Bethel basin, Alaska: 1979 field analyses sent to Doyon, Ltd.

Waller, S.F., and Amoco Oil Co.

GMC DATA REPORT 456

This GMC data report from the Amoco Heritage collection has been made available through funding from the FY2018 USGS National Geological and Geophysical Data Preservation Program, Grant Number G18AP00054. This project report is presented in its original format and has not been reviewed for technical content or for conformity to the editorial standards of DGGS. It should not be used or cited as reviewed data.

2019
State of Alaska
Department of Natural Resources
Division of Geological & Geophysical Surveys
GEOLOGIC MATERIALS CENTER

CF820029

CF820029

Amoco Production Company

Denver Region
Far West Division

AREA Bethel Basin 46

STATE Alaska

COUNTY

CF 820029 1

SUBJECT 1979 Field Analyses Sent to Doyon, Ltd.

Geological Memorandum No. FW-19-82M

Date June, 1982

By Stephen F. Waller

NO.	ENCLOSURES	SCALE
1.	1979 Field Sample Analysis Map, Bethel Basin, Alaska	

CLASS II MATERIAL

CF 82 0029

Amoco Production Company
Denver Region
Amoco Building
17th & Broadway
Denver, Colorado 80202
303 - 830-4040

June 10, 1982

Doyon Ltd.
Doyon Bldg.
201 First Avenue
Fairbanks, Alaska 99701

Dear Sirs:

Enclosed please find the results of analyses of samples taken on Doyon Ltd. acreage by Amoco's 1979 summer field party (Bethel Basin/ Norton Sound group) in July, 1979. This is all the sample data that is available, to the best of our knowledge. If additional analyses are ever performed, results will be provided to you upon completion.

Sincerely yours,

Stephen F. Waller
Geologist

SFW/cjp
cc: Scott McCoy

Source Rock Analysis

Sample	Sec.	T	R	Latitude	Longitude	Age	Lithology	Petroleum Generation Capability	Kerogen Type	Stage of Diagenesis
C79-6002	CSW36	12S	20W	64° 29' 10" N	162° 35' 20" W	Paleozoic	Limestone	Non-Source	--	--
C79-6017	NWNE6	8S	4W	64° 49' 50" N	159° 32' 45" W	Mesozoic	Vol. Litharenite	Non-Source	--	--
C79-6018	NWNE6	8S	4W	64° 49' 50" N	159° 32' 45" W	Mesozoic	Vol. Litharenite	Good	--	--
C79-6022	SESW13	6S	6W	64° 57' 30" N	159° 49' 20" W	Mesozoic	Micaceous Litharenite	Fair	--	--
C79-6026	CNE13	4S	8W	65° 08' 45" N	160° 12' 20" W	Mesozoic	Micaceous Litharenite	Non-Source	(Gas)*	(Early Peak Gas)
C79-6029	SESE8	12S	32W	64° 27' 30" N	165° 06' 00" W	Pleistocene/Recent	Gravel	Non-Source	--	--

Porosity and Permeability

Sample	Sec.	T	R	Latitude	Longitude	Age	Lithology	% Porosity (Ø)	Permeability (K) in md
C79-4027	SWNE3	28S	13W	63° 02' 22" N	161° 05' 20" W	Mesozoic	Vol. SS	2.2	<0.01
C79-4028	SWSW9	28S	13W	63° 04' 20" N	161° 10' 00" W	Mesozoic	SS	1.7	0.01
C79-4031	NW19	27S	13W	63° 08' 20" N	161° 13' 50" W	Mesozoic	SS	2.7	<0.01
C79-4032	SESE10	27S	14W	63° 09' 50" N	161° 18' 30" W	Mesozoic	(Micaceous) SS/Siltstone	6.0	7.5
C79-4040	SWSE33	26S	14W	63° 11' 22" N	161° 20' 55" W	Mesozoic	SS	3.3	0.01
C79-4042	NE12	22S	20W	63° 36' 40" N	162° 26' 20" W	Quaternary	Vesicular Basalt	25.0	0.18
C79-4045	SESE34	26S	22W	63° 11' 35" N	162° 50' 20" W	Mesozoic	Calc Litharenite	1.9	0.02
C79-4048	SESW21	26S	16W	63° 13' 08" N	161° 44' 15" W	Quaternary	Basalt	14.3	2800
C79-4075	NENE9	28S	18W	63° 04' 25" N	162° 03' 10" W	Mesozoic	SS	2.8	<0.01
C79-4077	SWSW31	27S	18W	63° 04' 15" N	162° 11' 00" W	Mesozoic	SS	2.4	<0.01

Magnetic Susceptibility

Sample	Sec.	T	R	Latitude	Longitude	Lithology	Age	Field Results (Mcgs)
	SW13	15S	12W	64° 11' 10" N	160° 57' 20" W	Siltstone	Mesozoic	0
	SW24	16S	12W	64° 05' 25" N	160° 56' 45" W	SS	Mesozoic	0
	SW24	16S	12W	64° 05' 25" N	160° 56' 45" W	SS/Hornfels	Mesozoic	0
	SW19	17S	11W	63° 59' 50" N	160° 53' 45" W	Shale	Mesozoic	0
	28	20S	11W	63° 43' 15" N	160° 49' 00" N	Shale	Tertiary	16
	NE 1/4 SW 1/4 Sec. 6	17S	1E	--	--	Andesite	--	1,376
	SE 1/4 21 NW 1/4	21S	4W	--	--	Volcanic	--	48-72
	NE 1/4 NE 1/4 34	19S	3W	63° 48' 20" N	159° 13' 10" W	Rhyolite	?	176
	SW 1/4 SW 1/4 29	9S	9W	64° 40' 40" N	160° 31' 30" W	SS	Mesozoic	0
	SW SW 12	12S	7W	64° 27' 35" N	159° 59' 40" W	SS/Shale	Mesozoic	0
	NW 1/4 SW 1/4 17	13S	5W	--	--	--	--	32
	C16	12S	14W	--	--	Quartzite Schist	--	0
	NW 1/4 8 CS 1/2	6S	12W	64° 54' N	160° 33' W	Limestone	--	0
	--	--	--	64° 54' N	160° 35' W	--	--	0
	--	--	--	64° 57N	160° 22W	--	--	0
	--	--	--	64° 54' N	160° 20' W	--	--	0
	--	--	--	64° 46' N	160° 30' W	SS	--	0
	CNE 1/4 19	12S	1E	64° 43' 00" N	158° 46' 20" N	Siltstone/SS	--	0
	C/SW 36	12S	20W	64° 29' 10" N	162° 35' 20" W	Limestone	Paleozoic	0
	Not surveyed			64° 52' N	161° 58' W	Limestone Congl.	Late Cretaceous/Early Tertiary	0
	NENE 28	7S	17W	64° 54' N	161° 58' 00W	Limestone Congl.	--	44
	26 C/N 1/2	6S	17W	--	--	Andesite	--	48
	NE/SW 13	5S	16W	--	--	Schist	--	16
	NE/SW19	4S	16W	--	--	Greenstone	--	48
	C/NE1	1S	13W	--	--	--	--	1,264
	SW/SE 1/4 20	1N	19W	--	--	--	Jurassic	648
	Sec. 17-20 NE	4N	18W	--	--	Schist/Graphite	--	0
	C/N 1/2 2	6N	17W	--	--	--	--	0
	NW/NE 1/4	8S	4W	64° 49' 50" N	159° 32' 45" W	Shale	Mesozoic	0

Magnetic Susceptibility

Sample	Sec.	T	R	Latitude	Longitude	Lithology	Age	Field Results (Mcgs)
C79-4108	NE8NW9	21S	9W	63° 41' 25" N	160° 26' 00" W	SS	Mesozoic	72
C79-4113	SWSW6	22S	9W	63° 36' 30" N	160° 29' 40" W	Shaley Siltstone	Mesozoic	120
C79-4116	NWSE34	22S	10W	63° 32' 20" N	160° 34' 45" W	SS	Mesozoic	40
C79-4121	CW 1/2 15	18S	6W	63° 55' 50" N	159° 49' 45"W	Shaley Siltstone	Mesozoic	28
C79-4124	NENE4	19S	6W	63° 52' 30" N	159° 49' 10" W	SS	Mesozoic	24
C79-4128	NENE28	19S	6W	63° 49' 15" N	159° 50' 00" W	Silty Shale	Mesozoic	40
C79-4129	NWNW16	20S	6W	63° 45' 45" N	159° 51' 30" W	Silty Shale	Mesozoic	32
C79-4132	NWSW3	22S	6W	63° 36' 35" N	159° 48' 50" W	SS	?	40
C79-4135	SENE10	23S	7W	63° 45' 00" N	159° 59' 30" W	SS	?	40
C79-4138	CS 1/235	22S	8W	63° 32' 30" N	160° 09' 00" W	Silty Shale	?	72
C79-4139	NWNW3	15S	1E	64° 13' 30" N	158° 39' 25" W	SS	?	48
C79-4144	NWNENW17	22S	4W	63° 35' 20" N	159° 29' 32" W	Siltstone	?	48
C79-4148	SWSW11	19S	3W	63° 51' 15" N	159° 12' 50" W	SS	?	32
C79-4151	NWSE	17S	4W	64° 01' 50" N	159° 27' 25" W	SS	Mesozoic	96
C79-4157	NENE34	16S	6W	64° 03' 55" N	159° 49' 00" W	SS	Mesozoic	40
C79-4165	E 1/2 19 W 1/2 20	17S	8W	64° 00' 25" N	160° 17' 10" W	SS	Mesozoic	19.2
C79-4168	NWNW9	16S	9W	64° 07' 15" N	160° 27' 45" W	SS	Mesozoic	36
C79-4172	NENE18	15S	9W	64° 11' 35" N	160° 30' 45" W	SS	Mesozoic	24
C79-4178	NWNW8	13S	11W	64° 22' 50" N	160° 47' 40" W	SS	Mesozoic	360
C79-4182	SWSW21	11S	10W	64° 30' 50" N	160° 34' 35" W	SS	Mesozoic	49.6
C79-4185(a)	NESW33	9S	9W	64° 24' 00" N	160° 29' 00" W	SS	Mesozoic	24
C79-4185(b)	NESW33	9S	9W	64° 24' 00" N	160° 29' 00" W	SS	Mesozoic	24
C79-4190(a)	SESW5	11S	8W	64° 33' 40" N	160° 29' 10" W	SS	Mesozoic	40
C79-4193(a)	NWSW25	11S	8W	64° 30' 25" N	160° 20' 11" W	SS	Mesozoic	32
C79-4198	SWSW29	12S	6W	64° 25' 08" N	159° 55' 15" W	SS	Mesozoic	40
C79-4201	NWSW17	13S	5W	64° 21' 50" N	159° 42' 25" W	SS	Mesozoic	32
C79-4205	NENE26	14S	5W	64° 15' 25" N	159° 35' 25" W	SS	Mesozoic	16
C79-4208	SWNW14	15S	4W	64° 11' 35" N	159° 23' 20" W	SS	Mesozoic	44
C79-4215	NE8	13S	14W	64° 22' 25" N	161° 30' 50" W	Limestone	Mesozoic	40
C79-4229	NWSE13	9S	1W	64° 43' 00" N	158° 46' 20" W	SS	Mesozoic	16
C79-4232	Not surveyed			64° 46' 50" N	158° 49' 50" W	SS	Mesozoic	20
C79-4235	SESE34	7S	2W	64° 50' 00" N	159° 02' 00" W	SS	Mesozoic	32
C79-4155	SWNW13	16S	5W	64° 06' 15" N	159° 34' 30" W	SS	Mesozoic	40

Magnetic Susceptibility

Sample	Sec.	T	R	Latitude	Longitude	Age	Lithology	Field Results (Mcgs)	Lab Results (Mcgs)
C79-4018	28	20S	11W	63° 43' 15" N	160° 49' 00" W	Shale	Tertiary	--	
C79-4027	SWNE3	28S	13W	63° 02' 22" N	161° 05' 20" W	Volcanic SS	Mesozoic	64	
C79-4028	SWSW9	28S	13W	63° 04' 20" N	161° 10' 00" W	SS	Mesozoic	76	
C79-4031	NW19	27S	13W	63° 08' 20" N	161° 13' 50" W	SS	Mesozoic	600	
C79-4032	SESE10	27S	14W	63° 09' 50" N	161° 18' 30" W	SS/Siltstone	Mesozoic	48	
C79-4040	SWSE33	26S	14W	63° 11' 22" N	161° 20' 55" W	SS	Mesozoic	32-60	
C79-4042	NE12	22S	20W	63° 36' 40" N	162° 26' 20" W	Basalt	Quaternary	836	
C79-4048	SESW21	26S	16W	63° 13' 00" N	161° 44' 15" W	Basalt	Quaternary	40	
C79-4084	SESE10	20S	10W	63° 46' 00" N	160° 35' 00" W	Shale	Mesozoic	36	
C79-4091	NWNE30	21S	10W	63° 38' 45" N	160° 40' 30" W	Shale	Mesozoic	36	
C79-4093	S 1/2 13 N 1/2 24	22S	11W	63° 34' 30" N	160° 42' 50" W	SS	Mesozoic	48	
C79-4095	CNE15	23S	11W	63° 30' 00" N	160° 45' 50" W	SS	Mesozoic	40	
C79-4099	SWSW19	23S	11W	63° 28' 40" N	160° 52' 45" W	SS	Mesozoic	60	
C79-4104	NESE22	23S	12W	63° 28' 55" N	160° 56' 50" W	SS	Mesozoic	32	

Palynology and Thermal Alteration Index

Sample	Sec.	T	R	Latitude	Longitude	Results Age	Carbonization Level
C79-4023	SWNE3	32N	60W	62° 53' 40" N	160° 41' 30" W	U. Mid. Jurassic (Callovian?)	4.0-4.5
C79-4030	NW19	27S	13W	63° 08' 20" N	161° 13' 50" W	Barren	5.0-5.5
C79-4035	SESE10	27S	14W	63° 09' 50" N	161° 18' 30" W	Effectively Barren	5.5
C79-4041	SWSE23	26S	14W	63° 11' 22" N	161° 20' 55" W	Barren	6.0+
C79-4085	SESE10	20S	10W	63° 46' 00" N	160° 35' 00" W	Barren	5.5
C79-4086	NWSW34	20S	10W	63° 42' 30" N	160° 36' 45" W	Barren	4.5
C79-4089	NWNE30	21S	10W	63° 38' 45" N	160° 40' 30" N	Effectively Barren	4.5-5.0
C79-4101	SWSW19	23S	11W	63° 28' 40" N	160° 52' 45" W	Barren	5.5-6.0
C79-4105	NESE11	23S	12W	63° 28' 55" N	160° 56' 50" W	Barren	4.5-5.0
C79-4109	NE8NW9	21S	9W	63° 41' 25" N	160° 26' 00" W	Barren	4.0-4.5
C79-4112	SWSW6	22S	9W	63° 36' 30" N	160° 29' 40" W	Barren	5.0
C79-4119	CW1/2	18S	6W	63° 55' 50" N	159° 49' 45" W	Barren	4.5
C79-4125	NENE14	19S	6W	63° 52' 30" N	159° 49' 40" W	Barren	4.5
C79-4126	NENE28	19S	6W	63° 49' 15" N	159° 50' 00" W	Barren	5.0-5.5
C79-4130	NWNW16	20S	6W	63° 45" N	159° 51' 30" W	Barren	4.5-5.0
C79-4136	CS1/2 35	22S	8W	63° 32' 30" N	160° 09' 00" W	Barren	5.0
C79-4143	NWNENW17	22S	4W	63° 35' 20" N	159° 29' 32" W	Barren	4.5-5.0
C79-4149	SWSW11	19S	3W	63° 51' 15" N	159° 12' 50" W	Tertiary	5.0
C79-4153	NWSE9	17S	4W	64° 01' 50"	159° 2&' 25" W	Cretaceous (Campanian?)	5.5-6.0
C79-4154	SWNW13	16S	5W	64° 06' 15" N	159° 34' 30" W	Barren	5.0
C79-4160	NENE34	11S	6W	64° 03' 55" N	159° 49' 00" W	Effectively Barren	4.5-5.0
C79-4162	SWSW35	11	6W	64° 03' 20" N	159° 48' 25" W	Middle (?) Cretaceous	4.0-4.5
C79-4170	NWNW9	16S	9W	64° 07' 15" N	160° 27' 45" W	Barren	Indet.
C79-4173	NENE14	15S	9W	64° 11' 35" N	160° 30' 45" W	Barren	5.0
C79-4179	NWNW8	13S	11W	64° 22' 50" N	160° 47' 40" W	Barren	4.5-5.0
C79-4189(b)	NWSW25	11S	8W	64° 30' 25" N	160° 20' 11" W	Effectively Barren	6.0
C79-4193(b)	SWSW12	12S	7W	64° 27' 35" N	159° 59' 40" W	Effectively Barren	5.0
C79-4199	SWSW28	12S	6W	64° 25' 08" N	159° 55' 15" W	Barren	5.0
C79-4210	SWSW34	21S	12W	63° 37' 00" N	160° 59' 00" W	Effectively Barren	4.5-5.0
C79-4217	NE8	13S	14W	64° 22' 25" N	161° 30' 50" W	Barren	4.5
C79-4219	Not surveyed			64° 54' 80" N	160° 33' 00" W	Barren	5.5
C79-4221	Not surveyed			64° 57' 00" N	160° 34' 00" W	Effectively Barren	4.5-5.0
C79-4223	Not surveyed			64° 54' 00" N	160° 20' 00" W	Effectively Barren	5.5-7.0
C79-4225	Not surveyed			64° 46' 00" N	160° 30' 00" W	Barren	5.0
C79-4228	CNE19	12S	1E	64° 26' 20" N	158° 44' 10" W	Effectively Barren	5.0
C79-4233	Not surveyed			64° 06' 50" N	158° 49' 50" W	Barren	4.5-5.0
C79-4237	SESE34	7S	2W	64° 50' 00" N	159° 02' 00" W	Effectively Barren	5.0-6.0
C79-6001	CSW36	12S	20W	64° 29' 10" N	162° 35' 20" W	Effectively Barren	3.5-4.0?
C79-6006	Not surveyed			64° 56' 00" N	161° 58' 00" W	RNAD	4.0
C79-6016	NWNE6	8S	4W	64° 49' 50" N	159° 32' 45" W	Barren	5.5-6.0
C79-6019	NWNE6	8S	4W	64° 49' 50" N	159° 32' 45" W	Barren	6.0
C79-6021	SESW13	6S	6W	64° 57' 30" N	159° 49' 20" N	RNAD	4.5

Geochronology

Sample	Sec.	T	R	Latitude	Longitude	Results: Age	Lithology
C79-2003	NW16	6S	69W	59° 39' 40" N	161° 02' 00" W	104 ± 4 my	Vesicular Basalt
C79-2005	NENE19	5S	68W	59° 44' 20" N	160° 54' 25" W	103 ± 4 my	Andesite & Breccia
C79-2029	SWNE8	2N	66W	60° 14' 10" N	160° 46' 30" W	57.0 ± 2.7 my	Rhyolite
C79-2031	NWSE30	3N	66W	60° 19' 12" N	160° 48' 00" W	66.0 ± 2.8 my	Basalt
C79-2041	NENE21	3N	66W	60° 20' 40" N	160° 44' 30" W	60.4 ± 2.5 my	Rhyolite
C79-2042	NENE21	3N	66W	60° 20' 40" N	160° 44' 30" W	62.8 ± 2.8 my	Basalt
C79-2064	SENW30	6N	65W	60° 34' 40" N	160° 45' 20" W	112 ± 5 my	Basalt
C79-2066	NWNE6	5N	65W	60° 33' 40" N	160° 45' 20" W	114 ± 6 my	Basalt Vesicular
C79-2067	NWSE3	5N	65W	60° 33' 10" N	160° 39' 58" W	127 ± 6 my	Basalt Pillows
C79-2069	NWNE24	5N	65W	60° 30' 50" N	160° 36' 20" W	63.5 ± 2.8 my	Basalt & Volcaniclastics
C79-2084	NWNW33	6N	64W	60° 34' 15" N	160° 30' 15" W	61.3 ± 2.7 my	Basalt/Diorite
C79-2086	NESW27	6N	64W	60° 34' 47" N	160° 29' 58" W	67.3 ± 2.7 my	Rhyolite
C79-2089	NWSE21	7N	65W	60° 40' 45" N	160° 41' 45" W	127 ± 7 my	Andesite
C79-2093	SWSW34	7N	63W	60° 39' 10" N	160° 19' 15" W	53.0 ± 4.0 my	Basalt
C79-2125	NWNE28	5N	60W	60° 30' 50" N	159° 48' 40" W	127 ± 16 my	Basalt
C79-2143	Not surveyed			60° 22' N	166° 24' W	47.0 ± 2.1 my	Basalt
C79-2148	NWSW18	15N	82W	61° 23' 15" N	164° 04' 10" W	0.71 ± .07 my	Basalt
C79-2156	NESW23	7N	90W	60° 40' 50" N	165° 01' 50" W	11.9 ± 1.3 my	Volcanic
C79-2157	NWNW10	22N	83W	62° 00' 55" N	164° 28' 36" W	59.9 ± 2.3 my	Lamprophyre
C79-2161	SENW20	24N	81W	62° 09' 32" N	164° 10' 25" W	4.0 ± .4 my	Basalt
C79-2163	Not surveyed			62° 28' 55" N	164° 31' 15" W	7.1 ± .6 my	Basalt
C79-2206	SESE11	10N	58W	60° 59' 10" N	159° 43' 30" W	71.6 ± 2.7 my	Granodiorite
C79-2208	NWSW11	18N	55W	61° 39' 45" N	159° 13' 00" W	73.6 ± 2.7 my	Syenite
C79-2218	Not surveyed			62° 45' 00" N	163° 32' 32" W	97.2 ± 3.6 my	Basalt & Breccia
C79-2246	NWNW3	30N	68W	62° 43' 25" N	162° 01' 10" W	56.3 ± 2.4 my	Rhyolite
C79-2250	NWNW10	18N	6W	61° 40' 15" N	160° 08' 30" W	83.8 ± 3.2 my	Andesite
C79-2276	NWSE9	21N	64W	61° 55' 20" N	161° 01' 10" W	56.6 ± 2.3 my	Andesite Breccia
C79-2281	SWSW17	26N	66W	62° 20' 15" N	161° 34' 10" W	61.6 ± 2 my	Basalt
C79-2283	NESW13	26N	66W	62° 20' 55" N	161° 26' 20" W	No date	Dacite
C79-2288	SENE18	26N	61W	62° 20' 45" N	160° 39' 00" W	52.1 ± 2 my	Andesite
C79-6007	CNE27	5S	17W	65° 06' 30" N	162° 04' 35" W	151 ± 10 my	Andesite
C79-6009	SWNW15	2N	19W	65° 34' 40" N	160° 34' 15" W	34.8 ± 2.1 my	Basalt
C79-6010	SENW2	1N	24W	65° 31' 12" N	163° 36' 00" W	2.1 ± 1.2 my	Basalt
C79-6030	NWNW36	11S	38W	64° 29' 30" N	166° 12' 20" W	104 ± 4 my	Granite
C79-6047	Not surveyed			64° 58' 00" N	168° 02' 00" W	103 ± 4 my	Granite
C79-6064	NWNW15	6N	36W	65° 55' 30" N	166° 14' 25" W	71.2 ± 2.6 my	Granite
C79-6066	NWNE11	4S	37W	65° 09' 45" N	166° 11' 50" W	388 ± 28 my	Granite

Density

Sample	Sec.	T	R	Latitude	Longitude	Formation	Lithology	Density (gm/cc)
C79-4027	SWNE3	28S	13W	63° 02' 22"N	161° 05' 20" W	MZ	Vol. SS	2.64
C79-4028	SWSW9	28S	13W	63° 04' 20" N	161° 10' 00" W	MZ	SS	2.63
C79-4031	NW19	27S	13W	63° 08' 20" N	161° 13' 50" W	MZ	SS	2.66
C79-4032	SESE10	27S	14W	63° 09' 50" W	161° 18' 30" W	MZ	SS/SLTST	2.57
C79-4040	SWSE33	26S	14W	63° 11' 22" N	161° 20' 55" W	MZ	SS	2.62
C79-4042	NE12	22S	20W	63° 36' 40" N	162° 26' 20" W	Qv	Basalt	2.51
C79-4048	SESW21	26S	16W	63° 13' 01" N	161° 44' 15" W	Qv	Basalt	2.65