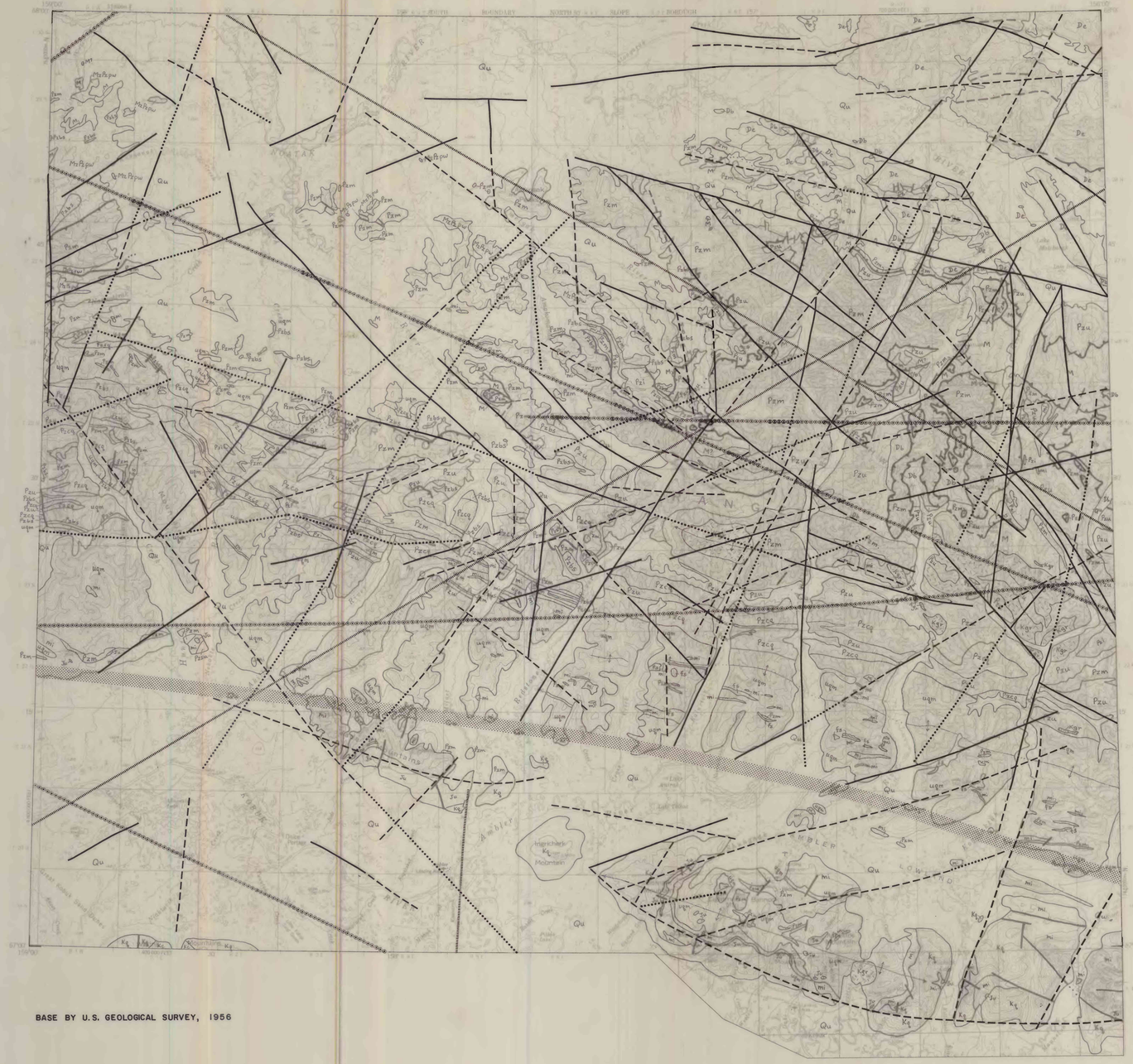
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVE



BASE BY U.S. GEOLOGICAL SURVEY, 1956

SCALE 1:250 000

5 0 5 10 15 20 25 MILES

5 0 5 10 15 20 25 KILOMETERS

CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL

QUADRANGLE LOCATION

DISCUSSION

To aid in the mineral resource assessment of the Ambler River quadrangle, Landsat images were analyzed for lineaments, circular and arcuate features, and iron-oxide colored areas which might be related to known mineral occurrences or to areas of mineral resource potential (Mayfield and Grybeck, 1978). The methodology and limitations of this type of study are discussed in detail by Albert (1975) and Albert and Steele (1976a,b). Detailed descriptions of lineaments identified in previous studies are given by Albert and Steele (1976b) and Albert, Le Compte, and Steele (1978).

Details concerning the different types of imagery used are given in Table 1. Computer-enhanced Landsat images were produced from computer compatible tapes processed by Pat S. Chavez, Jr., Teresa E. Grow, and Lynda Sowers, U.S. Geological Survey, Flagstaff, Arizona. Copies of the images used are available from the EROS Data Center, Sioux Falls, South Dakota 57198. PAO number must be specified when ordering. More detailed descriptions of the various computer enhancement techniques used in these images are given by Albert and Steele (1976a,b) and Condit and Chavez (1978).

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Lathram, E. H., and Raynolds, R. G. H., 1977, Tectonic deductions from Alaskan space imagery, in Woll, F. H., and Fischer, W. A., eds., Proceedings of the First Annual William T. Pecora Memorial Symposium, October 1975, Sioux Falls, South Dakota: U.S. Geological Survey Professional Paper 1015, p. 179-191.

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MAP SHOWING INTERPRETATION OF LANDSAT IMAGERY OF THE AMBLER RIVER QUADRANGLE, ALASKA

BY

NAIRN R.D. ALBERT, 1978

EXPLANATION FOR GENERALIZED GEOLOGIC MAP

CORRELATION OF MAP UNITS

SURFICIAL DEPOSITS

Qu — QUATERNARY

SEDIMENTARY AND METASEDIMENTARY ROCKS	METASEDIMENTARY ROCKS OF UNCERTAIN AGE	IGNEOUS AND META-IGNEOUS ROCKS
Kg, Kc — CRETACEOUS	MzPzpw — MESOZOIC OR PALEOZOIC	Kgr — CRETACEOUS
Unconformity		Ju, mi, fs, Pzi — JURASSIC AND (OR) PALEOZOIC
M — MISSISSIPPIAN	Pzcq, Pzbs, Pzu — PALEOZOIC	
Unconformity		
De, Db, Pzm — DEVONIAN AND OLDER	uqm — PALEOZOIC AND OLDER (?)	

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS

Qu — UNCONSOLIDATED SURFICIAL DEPOSITS (QUATERNARY)

SEDIMENTARY AND METASEDIMENTARY ROCKS

Kg — QUARTZ CONGLOMERATE, SANDSTONE, AND MUDSTONE (CRETACEOUS)

Kc — IGNEOUS PEBBLE-COBBLE CONGLOMERATE (CRETACEOUS)

M — LISBURNE GROUP AND UPPER PART OF ENDICOTT GROUP (MISSISSIPPIAN)—INCLUDES KAYAK SHALE AND KEKIKTUK CONGLOMERATE

De — LOWER PART OF ENDICOTT GROUP (DEVONIAN)—MAINLY SLATE AND SANDSTONE

Db — DARK CALCAREOUS SCHIST, LIMESTONE, AND SILICEOUS PHYLLITE (DEVONIAN)

Pzm — LIMESTONE AND MARBLE (DEVONIAN AND OLDER)

METASEDIMENTARY ROCKS OF UNCERTAIN AGE

MzPzpw — PHYLLITE AND MAFIC VOLCANIC WACKE (MESOZOIC OR PALEOZOIC)

Pzcq — CHLORITIC QUARTZITE AND SCHIST (PALEOZOIC)—LOCALLY INCLUDES FELDSPATHIC ORTHOGNEISS

Pzbs — GRAPHITIC PHYLLITE AND SCHIST (PALEOZOIC)

Pzu — UNDIFFERENTIATED METAMORPHIC ROCKS (PALEOZOIC)—INCLUDES MARBLE, QUARTZITE, CALC-SCHIST, AND LESSER QUARTZ-MICA SCHIST

uqm — GRAY PHYLLITE AND QUARTZ-MICA SCHIST (PALEOZOIC AND OLDER (?))

IGNEOUS AND META-IGNEOUS ROCKS

Kgr — META-GRANITIC PLUTONIC ROCKS (CRETACEOUS)

Ju — ULTRAMAFIC ROCKS AND SERPENTINITE (JURASSIC)

mi — BASALT, DIABASE, AND GREENSTONE (MESOZOIC AND/OR PALEOZOIC)

fs — FELSIC SCHIST (MESOZOIC AND/OR PALEOZOIC) MAY BE, IN PART, VOLCANIC

Pzi — INTERMEDIATE META-IGNEOUS ROCKS (MESOZOIC AND/OR PALEOZOIC) MAY BE PLUTONIC AND (OR) VOLCANIC, MOSTLY GRANODIORITE OR QUARTZ DIORITE IN COMPOSITION

LITHOLOGIC CONTACT; dashed where uncertain

HIGH ANGLE FAULT; dashed where uncertain, dotted where concealed

THRUST FAULT; dotted where concealed

EXPLANATION OF IMAGERY INTERPRETATION

WELL-DEFINED LINEAMENT

MODERATELY-DEFINED LINEAMENT

POORLY-DEFINED LINEAMENT

LINEAMENT DESCRIBED IN EARLIER STUDY

LINEAMENT IDENTIFIED BY LATHRAM AND RAYNOLDS (1976)

BROAD LINEAMENT ZONE

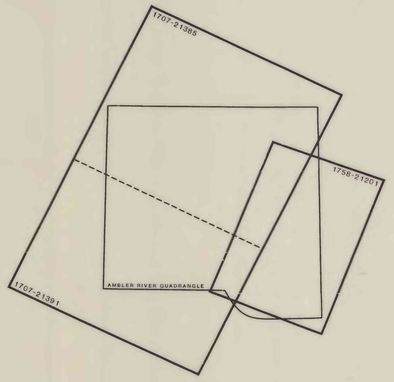

Figure 2.--Map showing location of Landsat imagery used in the analyses of the Ambler River quadrangle. Dotted lines indicate mosaicked image boundaries.

This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature.

OPEN-FILE REPORT

78-120J

FOLIO OF THE AMBLER RIVER QUADRANGLE. ALASKA

SHEET 1 OF 2

ALBERT -- INTERPRETATION OF LANDSAT IMAGERY

Table 1.--*Landsat imagery used in analyses of the Ambler River quadrangle.*

Imagery type	Bands and colors used	Scene ID number	Date	Projection	Public Affairs Office No.	Transparency scale	Print scale
U.S.D.A. Alaska mosaic	7 Black and white	Not applicable		Alber's equal area	Not applicable	Not applicable	1:1,000,000
Computer-enhanced imagery							
False-color with linear stretch - east	4 Blue 5 Green 7 Red	1758-21203	3-20-74	Orthographic	E-715-53CT	1:1,067,000	1:250,000
False-color with linear stretch - west	4 Blue 5 Green 7 Red	1707-21385 1707-21391	6-30-74 6-30-74	Orthographic	E-712-[illegible]CT	1:1,067,000	1:250,000
False-color with sinusoidal stretch - east	4 Blue 5 Green 7 Red	1758-21201	8-20-74	Orthographic	E-716-53CT	1:1,067,000	1:250,000
False-color with sinusoidal stretch - west	4 Blue 5 Green 7 Red	1707-21385 1707-21391	6-30-74 6-30-74	Orthographic	E-713-85CT	1:1,067,000	1:250,000
Simulated natural color - east	Synthetic blue 4 Green 5 Red	1758-21201	8-20-74	Orthographic	E-714-53CT	1:1,067,000	1:250,000
Simulated natural color - west	Synthetic blue 4 Green 5 Red	1707-21385 1707-21391	6-30-74 6-30-74	Orthographic	E-711-85CT	1:1,067,000	1:250,000
Vertical first derivative - east	6 Black and white	1758-21201	8-20-74	Orthographic	E-357-53BF	1:1,067,000	1:250,000
Vertical first derivative - west	6 Black and white	1707-21385 1707-21391	6-30-74 6-30-74	Orthographic	E-356-85BF	1:1,067,000	1:250,000

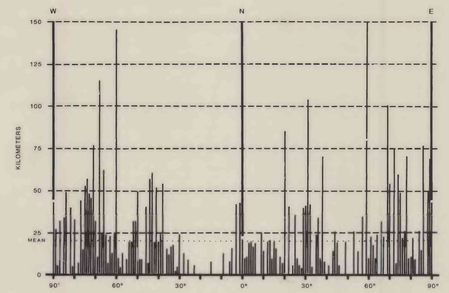

Figure 1.--Histogram of trends and cumulative lengths of lineaments observed on Landsat imagery of the Ambler River quadrangle.

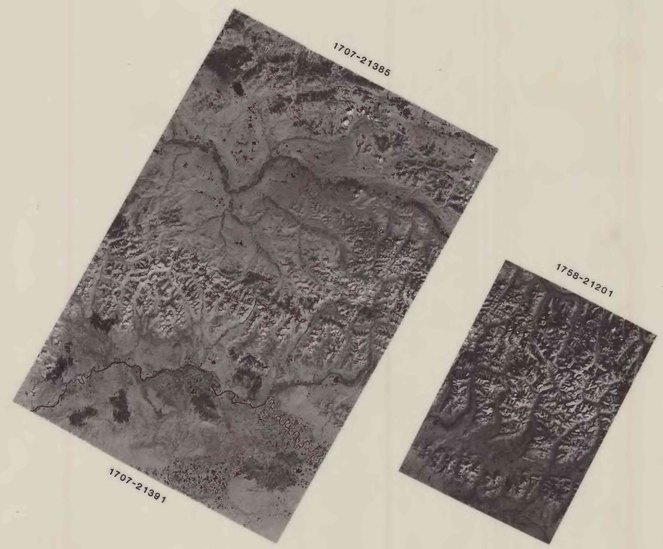

Figure 3.--Example of Landsat imagery used in analyses of the Ambler River quadrangle. Band 7.