55	314.1	Caribou Mountain Crk. Crossing	Proposed ACR 13-29 swings alignment away from road. At Caribou Mountain Crk, the stream crosses the Haul Road and then bends to run parallel to & about 15-25' from the east toe of the road for approx. 100'. to avoid environmental concerns. A Native allotment is also located at this stream crossing.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
55	314.5-315.7	Historic Place	For 1.16 miles, Doyon, Ltd. has selected as historic place under the provisions of ANILCA.
55	316.2	Dalton Highway Crossing	Alignment back to west of highway
55	316.3	Kristie's Creek Crossing	
55	316.9	Olson Lake Creek Crossing	
56	320.3	Finger Mtn. Creek Crossing	ACR 13-19 swings alignment westerly away from Hwy. for better crossing.
56	321.2	Unnamed Creek Crossing	
56	322.6	Smoky Creek Crossing	ACR 13-20 swings alignment westerly.
56 57	322.7 323.5	APSC Access Road to West Fork Dall River (Middle Branch)	ACR 13-24 swings alignment westerly away from highway.
57	325.8	West Fork Dall River (South Branch)	ACR 13-21 - minor alignment adjustment moves alignment westerly for better alignment across creek. Very active aufeis producer.
58	329.5-329.8	Unnamed Creek Crossing	ACR 13-22 moves crossing upstream and swings alignment west from road.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
58	330.4	Road crossing to APSC Material Site	
59	333.3	Fed Creek Crossing	ACR 13-23 swings alignment away from road westerly for approx. 2,000 ft. Very active aufeis producer.
59	334.7	Road Crossing of APSC road to Material Site	
59	335.9	N. Fork Ray Riv. Crossing	
59	336.0-337.0		Blocked drainage on west side of hwy (ditch side) causing extensive thermal/hydraulic erosion.
60	339.3	Access Road 81 Access to Pipeline (APL) Access to Material Site (AMS) - 4 Across Dalton Hwy. on E. Side	Access route to Ray River Weather Station constructed by NWA.
60	341.3	Knowater Creek Crossing	ACR 13-30 moves alignment westerly from road for approx. 2,400 ft. Better stream crossing location downstream from road. The Rev. 3 alignment is sandwiched between the Haul Road and Ft. Hamlin Hills Crk and thus would entail encroachment into the crk, resulting in stream degradation and potential restoration & maintenance problems. The stream banks downstream from the road are very unstable & exhibit evidence of active erosion and migration of the stream back toward the road and Rev. 3 alignment. However, Rev. 4 depicts proposed (ACR 13-30) reroute which swings downstream away from the road and would thus avoid environmental problems cited above. Specific Rev. 4 stream crossing location has not been field-checked.
61	344.1	Fort Hamlin Hills Crk Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
61	345.4	Unnamed Creek Crossing	
61	345.8- 347.6		ACR 13-17 & 13-18 - No realignment has been shown, but area has been flagged as potential problem. Rev. 3 alignment swings to the west thru low wetland area near Ray River. ACR's identify problem areas, but no alignment changes are shown in the ACR.
61	348.5		Alignment crosses APSC pipeline west to east.
62	348.6	Stumblin Creek	
62	348.8	APSC Access Road Crossing	
62	349.8		Alignment crosses Dalton Hwy. to east side.
62	350.0	Unnamed Creek Crossing	
62	351.3	Dalton Hwy.	Alignment crosses from east to west side of Hwy.
62	352.2	APSC Access Road to Pipeline Crossing	
62	352.8	Phelps Creek Crossing	
63	354.8	APSC Pipeline Access Road Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
63	355.6	APSC Pipeline Crossing	Alignment crosses east to west side of APSC pipeline. From M.P. 355.6 to 356.1, access will probably be one-way from south along gasline pad.
63	356.3	North Access Road to Five Mile Camp	Alignment crosses northern access to Five-Mile Camp, then returns to Dalton Hwy.
63	356.5		Alignment crosses southern access to Five-Mile Camp.
63	358.4	Wood Chopper Creek Crossing	
64	359.4	Burbot Creek X-ing	
64	360.8	N. Bank Yukon River Crossing	NWA has area for M.P. 360.4-362.5 on "hold status". Many issues to resolve through this stretch. (See F0000763, Action Memo, Toskey to Rhett, October 5, 1982, background references.
64	362.3	Dalton Hwy Crossing from West to East side	
64	362.4	APSC Pipeline Crossing from west to east	From 362.4-363.5 alignment swings away from Dalton Hwy.
64	363.8		Alignment crosses Dalton Hwy. east to west.
65	368.2		Alignment crosses Access Road to APSC Pipeline.
65	369.4	Isom Creek Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
66	370.3		Alignment crosses Trib. to Isom Creek
66	370.6		Alignment crosses Trib. to Isom Creek
66	371.5	Isom Creek Crossing	
66	372.8		Alignment crosses APSC Access Road to APSC pipeline.
66	374.3	Unnamed Creek X-ing	
66	374.7		Alignment crosses APSC pipeline from east to west. Pipeline then turns in southerly direction parallel Dalton Hwy.
67	375.9		Alignment crosses Dalton Hwy.
67	376.8		Alignment crosses Dalton Hwy.
67	378.5	Hot Cat Creek Crossing	
67	379.5	Unnamed Creek Crossing	
67	380.1	Unnamed Creek Crossing	
67	380.7- 381.0	Compressor Station 9	
67	381.3	Two-Bit Creek Crossing	Check capacity of hwy. drainage structure. (See Note 1).

A.S.	MILEPOST	DESCRIPTION	COMMENTS
68	383.4	Two Bank Creek	
68	385.8		Alignment crosses Dalton Hwy. Rev. 4 realignment provides for crossing of tributaries to Mastodon Crks.
68	386.1	Hess Creek Crossing	History of rapid channel changes.
68	387.1	Hess Creek Oxbow Crossing	
68	387.4	Hess Creek Trib. from Mastodon Creek	
69	390.5	Unnamed Creek X-ing	ACR 14-15 shifts alignment easterly for better crk. crossing.
69	393.0	West Fork Erickson Creek	Rev. 3 alignment encroaches very close to meander of W.F. Erickson Crk. However, ACR 14-15 indicates slight shift away from the meander bend. Stream meanders occur on both sides of ANGTS alignments. Special design consideration required.
70	396.3	Erickson Creek Trib. Crossing	Alignment converges very close to Erickson Crk. Trib. for several hundred feet immediately north of the proposed stream crossing, thus infringing on riparian habitat and may ultimately result in maintenance and restoration problems. Concern may be alleviated by slight shift in alignment toward the west and/or necking down the workpad.
70	399.0	APSC Access Road Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
71	400.3- 400.7		Alignment overlays small unnamed drainage & riparian habitat in an area of potential thermal erosion. Only a slight shift in alignment would be necessary to alleviate the concern. In addition, the alignment infringes on a meander of Lost Creek which could be avoided by minor shift toward the west. It is recommended that alignment be relocated to the west and perpendicular across Lost Creek (see A0011046).
71	400.7	Lost Creek Crossing	
71	403.1	APSC Pipeline Crossing	
71	403.8	Unnamed Trib to W. Fork Tolovana River	
71	405.6	Elliot Highway (Man- ley Hot Springs Road)	Old Livengood Camp, approx. 1/2 mi. S.W.
72	406.8	Tolovana River Crossing	
72	407.5	Trib. to Tolovana River Crossing	
72	408.6	Shorty Creek Crossing	
73	412.8	Trib. to Wilbur Crk Crossing	
73	414.0	Wilbur Creek Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
73	414.4	APSC Pipeline Crossing	
73	414.8	Ski Jump Ramp Creek Crossing	
73	416.5	Slate Creek Crossing	
73	416.6	Trib. to Slate Creek Crossing	
74	420.7	Elliot Highway Crossing	
74	421.1	Tatalina River Crossing	
74	421.6	Old Elliot Hwy. Crossing	
74	421.9	Unnamed Trib. to Tata- lina River	
74	421.8	Elliot Hwy. Crossing	
74	422.4	Access Rd. to Alyeska Pump Station 7 Crossing	
75	414.0- 427.0	Grapefruit Rocks and Globe Creek Area	Major Rev. 4 realignment starts here for Grapefruit Rocks & Globe Crk areas. Rev. 3 alignment passed within 1 mi. of peregrine falcon nesting habitat and passed very near popular recreational use area. NWA has since re-routed the ANGTS in response to our concerns.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
75	425.1	Cross Toe of Ridge Southerly from Grape- fruit Rocks	
75	425.8	Globe Creek Crossing	
76	428.5- 430.0		APSC utilized snow pad during construction because of massive ice in this area. A special design may be required.
76	428.6	Unnamed Trib. to Little Globe Crk Crossing	
76	429.0	Little Globe Creek Crossing	
76	430.7	Access Road to APSC Crossing	
76	431.3	Boundary of Fairbanks North Star Borough	
76	431.7	N. Fork Aggie Creek Crossing	
76	432.0	Future Compressor Station #10 Location	
76	432.5	S. Fork Aggie Creek Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
77	434.6	APSC Access Road Crossing	
78	439.8	Washington Creek Crossing	At the Washington Crk. stream crossing, a steep slope ascends immediately from the south bank. This steep north-facing hillside may contain ice-rich soils highly susceptible to erosion, causing erosion into Washington Crk. In addition, the alignment encroaches very near an upstream creek meander. Rev. 4 (ACR 14-14) shows a slight re-route upstream.
78	443.8	APSC Access Road Crossing	
79	446.2	Chatanika River Crossing	
79	446.7	APSC Access Road Crossing	
79	448.5	Trib. to Vault Creek Crossing	
79	449.5-459.9	Mining Claims	Alignment crosses 7 active mining claims (see F0001030, April 18, 1984).
79	450.1	Treasure Creek Crossing	
80	453.1	Murphy Dome Road Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
80	454.4	Elliot Hwy. Crossing	
80	454.5	Fox Creek Crossing	Icing was observed across the ROW on May 3, 1981 (see <u>[Forney field report]</u>)
80- 81	455.0- 459.0	NASA Satellite Station	If active, may place some distance/time window on welding and equipment activity. (See Memorandum of Agreement between the DOI and NASA).
81	456.9	Gold Run Creek Crossing	
81	457.4	Pedro Crk. Crossing	
81	457.6	Gilmore Creek Crossing	Gold dredge may be operating in this area.
81	459.4	Rose Crk. Crossing	
81	460.5	Nugget Creek Trib. Crossing	ACR 14-13 provides minor shift to avoid trib. to Nugget Creek
82	463.8	Smallwood Creek Crossing	
82	465.9	Trib. to Smallwood Creek Crossing	
83	467.7	Trib to Smallwood Creek #1 Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
83- 84	467.7- 474.7	Potlatch Ponds - Farming	Area is in litigation; State/Fairbanks North Star Borough/13 owners with apparent agricultural rights. May require extensive coordination (see F0001030, April 18, 1984).
83	468.9	Little Chena River Crossing	
83	469.3	Trib. to Little Chena River #2	
83	469.9	Trib. to Little Chena River #1 Crossing	
83	472.6	Potlach Creek Crossing	
84	475.1	Unnamed Creek Crossing	
84	475.3	Chena River Crossing	
84	475.9	Chena River Side Channel Crossing	
84	476.2	Chena River Oxbow Crossing	
84	476.3	Chena River Oxbow Crossing	
85	480.3	Military Trail Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
85	482.0	Moose Creek Crossing	ANGTS alignment crosses Moose Creek at a very sharp meander of the stream. Such meanders are very prevalent along this stream. The most suitable stream crossing location observed in the vicinity of the existing alignment is located approximately 400' downstream from the existing location. (See A0011046).
85	482.5	Unnamed Creek Crossing	
86	483.7	Unnamed Creek Crossing	
86	484.1	French Creek Crossing	
86	484.6	Trib. to French Creek Crossing	
86	485.1		The Rev. 3 alignment would overlay or encroach upon 120-150' of a trib to French Creek. ACR 14-19 reflects an alignment modification that would avoid the problem.
86	487.0	Unnamed Creek Crossing	
86	487.5	APSC pipeline Crossing, East to West Side	
86	487.6	Knokanpeover Creek Crossing	
87	489.9	French Creek Crossing	
87	493.3	Million Dollar Creek Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
87	494.0- 494.4	Compressor Station #11 Location	
88	496.5	Military & Alyeska Access Rd. Crossing, Just North of Pump Station #8	
88	496.7	Main Access Road to APSC Pump Station #8 Crossing	
88	497.3	Trib. to Little Salcha Crossing	
88	498.2	Little Salcha River Crossing	Rev. 3 encroached upon a tight stream meander of the Little Salcha Riv., would have entailed an unnecessary amount of destruction of riparian habitat and crossed the stream at an oblique angle. ACR 14-23 reflects minor alignment change downstream that should alleviate environmental concerns.
88	498.8	Cross Golden Valley Electric R.O.W.	
88	499.8	Two-Nineteen Creek Crossing	
89	503.4	N. Bank Salcha River Crossing	NWA crossing downstream from APSC pipeline.
89	503.9	Third Slough Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
89-93	504.0-527.0	Limited Access to ROW	Unless NWA is successful in obtaining an access road from Richardson Hwy. to the work pad, the only access will be along the pipeline ROW.
89	504.6	Trib. to Salcha River Crossing	
90	507.3	Redmond Creek Crossing	
91	512.4	Trib. to Small Creek Crossing	
91	514.3	Gold Run Creek Crossing	Steep banks on creek.
91	515.6	West Fork Minton Crk #2	
91	516.0	West Fork Minton Crk #1	
91	516.9	East Fork Minton Crk #1	Severe aufeis problems were encountered by APSC during TAPS construction between MP 515 & 519. Icing due to construction and re-routing of Minton Creek and tributaries. Problem continues for APSC during O&M. (See May 1981 Icing Survey).
92	517.1	East Fork Minton Crk #2	
92	517.3	East Fork Minton Crk #3 Crossing	Severe aufeis problems.
92	517.7	East Fork Minton Crk #4 Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
92	518.0- 518.2		Both alignments overlay the S.F. Minton Crk and much of its riparian zone throughout this stretch. Special design/restoration required.
92	518.2	S. Fork Minton Crk Crossing	
92	518.3	East Fork Minton Crk #5 Crossing	
92	518.7	East Fork Minton Crk #6 Crossing	
92	519.5	Top Rosa Pass	
92	519.9	Rosa Crk #6 Crossing	
92	520.2	Rosa Crk #5 Crossing	
92	520.5	Rosa Crk #4 Crossing	
92	521.3	Rosa Crk #3 Crossing	
92	521.4- 521.5	Rosa Crk #2 Crossing	Alignment overlays a stretch of Rosa Crk #2. Recommend realignment to the west with perpendicular crossing (see A0011046).
93	526.4	Lower Rosa Crk Cross- ing Area	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
93	527.4	Shaw Crk Crossing	
94	528.3	Cross APSC Pipeline, West to East Side	
94- 95	528- 538	Class 2 & 3 Wetlands Area	
95	535	Compressor Station #12 Location	
95- 96	535.2- 541.0		Rev. 4 alignment just south of Compressor Station avoids many individual land-owners, however, it does have some environmental problems. ACR 15-12 alignment crosses a major chum salmon spawning area which would necessitate construction scheduling to avoid sensitive spawning periods.
95	536	Cross Road to Quartz Lake Recreation Area	
95	538.8	Cross Large Side Channel of Tanana Riv.	
96	539.3	Tanana Riv. (Main Channel) Crossing	
96	540- 576	Farming Area Next 36 Miles	Farmers will have crops May - Sept.
97	548		Alignment swings southeasterly away from APSC pipeline.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
98	554.5	Clearwater (Remington) Road Crossing	
100	565.4	Sawmill Creek Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
102	576.3- 576.9	Gerstle River Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
103	578.9	Dougherty Crk X-ing	In addition to breakup, heavy flow can occur mid-July to Sept.
103	579.3- 579.6	Compressor Station #13	Compressor Station #13 is located approx. 2 mi. from historic peregrine falcon nesting habitat along the Tanana River. Concern has been expressed over potential noise effects of the C.S. on potential reuse of the nesting area.
103- 104	580.5 584.5		Canteen fault zone.
103	581	Little Gerstle River Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
104	583.4	Cross Alaska Highway East to West Side	
104	588.7- 588.9	Johnson River Crossing	Historical aufeis.
105	591.2	Dry Creek Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
105	591.5- 594.5		Horn Mt., Dry Creek, Saddle Fault Zone.
105	592.3	Unnamed Creek Crossing	
106	594.8	Sears Creek Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
106	597.9	Berry Creek Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
106	600.1	Unnamed Creek Crossing	
107	603.3	Sam Creek Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
107	604.8	Unnamed Creek Crossing	
108	605.7	Unnamed Creek Crossing	
108- 110	605.7- 617.5	Native Land	All land controlled by Dot Lake Native Corp. or individual allottees.
109	606.9	Unnamed Creek Crossing	
109	607.1	Unnamed Creek Crossing	
109	609.0	Cross Alaska Hwy, West to East Side	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
108	610.3	Chief Creek Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
108	611.7	Bear Creek Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
109- 110	613.0 - 617.5		Mansfield Creek Fault Zone (north)
109	616.8	Unnamed Creek Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
110	618.8	Unnamed Creek Crossing	In addition to breakup, heavy flow can occur mid-July to Sept.
110	619.5	Cross Alaska Hwy, East to West Side	Mansfield Creek Fault Zone (south), M.P. 619.5 to M.P. 622.0.
110	620.3		Alignments cross a Class "A" wetland (pond and adjacent marsh). We have recommended that NWA follow the existing Haines Pipeline ROW which swings around the wetland area, or provide mitigation. (See A0011046).
110	621.3- 621.5	Robertson River Crossing	Historical aufeis.
111	623.6	Unnamed Creek Crossing	
111	624.9	Unnamed Creek Crossing	
111	625.4	Unnamed Creek Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
111	626.7- 626.9	Sheep Creek Crossing	Creek spread out in several channels. In addition to breakup, heavy flow can occur July-Sept.
111	627.9	Unnamed Creek Crossing	
111	628.4	Unnamed Creek Crossing	
112	628.9	Unnamed Creek Crossing	
112- 114	629.0- 646.0	Native Lands	Approx. 14.5 miles of land controlled by Tanacross Native Corp.
112	629.7	Cathedral Rapids Crk Crossing #7	Crossing located on fan (see note 2). In addition to breakup, heavy flow can occur July to Sept.
112	629.9	Cathedral Rapids Crk Crossing #6	Crossing located on fan (see note 2). In addition to breakup, heavy flow can occur July to Sept.
112	630.1	Cathedral Rapids Crk Crossing #5	Crossing located on fan (see note 2). In addition to breakup, heavy flow can occur July to Sept.
112	630.3	Cathedral Rapids Crk Crossing #4	Crossing located on fan (see note 2). In addition to breakup, heavy flow can occur July to Sept.
112	630.4	Cathedral Rapids Crk Crossing #3	Crossing located on fan (see note 2). In addition to breakup, heavy flow can occur July to Sept.
112	630.5	Cathedral Rapids Crk Crossing #2	Crossing located on fan (see note 2). In addition to breakup, heavy flow can occur July to Sept.

A.S.	MILEPOST	DESCRIPTION	COMMENTS
112	630.9	Cathedral Rapids Crk Crossing #1	Crossing located on fan (see note 2). In addition to breakup, heavy flow can occur July to Sept.
112	632.4	Unnamed Creek Crossing	
112	634.0-634.5	Compressor Station #14 Location (future)	
113	634.8	Yerrick Creek Crossing	In addition to breakup, heavy flow can occur July to Sept.
113	636.9	Moon Lake Creek Trib. Crossing	
113	637.6	Alaska Hwy Crossing	ACR 16-16 moves hwy. Crossing to same location where Haines Pipeline crosses. Gasline crosses to north side of hwy.
113	638.2	Unnamed Creek Crossing	
113	639.3	Unnamed Creek Crossing	
113	640.5		Hillside icing. (See 1980, '81 & '82 Icing Surveys). Stability problems may be encountered due to groundwater problems.
114	643.2	Cross Road to Tana-cross Village	
114	644.3	Cross Road to Tana-cross Airport	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
116	655.3- 660.7	Native Lands	
116- 118	657.5- 669.0		Combined Dennison Fork & Caribou Crk Faults.
117	657.7	Tok River Overflow	
117	659.8	Tok River	
117	661	Coast Guard LORAN "C" Station 1/4 mi. north of line	
117- 121	661.4- 682.1	Native Land	Tetlin Native Corp. controls 20.7 miles immediately north of Tetlin Wildlife Refuge.
118	663.9	Tanana River Overflow Crossing	
118	665.9- 661.1	Tanana River Crossing	
118	667.5	Cross Taylor Hwy.	
119	671.4	Unnamed Creek Crossing	
119	672.6	Unnamed Creek	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
121	682	Enter Tetlin Wildlife Refuge	
121	682.5	Cross Alaska Hwy from NE to SW side	
121-126	683.0-714.9	Native Land	Northway Natives, Inc. and individual native allottees control this land (see F0001030).
121	683.4	Unnamed Creek Crossing	
121	684.6	Cross Alaska Hwy, SW to NE Side	
121	685.5	Unnamed Creek Crossing	
122	688.3	Bitters Creek Crossing	Good candidate for aerial crossing.
122	690.2	Unnamed Creek Crossing	
123	694.6	Unnamed Creek Crossing	
123	696.7	Cross Alaska Hwy	
123	696.9	Unnamed Creek Crossing	
123	697.3	Alaska Hwy. Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
124	699.3	Beaver Creek Crossing	
124	700.9	Lethe Creek Crossing	
124	703.4	Unnamed Creek Crossing	
125	706.6	Silvercreek Crossing	
126	710.9	Alaska Hwy. Crossing	
126	712.5	Ten-Mile Crk Crossing	
127	718.3- 718.6		Rev. 3 alignment follows Haines Pipeline ROW across Gardiner Creek. Such an alignment would require disruption of an adjacent stream meander with steep and unstable banks and ultimately may lead to restoration and maintenance problems and potential erosion into Gardiner Crk. ACR 16-11 depicts a reroute downstream, as requested, to reduce problems noted in conjunction with Rev. 3.
127	718-6	Gardiner Crk. Crossing	Special design consideration for aerial crossing.
128	723.6	Unnamed Creek Crossing	
128	724.2	Unnamed Creek Crossing	Both alignments follow Haines Pipeline ROW which runs through small stream and pond system & associated wetland habitat. These wetland areas could be avoided by swinging alignment slightly to the north for approx. 500-600', or special design consideration.
129	728.3	Unnamed Creek Crossing	

A.S.	MILEPOST	DESCRIPTION	COMMENTS
129	728.6	Unnamed Creek Crossing	
129	729.6	Unnamed Creek Crossing	
129	729.7	Alaska Hwy. Crossing, West to East Side	
129	732.4	Unnamed Creek Crossing	
130	737.4	Desper Creek Crossing	Just south of Desper Crk stream crossing, Rev. 3 encroaches very close to a stream meander & overlays a pond and associated sedge/grass marsh. As we requested, ACR 16-14 shows a minor reroute upstream addressing the above problem.
131	739.3	Scottie Creek Crossing	Special design consideration for aerial crossing.
131	740.1	Alaska Hwy. Crossing, East to West Side	
131	740.2		Rev. 3 would encroach on the high quality riparian zone and wetland complex associated with Little Scottie Crk. Little Scottie Crk receives high use by several species of waterfowl, shorebirds and fish. ACR 16-7 provides a minor reroute to minimize environmental impacts to Little Scottie Crk, at our request.
131	743.0	Border - Alaska, U.S./ Yukon Territory	
131	743.08	Metering Station #2	

NOTES

1. For those cases where the alignment is downstream of highway drainage structures, the possibility of the PDF breaching the roadway at a location other than at the drainage structure must be evaluated. Design of the necessary cover for the pipeline should consider the possible scour downstream of the breached area.
2. For those cases where the alignment crosses a fan, the possibility of channel switching should be considered and the depth of cover designed accordingly.
3. Perpendicular crossings tend to reduce sloughing of ice-rich banks and minimize habitat disturbances.