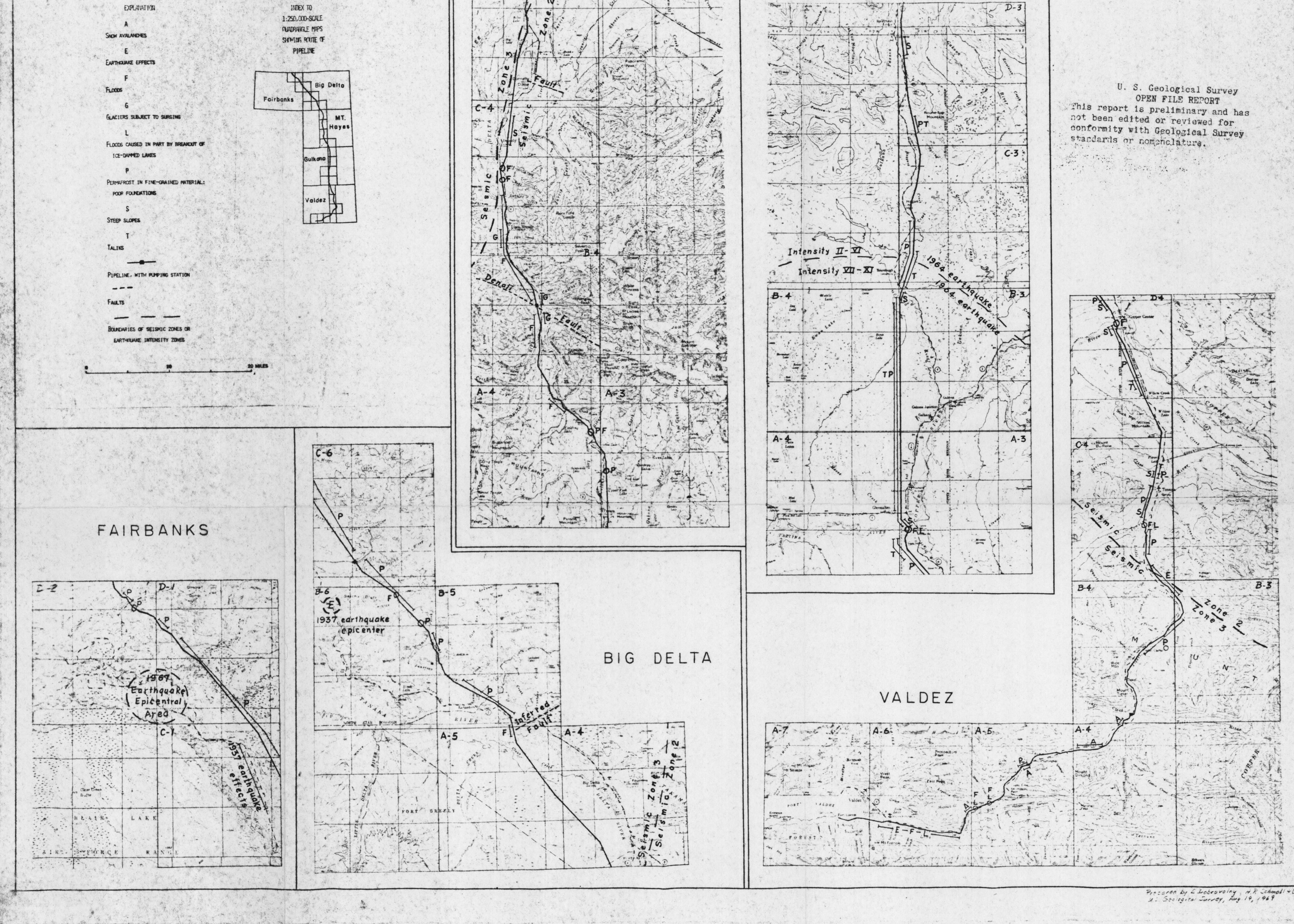


Quadrangle	Topography	Geology of formations and construction materials	Tectonics	Floods	Other factors	Sources of data	
						Numbers refer to list of sources; pertinent and references given there	List of sources
Valdez A-7	Moderate to low slopes on subdued bedrock hills adjacent to steep mountains.	Bedrock and alluvial fans provide good foundations and possible sources of riprap and gravel, respectively.	Seismic zone 3. Intensity VII-IX during 1964 earthquake, but no significant effects on bedrock. No faults mapped.	Probably not subject to flooding.		5, 8, 29	1. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press); and Deane, R. W., 1958, "Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Valdez A-6, A-5, A-4, B-4, B-3	Steep slopes south of Thompson Pass. Low to moderate slopes on bedrock benches adjacent to Koyuk River and Taina River. Alluvial fans are low along pipeline route.	Fine-grained deposits below water-table level and in upper Taina valley contain bedrock and may be subject to frost heave and differential settlement. Areas of rubble on steep slopes may be subject to landslides. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 3. Intensity VII-IX during 1964 earthquake, but no significant effects on bedrock. No faults mapped. Landslides and joint sets are seen to have no apparent significant bearing on pipeline integrity.	Low River valley subject to flooding. Potential without protection on Bear River, Shesha Creek and other alluvial fans crossing as channel channels. Bedrock release of water from glacier-dammed lakes may cause exceptional scour along Bear River, Shesha Creek, and Low River.	Avalanche and nonavalanche potential high locally between Koyuk River and upper Taina River valley.	5, 6, 7, 27, 19, 29	2. Deane, R. W., Mendenhall, W., and Fitch, F. J., 1958, "Geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Valdez C-1, B-4, Gulkana A-3, A-4	Steep slopes on bluffs in unconsolidated deposits at several valley crossings and marginal to Taina River and Shesha Creek. Alluvial fans are very low on contact lake floor and on river terraces. Downwash along potential high due to induced freezing.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 2. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	Probably not subject to floods.	Thawing, sluffing, and Taina River valley subject to flooding depth of potential scour not known. Bedrock release of water from glacier-dammed lakes may cause exceptional scour along Taina and Taina River.	5, 9, 10, 17, 19, 20, 29	3. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Gulkana B-3, B-4	Steep slopes on bluffs in unconsolidated deposits at Gulkana River crossings. Very low slopes on deposits of contact lake floor.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 2. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	Probably not subject to floods.	Potential hills problem. See above.	3, 9, 10, 11, 12, 17, 29	4. Collins, J. M., and Stewart, J. P., 1957, "Flood of August 1956 at Fairbanks, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Gulkana C-3	Low to moderate slopes along margins of subdued bedrock hills. Low slopes on contact lake floor deposits and associated shore features.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 2. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	No floods anticipated.	Potential hills problem. See above.	5, 9, 10, 11, 12, 29	5. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Gulkana D-3	Low to moderate slopes along margins of subdued bedrock hills and on intervening terraces. Low slopes on contact lake floor and associated shore features.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 2. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	No floods anticipated.	Potential hills problem. See above.	5, 9, 10, 11, 12, 29	6. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Mount Hayes A-3, A-4	Low to moderate slopes on hummocky terrain and related features. Low slopes on river flood plains and on alluvial fans.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 2. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	Floods possible along Taina River and upstream River.		3, 24, 29	7. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Mount Hayes B-4	Low to moderate slopes on hummocky terrain and related features. Low slopes on river flood plains and on alluvial fans.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 2. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	Flooding and concentration channel changes along Delta River and tributary alluvial fans segment, but 3 miles east of pipeline 10-20 ft of vertical displacement appears on differential alluvial fan. (ref. 27) Detailed mapping south of Delta Peak from some recent (1964) aerial photographs has been completed. (ref. 18, 27)	Center and Corral glaciers possibly subject to surging. (ref. 20)	1, 2, 14, 16, 18, 20, 24, 25, 27, 29, 29	8. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Mount Hayes C-4	Moderate to low slopes; hills moderate by bedrock. Low slopes on river flood plains and on alluvial fans.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 2. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	No floods anticipated.	No floods anticipated.	15, 16, 26, 29	9. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Mount Hayes D-4	Low to moderate slopes on hummocky terrain. Low slopes on broad outwash plains.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 2. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	Flooding possible on Delta River crossing.		23, 29	10. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Big Delta A-4	Moderate slopes on hummocky terrain and on sides of unroofed bedrock hills and ridges. Low slopes on river terraces and ridges.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 3. No faults mapped.	No floods anticipated.		24, 29	11. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Big Delta A-5, B-5, B-6, C-6	Moderate to low slopes; hills moderate by bedrock. Low slopes on river terraces and ridges.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 3. Local extensive epigenetic areas, localities, and hills, ground cracks, and slip water near Delta bluff reported following 1937 earthquake (ref. 3).	Chena River subject to flooding (ref. 14).		1, 18, 20, 31	12. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Fairbanks C-1	Low slopes on river terraces.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 3. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	No floods anticipated.		3, 25, 29	13. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Fairbanks D-1	Moderate to low slopes; hills moderate by bedrock. Low slopes on river terraces.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 3. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	Chena River subject to flooding (ref. 14).		1, 13, 29, 31	14. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).
Fairbanks B-2	Moderate to low slopes; hills moderate by bedrock.	Permafrost present within a few feet of the surface in fine-grained lake deposits that locally contain numerous lenses of clay loam; on Taina ground differential settlement and locally complete loss of bearing strength result from thawing. Bedrock is generally stable. Alluvial fans are generally stable. Alluvial fans are generally stable.	Seismic zone 3. Intensity VII-IX during 1964 earthquake, moderate to minor local ground breakage. No faults mapped.	No floods anticipated.		13, 18, 29	15. Deane, R. W., and Fitch, F. J., 1957, "The geotectonic stability of the Denali Fault Zone, Alaska," U.S. Geol. Surv. Prof. Paper 309, 107 pp., 12 pls. (in press).

MAPS SHOWING PROPOSED ROUTE OF TAPS AND LOCATION OF SIGNIFICANT GEOLOGIC ENVIRONMENTAL FACTORS, VALDEZ TO FAIRBANKS, ALASKA



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