APPENDIX A

TABLE OF URANIUM OCCURRENCES

APPENDIX A. URANIUM OCCURRENCES IN THE KALISPELL QUADRANGLE

Occurrence No.	Name	Location	Host Rock Formation/member	Deposit Class or Subclass (No.)	Production[2]	Reference[3]	Comments
1	Warland Creek*	SW¼SE¼NE¼ S26 T32 R29W 48°30'33", 115°15'37"	brecciated contact	autometasomatic (350)[1]	a	This report	New uranium occurrence.
2	Raven*	NW¼NE¼SW¼ S21 T31N R30W 48°26'05", 115°26'32"	syenite-quartzite contact zone	magmatic-hydrothermal (330)[1]	a	Johns, 1970	
3	Lucky Mac*	NE¼NE¼SW¼ S21 T31N R30W 48°26'01", 115°26'24"	Wallace Fm.	contact-metasomatic (340)[1]		Johns, 1970	
4	Maybasket Claims*	NE¼NW¼SW¼ S24 T31N R30W 48°24'17", 115°25' 29"	syenite dike	magmatic hydrothermal (330)[1]	a	PRR NI-8-76; Johns, 1970	Refered to by Johns (1970) as the "Kennedy property.
5	Kennedy Gulch Claims*	NW¼NE¼NW¼ S3 T30N R30W 48°23'52", 115°25'20"	silicified zone in Wallace Fm.	contact-metasomatic (340)[1]	a	PRR NW-87 (?)	
6	No Name					Merewether, 1960	Could not locate.
7	Esther May Corp. Claims	SE¼NW¼SW¼ S35 T36N R32W				PRR NW-121	No anomalous radioactivity at location reported in PRR.

[1]Mathews, 1978

[2]Production categories: a. 0 to 20,000 lb. U_3O_8 (no uranium production reported from these occurrence)

[3]PRR: U.S. Atomic Energy Commission Preliminary Reconnaissance Report, open filed.

*See Appendix C for additional information.

APPENDIX B

TABLE OF CHEMICAL ANALYSES

APPENDIX B. LOCATIONS AND ANALYSES OF SAMPLES FROM THE KALISPELL QUADRANGLE

Rock Samples

Sample Number	Rock Unit[1]	Rock Type[2]	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3O_8 (ppm)	Gamma Spectroscopic eK (%)	eU (ppm)	eTh (ppm)	Comments
MKW 001+	sy	syenite*	SENWSW	35	36	32	48 50 20	115 42 52	6	1.6	4	17	U. Occ. No. 7; Esther May
MKW 002+	p€w	Mn-stained quartzite	SENWSW	35	36	32	48 50 20	115 42 52	5				U. Occ. No. 7; Esther May
MKW 003	p€p	sph-chal-calcite vein	SESENE	19	31	34	48 26 14	115 59 30	5				Big Eight Mine; 3+
MKW 004	md	metadiorite*	SESENE	19	31	34	48 26 11	115 59 28	2				Big Eight Mine; 3+
MKW 005	md	gal-sph-chpy-qtz-calc vn	SENESE	19	31	34	48 25 58	115 59 24	5				Snowstorm Mine; 3+
MKW 006	p€w	quartzite	SENENE	22	31	34	48 26 25	115 55 35	5				Troy district; 3+
MKW 007	p€p	micaceous quartzite	NENENW	21	31	34	48 26 29	115 57 28	7				Troy district; 3+
MKW 008	md	metadiorite	NWSENE	21	31	34	48 26 21	115 57 30	2				Troy district; 3+
MKW 009	md	gal-pyrr-quartz vein	SWNWSW	27	31	34	48 25 06	115 56 43	<1				Montana Morning Mine; 3+
MKW 010	md	metagabbro*	SWNWSW	27	31	34	48 25 06	115 56 43	4				Montana Morning Mine; 3+
MKW 011	md	galena-quartz vein	NWSWSW	13	30	34	48 21 29	115 54 04	4				Bimetallic Mine; 3+
MKW 012	md	metadiorite	NWSWSW	13	30	34	48 21 29	115 54 04	4				Bimetallic Mine; 3+
MKW 013	p€ru	pyrr-sph-qtz-calc-sid vn	NWNESW	10	30	34	48 22 36	115 56 17	1				Grouse Mountain Mine; 3+
MKW 014	p€ru	quartzite	SENWSW	10	30	34	48 22 29	115 56 32	3				Grouse Mountain Mine; 3+
MKW 015	md	sulfide-rich metadiorite	NESWNE	15	30	34	48 21 56	115 55 55	2				King Mine; 3+
MKW 016	md	hbld dacite porphyry*	NWNENW	14	30	34	48 22 13	115 54 57	7				Iron Mask Mine; 3+
MKW 017	md	gal-chl-quartz vein	NWNENW	14	30	34	48 22 13	115 54 57	1				Iron Mask Mine; 3+
MKW 018	p€w	lim qtz-vn breccia	SESWSE	19	27	30	48 04 55	115 30 36	<1				Midas Mine; 3+
MKW 019	p€w	Fe, Mn-stained siltite	SESWNW	2	28	31	48 13 08	115 33 51	3				Libby district; 3+
MKW 020	p€ru	gal-sph-ars-qtz vein	NW	7	28	31	48 12 27	115 38 31	1				Snowshoe Mine; 3+
MKW 021	p€ru	Fe-stained quartzite	NW	7	28	31	48 12 27	115 38 31	2				Snowshoe Mine; 3+
MKW 022	p€ru	gal-lim-quartz vein		5	28	31	48 12 27	115 38 06	2				St. Paul Mine; 3+
MKW 023	p€ru	ars-gal-quartz vein	SW	36	29	31	48 13 34	115 38 27	1				Big Sky Mine; 3+
MKW 025	p€p	bio-rich siltite	NESENE	33	32	28	48 29 18	115 10 13	3				Warland Creek Area; 4+
MKW 026	p€p	galena-quartz vein		16?	27	31	48 05 50	115 35 24	1				Diamond John Mine; 3+

APPENDIX B. (continued)

Rock Samples

Sample Number	Rock Unit[1]	Rock Type[2]	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3O_8 (ppm)	Gamma Spectroscopic eK (%)	eU (ppm)	eTh (ppm)	Comments
MKW 027	pЄp	Fe-stained quartzite		16?	27	31	48 05 50	115 35 24	1				Diamond John Mine; 3+
MKW 028	pЄru	micaceous argillite		3	27	31	48 08 10	115 39 09	1				Libby district; 3+
MKW 029	pЄru	lim qtzitic argillite		27?	27	31	48 09 45	115 35 07	1				Libby district; 3+
MKW 030	sy	clinopyroxene syenite*	NESENW	29	32	31	48 30 35	115 35 32	<1	6.2	1	4	Bobtail Creek Stock; 2+
MKW 031+	sy	monz/qtzite contact*	NWNESW	21	31	30	48 26 05	115 26 32	4	3.8	6	29	U. Occ. No. 2; Raven
MKW 032+	sy	qtz sy/qtzite contact*	NWNESW	21	31	30	48 26 05	115 26 32	11	2.0	12	38	U. Occ. No. 2; Raven
MKW 033+	sy	monzodiorite*	NWNESW	21	31	30	48 26 05	115 26 32	17	2.3	27	173	U. Occ. No. 2; Raven
MKW 034+	sy	diorite*	NWNESW	21	31	30	48 26 05	115 26 32	90	1.0	87	361	U. Occ. No. 2; Raven
MKW 035+	pЄw	diorite/qtzite contact*	NWNESW	21	31	30	48 26 05	115 26 32	20	3.4	19	79	U. Occ. No. 2; Raven
MKW 036+	pЄw	metaquartzite*	NENESW	21	31	30	48 26 01	115 26 24	328	4.8	254	17	U. Occ. No. 3; Lucky Mac
MKW 037+	sy	pyroxene qtz monz*	NENESW	21	31	30	48 26 01	115 26 24	4	6.6	4	21	U. Occ. No. 3; Lucky Mac
MKW 038+	sy	syenite porphyry*	NENESW	21	31	30	48 26 01	115 26 24	3	7.4	4	19	U. Occ. No. 3; Lucky Mac
MKW 039+	sy	quartz syenite*	NENESW	21	31	30	48 26 01	115 26 28	4	4.8	4	11	U. Occ. No. 2; Raven
MKW 040+	sy	syenite/monzonite*	NWNENW	28	31	30	48 25 35	115 26 34	2	5.7	3	14	U. Occ. No. 2; Raven
MKW 041+	sy	quartz syenite*	SWSENW	21	31	30	48 26 07	115 26 37	1	5.2	3	8	U. Occ. No. 2; Raven
MKW 042+	sy	altered syenite*	NWNENW	28	31	30	48 25 28	115 26 29	1	7.3	2	9	U. Occ. No. 2; Raven
MKW 043	pЄru	bor-chpy-quartz vein	SESWSW	3	27	34	48 07 34	115 58 10	1				Blue Creek Mine; 3+
MKW 044	pЄru	impure quartzite	SESWSW	3	27	34	48 07 39	115 58 08	1				Blue Creek Mine; 3+
MKW 045	Cu	fetid carbonate	SWNENW	26	27	34	48 04 38	115 56 42	1				Hope fault area; 3+
MKW 046	pЄw	fn-xalline carbonate	NWNWNW	35	27	33	48 03 36	115 49 25	1				3+
MKW 047	pЄru	phy qtzitic argillite		3	27	32	48 07 45	115 42 48	2				Hayes Ridge area; 3+
MKW 049	pЄw	lam mica argillite	NWSWSE	5	26	32	48 02 08	115 44 56	5				HSSR follow-up
MKW 050	pЄr	mica qtzitic argillite	SW	26	27	32	48 03 59	115 41 21	4				Chicago Peak area; 3+
MKW 052+	gd	alsk granite porph*	SENENE	26	32	29	48 30 46	115 15 28	5	5.3	8	5	U. Occ. No. 1; Warland Creek
MKW 053+	gd	fault gouge	SENENE	26	32	29	48 30 45	115 15 30	12	4.4	3	16	U. Occ. No. 1; Warland Creek

KALISPELL

APPENDIX B. (continued)

Rock Samples

Sample Number	Rock Unit[1]	Rock Type[2]	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3O_8 (ppm)	Gamma Spectroscopic eK (%)	eU (ppm)	eTh (ppm)	Comments
MKW 054+	gd	alsk granite porph*	SENENE	26	32	29	48 30 42	115 15 35	5	4.6	3	16	U. Occ. No. 1; Warland Creek
MKW 055+	gd	lim metasiltite*	NWSENE	26	32	29	48 30 37	115 15 39	29	6.1	26	247	U. Occ. No. 1; Warland Creek
MKW 056+	gd	granite/siltite*	SWSENE	26	32	29	48 30 34	115 15 40	37	8.9	32	178	U. Occ. No. 1; Warland Creek
MKW 057+	sy	monzonite*	NWNESW	21	31	30	48 26 04	115 26 32	118	4.6	116	642	U. Occ. No. 2; Raven
MKW 058+	p€w	contact rock*	NENESW	21	31	30	48 26 01	115 26 24	212	3.1	206	1192	U. Occ. No. 3; Lucky Mac
MKW 059+	di	alkali fld.	NENWSW	34	31	30	48 24 16	115 25 27	91	11.0	90	1838	U. Occ. No. 4; Maybasket
MKW 060+	Qal	colluvium	SENWSW	34	31	30	48 24 15	115 25 27	104	10.3	127	4048	U. Occ. No. 4; Maybasket
MKW 061+	di	alkali fld.	NENWSW	34	31	30	48 24 17	115 25 29	192	10.5	165	3023	U. Occ. No. 4; Maybasket
MKW 067	p€ru	galena-quartz vein	SWNENW	5	29	31	48 18 13	115 35 39	1				Lukens Hazel Mine; 3+
MKW 068	p€ru	py-bearing quartzite	SWNWNW	7	29	31	48 17 41	115 37 20	1				Mountain Rose Mine; 3+
MKW 069	p€ru	pyrite-quartz vein		12	29	32	48 17 35	115 37 55	2				Silver Mountain Mine; 3+
MKW 070	p€ru	gal-py-quartz vein	SWNWNW	5	29	31	48 18 25	115 36 01	2				Lukens Hazel Mine area; 3+
MKW 071	p€ru	argillite	SWNWNW	5	29	31	48 18 25	115 36 01	2				Lukens Hazel Mine area; 3+
MKW 072	p€w	lamellar argillite	SWNWSW	20	30	31	48 20 46	115 36 01	3				Libby district; 3+
MKW 073	p€w	qtzitic argillite*	SESWNE	20	32	31	48 31 23	115 35 08	2	4.0	4	16	Bobtail Creek Stock; 2+
MKW 074	sy	monzonite porph*	NWNWNE	29	32	31	48 30 51	115 35 15	2	5.0	3	10	Bobtail Creek Stock; 2+
MKW 075	sy	alkali fld.	SENENW	29	32	31	48 30 45	115 35 25	2	2.6	2	5	Bobtail Creek Stock; 2+
MKW 076+	di	syenite*	NENWSW	34	31	30	48 24 17	115 25 29	16	10.3	14	63	U. Occ. No. 4; Maybasket
MKW 077+	p€w	quartzite	NENWSW	34	31	30	48 24 17	115 25 29	3				U. Occ. No. 4; Maybasket
MKW 078+	di	syenite*	NENWSW	34	31	30	48 24 17	115 25 29	13	7.9	18	54	U. Occ. No. 4; Maybasket
MKW 079+	di	alkali fld.	NENWSW	34	31	30	48 24 17	115 25 29	17	9.9	21	595	U. Occ. No. 4; Maybasket
MKW 080+	p€w	impure quartzite*	NENWSW	34	31	30	48 24 17	115 25 29	5				U. Occ. No. 4; Maybasket
MKW 081+	sy	monzonite*	NWNESW	34	31	30	48 24 19	115 25 15	5				U. Occ. No. 4; Maybasket
MKW 082+	sy	alkali fld.	SENESW	34	31	30	48 24 10	115 25 05	2	9.9	2	10	U. Occ. No. 4; Maybasket
MKW 083+	sy	syenite*	SESESW	34	31	30	48 24 01	115 25 03	5				U. Occ. No. 4; Maybasket

KALISPELL

Rock Samples

APPENDIX B. (continued)

Sample Number	Rock Unit[1]	Rock Type[2]	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3O_8 (ppm)	Gamma Spectroscopic eK (%)	eU (ppm)	eTh (ppm)	Comments
MKW 084+	di	metaquartzite	NWSESW	34	31	30	48 24 19	115 25 16	7				U. Occ. No. 4; Maybasket
MKW 085+	di	epidosite/monzonite*	NWNENW	3	30	30	48 23 52	115 25 20	34	7.4	28	138	U. Occ. No. 5; Kennedy Gulch claims
MKW 086+	di	siliceous vein	NWNENW	3	30	30	48 23 52	115 25 20	2				U. Occ. No. 5; Kennedy Gulch claims
MKW 092	pЄsp	argillite	NESENW	11	29	29	48 17 35	115 16 06	1				HSSR follow-up
MKW 094	pЄru	gal-chpy-bor-qtz vein	SE	27	27	31	48 04 18	115 34 21	1				B.W. Mine; 3+
MKW 095+	pЄp	siltite	SWSENE	26	32	29	48 30 34	115 15 39	3				
MKW 096+	gd	quartz syenite*	SESENE	26	32	29	48 30 34	115 15 29	3	5.1	3	7	U. Occ. No. 1; Warland Creek
MKW 097+	gd	granite dike*	SWSWNW	25	32	29	48 30 30	115 15 23	7				U. Occ. No. 1; Warland Creek
MKW 098+	pЄp	quartz vein	NENESE	26	32	29	48 30 27	115 15 29	1	0.0	0	1	U. Occ. No. 1; Warland Creek
MKW 099+	pЄp	siltite	NENESE	26	32	29	48 30 29	115 15 27	6				U. Occ. No. 1; Warland Creek
MKW 101	pЄru	biotitic quartzite	SESWNE	3	30	28	48 23 32	115 09 24	2				U. Occ. No. 1; Warland Creek
MKW 102+	gd	porph granite*	SWNESE	26	32	29	48 30 16	115 15 43	30	4.2	14	20	HSSR follow-up
MKW 103+	gd	granodiorite	SENWSE	26	32	29	48 30 18	115 15 45	41	3.4	34	62	U. Occ. No. 1; Warland Creek
MKW 104+	gd	quartz monzonite*	SWNESE	26	32	29	48 30 27	115 15 40	16	4.4	17	55	U. Occ. No. 1; Warland Creek
MKW 106	pЄp	Fe-stained siltite	NESESE	7	29	26	48 17 14	114 57 25	3				U. Occ. No. 1; Warland Creek
MKW 112	pЄru	impure quartzite	SENWNW	32	28	25	48 09 06	114 48 01	1				HSSR follow-up
MKW 114	pЄpl	lam Fe-stained arg			35	25	48 47 38	114 49 06	1				
MKW 120	Ts	siltstone	NWNWNE	12	30	19	48 22 59	113 58 11	1				HSSR follow-up
MKW 121	Pm	vuggy lim quartzite		25	37	23	48 56 37	114 30 06	1				Jager Mine; 9+
MKW 122	Mmb	fn-xalline limestone		26	37	23	48 56 13	114 31 41	2				Cut Bank 2° Quadrangle; 6+
MKW 123	Me	crs-xalline fos limestone			37	23	48 55 22	114 34 20	2				NE Whitefish Range; 7+
MKW 124	Me	fn-xalline carbonate		??	37	23	48 59 28	114 37 21	<1				NE Whitefish Range; 7+
MKW 125	Cu	fis shale/qtzitic arg			38	23	48 59 11	114 45 16	1				NE Whitefish Range; 7+
MKW 126	pЄw	vuggy impure quartzite		35	30	33	48 19 38	115 46 28	1				NE Whitefish Range; 7+
MKW 127	gd	granodiorite*		35	30	33	48 19 09	115 46 59	6				Bull Lake fault area; 5+
													Dry Creek Stock; 5+

KALISPELL

APPENDIX B. (continued)

Rock Samples

Sample Number	Rock Unit[1]	Rock Type[2]	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3O_8 (ppm)	Gamma Spectroscopic eK (%)	eU (ppm)	eTh (ppm)	Comments
MKW 128	p€w?	bio-musc-chl schist*	SESWNW	3	29	33	48 18 20	115 48 39	2				Bull Lake Fault; 5+
MKW 129	p€sp	lam argillite/shale	NESENW	4	29	33	48 18 31	115 49 35	3				Bull Lake Fault area; 5+
MKW 133	p€ru	dolom (?) argillite	SESWNW	29	30	34	48 20 08	115 59 09	3				HSSR follow-up
MKW 138	p€p	mag-brng argillite			33	33	48 37 28	115 53 37	2				HSSR follow-up
MKW 140	sy	syenite*	SWSWNE	28	31	30	48 25 17	115 26 12	2				Rainy Creek area; 1+
MKW 141	py	magnetite pyroxenite*	SWSWNE	23	31	30	48 25 44	115 23 32	1				Rainy Creek area; 1 +
MKW 142	py	granite pegmatite*	SESWSE	23	31	30	48 25 42	115 23 25	2				Rainy Creek area; 1 +
MKW 143	p€w	felsic dike*	SESWNE	25	31	30	48 25 16	115 22 03	2				Rainy Creek area/HSSR follow-up
MKW 144	p€r	mag-brng quartzite	SWSENE	25	31	30	48 24 56	115 22 00	1				Rainy Creek area/HSSR follow-up
MKW 148	p€p	silty quartzite	SWNENW	25	32	29	48 30 43	115 14 57	5				Warland Creek area; 4+
MKW 149+	gd	qtz monz-qtzite contact*	SWSENE	26	32	29	48 30 33	115 15 37	5290	1.8	3585	1.6%	U. Occ. No. 1; Warland Creek
MKW 150	p€w	den py-brng quartzite			29	34	48 16 15	115 56 50	<1				Spar Lake area; 3+
MKW 151	gd	altered felsite*	SWNWNE	16	29	33	48 16 52	115 49 26	7				Bull Lake Fault; 5+
MKW 152	gd	gd microbreccia*	SESENW	16	29	33	48 16 39	115 49 33	3				Bull Lake Fault; 5+
MKW 153+	gd	monzonite*	SESWNE	26	32	29	48 30 33	115 15 52	2				U. Occ. No. 1, Warland Creek
MKW 156	p€ru	mica py-brng qtzite	NWSENW	21	25	22	48 00 07	114 26 50	1				HSSR follow-up
MKW 160	p€ru	ser lim quartzite	SESWNW	14	26	22	48 00 52	114 24 09	1				HSSR follow-up
MKW 161	p€ru	impure quartzite	NWNENW	23	26	22	48 00 15	114 24 00	5				HSSR follow-up
MKW 173	Ts	limonitic sandstone	SWNWSE	20	37	22	48 56 08	114 28 55	1				6+
MKW 174	Ts	fer-calc conglomerate*	NESWSW	29	37	22	48 56 11	114 29 24	<1				6+
MKW 175	Ts	carbonaceous wacke		8	36	22	48 54 14	114 27 50	<1				6+
MKW 176	Ts	lignite	NENESW	13	34	20	48 39 50	114 10 59	<1				6+
MKW 177	Ts	carbonaceous claystone	NENESW	33	34	20	48 39 52	114 10 56	<1				6+
MKW 178	Ts	calc lithic wacke*	SWNWSW	29	34	20	48 40 37	114 12 47	<1				6+
MKW 179	Ts	calc sandy siltst*	SWNWSW	29	34	20	48 40 37	114 12 47	1				6+

KALISPELL

APPENDIX B. (continued)

Rock Samples

Sample Number	Rock Unit[1]	Rock Type[2]	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3O_8 (ppm)	Gamma Spectroscopic eK (%)	eU (ppm)	eTh (ppm)	Comments
MKW 180	Ts	lignite	SWNWSW	29	34	20	48 40 37	114 12 47	1				6+
MKW 181	Ts	calc sandy sltst*	NESWNW	29	34	20	48 40 56	114 12 33	1				6+
MKW 182	Ts	claystone	NESWNW	29	34	20	48 40 56	114 12 33	1				6+
MKW 183	pЄpl	Cu-S-brng qtz-sid vn	SWNENW	26	31	24	48 25 29	114 37 35	1				Humdinger Mine; 8+
MKW 184	pЄpl	Cu-S-brng qtz-sid vn	NWNWNW	29	31	24	48 25 41	114 41 48	<1				Blacktail Mine; 8+
MKW 185	pЄpl	quartz-siderite vein	SESWSW	1	30	25	48 23 07	114 44 05	<1				Yukon Mine; 8+
MKW 186	pЄpl	Fe-stained argillite	NESESW	31	31	24	48 24 04	114 42 28	1				Star Meadow district; 8+
MKW 187	pЄpl	quartzitic argillite	NWSWSW	35	31	24	48 24 05	114 45 35	<1				Star Meadow district, 8+
MKW 188	pЄpl	chpy-mal-sid-qtz vein	SENESE	20	30	24	48 21 03	114 40 57	2				Tin Cup Mine; 8+
MKW 189	pЄpl	quartzite	NENWSW	25	30	25	48 20 02	114 44 04	2				Star Meadow district; 8+
MKW 190	pЄpl	argillite/quartz vein	NESENE	19	30	24	48 21 07	114 41 51	1				West Virginia Mine; 8+
MKW 191	pЄpl	quartzitic argillite	NENENE	9	30	24	48 23 04	114 39 19					Star Meadow district; 8+
MKW 193	pЄpb	metadiorite/argillite			35	22	48 44 46	114 22 12	<1				HSSR follow-up
MKW 195	pЄk	quartzitic argillite			34	22	48 43 14	114 24 41	2				HSSR follow-up
MKW 198	pЄk	sericitic argillite			33	21	48 36 41	114 17 51	2				HSSR follow-up
MKW 200	pЄs	argillite		31	36	25	48 50 07	114 53 00	3				Eureka district; 9+
MKW 201	Ts	carbonaceous wacke		6	36	22	48 54 23	114 28 29	1				6+
MKW 202	Mb	fetid carbonate			36	23	48 53 14	114 31 27	<1				NE Whitefish Range; 7+
MKW 203	Ml	fetid carbonate			36	23	48 53 43	114 30 35	1				NE Whitefish Range; 7+
MKW 204	Mmh	fetid carbonate	NW	7	36	22	48 54 04	114 29 27	2				NE Whitefish Range; 7+
MKW 205	Ts	carbonaceous mudstone	SWNESW	16	36	22	48 52 47	114 26 51	3				6+
MKW 206	pЄp	quartzite	SESWSE	20	32	28	48 30 58	115 11 59	3				Warland Creek area; 4+
MKW 207	pЄp	quartzite	NWNWNW	25	32	29	48 30 51	115 15 59	2				Warland Creek area; 4+
MKW 208	pЄp	impure quartzite	SESWSE	18	32	28	48 31 48	115 13 12	3				Warland Creek area; 4+
MKW 209	pЄw	quartzite	NWSENW	4	30	30	48 23 01	115 26 33	6				Rainy Creek area; 1+

KALISPELL

APPENDIX B. (continued)

Rock Samples

Sample Number	Rock Unit[1]	Rock Type[2]	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3O_8 (ppm)	Gamma Spectroscopic eK (%)	eU (ppm)	eTh (ppm)	Comments
MKW 210	p€w	latite porphyry*	NWSENW	4	30	30	48 23 01	115 26 33	6				Rainy Creek area; 1+
MKW 211	p€w	argillite	SENESW	29	31	30	48 25 03	115 27 44	<1				Rainy Creek area; 1+
MKW 212	p€sp	lamellar argillite		25?	28	33	48 09 10	115 47 50	<1				Bull Lake Fault area; 5+
MKW 213	p€w	mag-brng quartzite			28	32	48 09 59	115 46 51	<1				Bull Lake Fault area; 5+
MKW 214	p€w	mag-py-brng-qtzitic arg	NESESE	5	32	34	48 33 44	115 58 08	<1				Yaak River area, 3+
MKW 215	p€ru	quartzitic argillite		17?	33	33	48 36 50	115 55 39	3				Yaak River area; 3+
MKW 216	p€p	S-brg mica qtzite		4?	33	33	48 38 51	115 53 05	<1				Yaak River area; 3+
MKW 217+	gd	alkali granite	SWSENE	26	32	29	48 30 32	115 15 40	5				U. Occ. No. 1; Warland Creek
MKW 218+	gd	monzonite*	SWSENE	26	32	29	48 30 32	115 15 40	5				U. Occ. No. 1; Warland Creek
MKW 219+	gd	pegmatite*	SWSENE	26	32	29	48 30 34	115 15 40	14				U. Occ. No. 1; Warland Creek
MKW 220	p€pb	amyg metabasalt					48 58 21	114 56 52	1				Eureka district; 9+
MKW 221	p€pb	chpy-mal-bor-qtz vein	NENWNW	8	37	26	48 59 29	115 00 02	1				Hansen Mine, 9+
MKW 222	p€pb	limonitic metabasalt	NENWNW	8	37	26	48 59 29	115 00 02	2				Hansen Mine; 9+
MKW 223	p€pb	amyg metabasalt		12?	36	24	48 53 34	114 45 30	1				Eureka district; 9+
MKW 224	p€s	quartzite		28?	36	24	48 51 30	114 49 28	2				Eureka district; 9+
MKW 225	p€pb	metadiabase (?)	NWSENW	14	36	26	48 53 13	114 55 30	1				Eureka district; 9+

KALISPELL

APPENDIX B. LOCATIONS AND ANALYSES OF SAMPLES FROM THE KALISPELL QUADRANGLE

Stream Sediment Samples

Sample Number	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3O_8 (ppm)	Extrac U_3O_8 (ppm)	LOI (%)	Locality Name/Comments
MKW 048	SESWNE	17	26	32	48 07 44	115 44 43	13		10.64	Government Creek
MKW 051	SWSESE	28	32	28	48 30 07	115 10 24	16	8		Warland Creek
MKW 062	unsurveyed				48 17 46	115 39 37	29	31/27	12.60	Granite Creek
MKW 063	unsurveyed				48 17 18	115 40 43	37		5.42	Granite Creek
MKW 064	unsurveyed				48 16 50	115 41 16	13	15	12.59	Granite Creek
MKW 065	unsurveyed				48 17 21	115 40 43	16	19	19.39	Trib. of Granite Creek
MKW 066	unsurveyed				48 17 25	115 40 26	7		24.12	Trib. of Granite Creek
MKW 087			33	32	48 38 19	115 43 26	5		7.36	Hemlock Creek
MKW 088			33	32	48 38 14	115 42 49	5		5.56	Hemlock Creek
MKW 089			33	32	48 38 10	115 42 49	6		8.05	Seventeen Mile Creek
MKW 090			33	32	48 37 28	115 42 53	5		3.95	Flattail Creek
MKW 091	SWNENW	6	31	30	48 29 04	115 29 11	12		8.18	Doak Creek
MKW 093	NENWNE	16	30	27	48 22 08	115 02 56	4		6.26	Dry Creek (W. Fork)
MKW 100	SENESW	9	31	28	48 25 08	115 12 38	9		4.91	N. Fork Canyon Creek
MKW 107	SWSESW	27	29	26	48 14 30	114 54 21	7		5.59	
MKW 109	NWSESW	17	28	25	48 11 08	114 47 48	10		5.00	Elbow Creek
MKW 110	SENWSW	9	28	26	48 12 05	114 54 31	7		3.48	Pleasant Valley Creek
MKW 115	SWSENW	8	34	24	48 43 29	114 43 46	13	8	25.78	
MKW 116	NESENW	8	34	24	48 43 36	114 43 37	10		22.26	
MKW 117	NWSESW	35	35	24	48 44 56	114 39 46	17		12.31	
MKW 118	NWSWNW	17	34	24	48 42 44	114 43 44	23	16	13.72	Stillwater River
MKW 119	NWSENW	20	34	24	48 41 50	114 43 51	2		14.86	Hellroaring Creek
MKW 130	SENWSE	5	29	33	48 18 12	115 50 37	60	62	21.10	Spring Creek
MKW 131	SWSWNE	29	30	34	48 20 05	115 58 41	5	3	5.40	Keeler Creek
MKW 132	SWSWNE	29	30	34	48 20 05	115 58 38	5	3	5.65	Keeler Creek

APPENDIX B. (continued)

Stream Sediment Samples

Sample Number	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3O_8 (ppm)	Extrac U_3O_8 (ppm)	LOI (%)	Locality Name/Comments
MKW 134	NWSENW	28	30	34	48 20 13	115 57 35	7	5	6.05	Keeler Creek
MKW 135	SESENW	28	30	34	48 20 06	115 57 26	6	3	4.94	Keeler Creek
MKW 136			33	33	48 35 12	115 52 48	25	20	14.95	Kilbrennen Lake
MKW 137			33	33	48 35 40	115 53 10	50	46	9.38	Kilbrennen Lake
MKW 139			33	33	48 36 07	115 53 16	9		3.83	Kilbrennen Lake
MKW 145	NWSWNW	30	31	29	48 25 27	115 21 44	1	<1	18.88	Alexander Creek
MKW 146	NESWNW	31	31	29	48 24 35	115 21 41	15	9	16.56	Alexander Creek
MKW 147	SWNWNW	31	31	29	48 24 38	115 21 41	4	3	34.77	Alexander Creek
MKW 155	NWSENW	21	25	22	48 00 05	114 26 30	18	17	17.57	Wild Bill Creek
MKW 157	SWNWSE	16	26	22	48 00 38	114 26 17	18	12	12.35	Wild Bill Creek
MKW 158	SESWNW	14	26	22	48 00 47	114 24 11	18	16	16.43	Truman Creek
MKW 159	SESWNW	14	26	22	48 00 50	114 24 09	19	19	18.67	Truman Creek
MKW 162	SENWNE	10	26	22	48 01 55	114 24 45	15		10.87	Truman Creek
MKW 163	SWSESE	11	33	23	48 37 58	114 31 15	15		22.89	Chicken Creek
MKW 164	NWSENE	14	33	23	48 37 36	114 31 34	12		18.15	Chicken Creek
MKW 165	SWSWNE	14	33	23	48 37 32	114 31 23	13		18.94	Chicken Creek
MKW 167	NENENE	12	31	22	48 28 14	114 19 55	4		16.18	Haskill Basin
MKW 168	NESESE	1	31	22	48 28 26	114 19 55	11		5.59	Haskill Basin
MKW 169	SWNESE	1	31	22	48 28 33	114 20 00	4		13.23	Haskill Basin
MKW 170	SWNESE	1	31	22	48 28 33	114 19 58	4		11.97	Haskill Basin
MKW 192	NESESE	32	35	21	48 44 52	114 19 23	22	16		Moran Creek
MKW 194			34	22	48 44 23	114 23 10	14	14		
MKW 196			33	21	48 36 56	114 17 32	8	19		Elelehum Creek
MKW 197			33	21	48 37 06	114 18 34	13	10		
MKW 199	unsurveyed				48 54 31	114 40 31	18	18		

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APPENDIX B. LOCATIONS AND ANALYSES OF SAMPLES FROM THE KALISPELL QUADRANGLE

Water Samples

Sample Number	LOCATION ¼ sec	sec	Twp (N)	Rng (W)	Latitude (N)	Longitude (W)	ANALYSES Fluor U_3C_8 (ppb)	Locality Name/Comments
MKW 105	NWNESW	16	29	27	48 16 34	115 03 26	13	Kavalla Creek; spring
MKW 108	SWSWNE	17	28	26	48 11 28	114 55 21	20	Pleasant Valley; spring
MKW 111	NWNENW	32	28	25	48 09 07	114 47 51	1	SE of Dahl Lake; lake
MKW 113	NWNESW	2	27	26	48 07 54	114 55 00	29	Pleasant Valley; spring
MKW 154	NENWNW	31	27	23	48 03 48	114 36 54	1	Lake Rogers; lake
MKW 166	SWSWNE	30	31	22	48 25 18	114 26 46	5	Trib. of Stillwater River; stream
MKW 171	SENWNW	5	28	22	48 13 25	114 26 01	7	Bluegrass Ridge; spring
MKW 172	SENENE	6	28	22	48 13 25	114 26 21	8	Bluegrass Ridge; stream

KALISPELL

FOOTNOTES

+ Sample taken at uranium occurrence. See "Comments" (above) and Appendices A and C for additional information.

* Petrographic identification of sample.

† Study area number. See Figure 2.

[1]"Rock Unit" symbols are those used on Plate 7, Geologic map of the Kalispell Quadrangle.

[2]Abbreviations used to describe rock types:

alsk = alaskitic
alt = altered
amyg = amygduloidal
arg = argillite
ars = arsenopyrite
bio = biotite
bor = bornite
brng = bearing
calc = calcite, calcareous
chal = chalcocite
chl = chlorite
chpy = chalcopyrite
crs = coarse
dolom = dolomite
Fe = iron
fer = ferruginous
fis = fissile
fn = fine
gal = galena
gd = granodiorite
hbld = hornblende
K-spar = potassium feldspar
lam = lamellar
lim = limonitic
mag = magnetite
mal = malachite
mica = micaceous
Mn = manganese
monz = monzonite
phy = phyllitic
porph = porphyry, porphyritic
py = pyrite
pyrox = pyroxene
pyrr = pyrrhotite
qtz = quartz
qtzite = quartzite
S = sulfide
sid = siderite
sph = sphalerite
sy = syenite
vn = vein
xalline = crystalline

APPENDIX C

URANIUM OCCURRENCE REPORTS

URANIUM-OCCURRENCE

REPORT

Quad Name A90< Kalispell >

Quad Scale A100< | , 2, 5, 0, 0, 0, 0 >

Deposit No. B40< 1 >

Deposit Name A10 < Warland Creek >

Synonym Name(s) A11 < Hoyt Claim Group >

District or Area A30 < libby >

Country A40 <U, S> [U, S] State Montana

State Code A50 <3, 0> [3, 0] County A60 < Lincoln >
(Enter code twice from List D)

Position from Prominent Locality A82 < Road log: from Libby, Montana proceed northeast on Highway 37 for 26 mi (begin mile 0 at the north end of the bridge that crosses the Kootenai River in Libby). The highway passes thru the central > *

Field Checked G1 <8, 0> [0, 7> By G2< Fleshman , Bill R. > *
Yr Mo Last name First Initial

Latitude A70 <4, 3> [3, 0> [4, 6, N> Longitude A80 <1, 1, 5> [1, 5> [2, 8, W>
Deg Min Sec Deg Min Sec

Township A77 < , 3, 2, N> Range A78 < , 2, 0, W> Section A79 <2, 6>
N/S E/W

FT/M

Meridian A81 < Montana > Altitude A107 < 2750 ft >

Quad Scale A91 < , , 2, 4, 0, 0, 0> Quad Name A92 < Ural >
(7½' or 15' quad)

Physiographic Province A63 <0, 8> [Northern Rockies >
(List K)

Location Comments A83 < There are several local areas containing anomalous radioactivity in the road cut. However, the area with the highest radioactivity > *

Location Sketch Map:

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 1

Commodities Present:
C10 <T,H, ,U, , ,A,U,?, A,G,?, W, , , , , , , , , >

Commodities Produced:
MAJOR <A,U,?, A,C,?, , , , , , , , , > COPROD < , , , , , , , , , >

MINOR < , , , , , , , , , , , , , , , > BYPROD < , , , , , , , , , >

Potential Commodities:
POTEN <U, , , W, , , T,H, , > OCCUR < , , , , , , , , , >

Commodity Comments C50 < Although the Hoyt property is reported to have produced small amounts of gold and silver from quartz vein that intersect both the stock and> *

Status of Exploration and Development A20 < 1 >
(1 = occurrence, 2 = raw prospect, 3 = developed prospect, 4 = producer)

Comments on Exploration and Development L110 < All of the exploration and development in the area was apparently for gold and silver (Johns, 1970) and there was no> *

Property is A21 (Active) (A22) (Inactive) (Circle appropriate labels)

Workings are M120 (Surface) M130 (Underground) (M140) (Both)

Description of Workings M220< Johns (1970) described development work in the area as consisting of a 51 m inclined shaft, a 54 m adit and a 6 m inclined shaft. We >

Cumulative Uranium Production PROD YES (NO) SML MED LGE (circle)

DH2
accuracy thousands of lb. years grade
G7< U, , , > G7A< , , , , , , , , , > G7B<LB> G7C< > G7D< % U3O8>

Source of Information D9 < >

Production Comments D10 < >

>

Reserves and Potential Resources

EH
accuracy thousands of lb. year of est. grade
E1< U, , , > E1A< , , , , , , , , , > E1B<LB> E1C< , , , > E1D< % U3O8>

Source of Information E7 < >

Comments E8 < >

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 1

Deposit Form/Shape M10 < Narrow tabular disseminations along brecciated contact. >

		FT/M	
Length	M40 < 60 ? >	M41 < M >	Size M15 (circle letter):
Width	M50 < 3 ? >	M51 < M >	1b U308
Thickness	M60 < 1.5 ? >	M61 < M >	A 0 - 20,000 B 20,000 - 200,000 C 200,000 - 2 million D 2 million - 20 million E More than 20 million
Strike	M70 < N 50° E ? >		
Dip	M80 < 90° ? >		

Tectonic Setting N15 < Mobile belt >

Major Regional Structures N5 < The Warland Creek stock, which hosts the occurrence, is possibly fault controlled along a more-or-less east-west trending vertical fault (Barron Creek Fault) that partially follows the axis of an anticline. > *

Local Structures N70 < Intersecting both the stock and the surrounding metasedimentary rocks are numerous milky white quartz veins that vary in thickness from 0.5 cm to 5 cm and occassionally up to 45 cm. The preferred orientation of the > *

Host-FM. Name U1 < Warland Creek > Member U2 < >

Host Rock K1 < CRET ? ¼ The plutonic rocks consist of granites, quartz monzonite, monzonite and quartz syenite. The rocks are generally leucocratic, massive and fine to medium grained with mainly hypidomorphic-granular textures, although some of the intrusives are locally porphyritic. > *

(Age) (Rock type, texture, composition, color, alteration, attitude, geometry, structure, etc.)

Host-Rock Environment U3 < plutonic - postorogenic >

(Sed. dep. environ., metamorphic facies, ign. environ.)

Comments on Associated Rocks U4 < The plutonic rocks are intruded into the low-grade metasedimentary rocks of the Prichard Formation which consist of siltite, argillites and quartzites. >

Ore Minerals C30 < SEM analysis detected thorite with a rim of zircon surrounded by an alteration rim of possible thoroqummite in sample MKW 149 along with grains > *

Gangue Minerals K4 < Quartz, K-feldspar and plagioclase >

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 1

Alteration N75 < The rocks are relatively fresh, showing only slight argillic alteration of the K-feldspar phenocrysts and occassional spotty sericitic alteration of the plagioclase phenocrysts. Sample MKW 218 appears to be the most > *

Reductants U5 < Pyrite occurs disseminated in the plutonic rocks in localized areas near the roof pendant. Limonitic clay occurs in several samples. In sample MKW 056 the uranium and thorium is apparently associated with the limonite clay. >

Analytical Data (General) C43 < The background chemical uranium content of the pluton was determined to be 4 ppm U_3O_8. High graded sample MKW 149 contains 0.53% U_3O_8 and 1.4% equivalent thorium (eTh). Semi-quantitative emission > *

Radiometric Data (General) U6 <Mount Sophris Sc-132 Scintillometer. The average
(No. times background and dimensions)
background radiometric reading for the intrusive is 195 cps and ranges from 140 to 275 cps. We detected 6 localized areas with anomalous (contin.) > *

Ore Controls K5 <The process of uranium concentration appear to have been by late magmatic fluids that were enriched in uranium, thorium, rare-earths and alkalis. The brecciated zone along the roof pendant provided the conduit for these fluids resulting in the deposition of the uranium and thorium.

>

Deposit Class C40 < Autometasomatic > Class No. U7 <3.5.0>

Comments on Geology N85 < see text

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 1

Uranium Analyses:

Sample No.	Sample Description	(U_3O_8) Uranium Analysis
MKW 052	Granite	5 ppm
MKW 053	fault gouge	12 ppm
MKW 054	alkali feldspar Granite	5 ppm
MKW 055	metapelite	29 ppm
MKW 056	contact between granite and metasediments	37 ppm
MKW 095	siltite from roof pendant	3 ppm *

Geologic Sketch Map and/or Section, with Sample Locations:

References:

F1 <Johns, W. M., 1970, Geology and mineral deposits of Lincoln and Flathead Counties, Montana: Montana Bureau of Mines and Geology, Bulletin 79, > *

F2 <

>

F3 <

>

F4 <

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 1

Continuation from p. 1-5:

Label

A82 < portion of the intrusive.>

G2 <and Siegmund, Bruce L.>

A83 <is just east of the road (Pl. 11, sample MKW 149).

C50 <the metasedimentary rocks, none of these veins contain any anomalous radioactivity.>

L110 <evidence in the field that the area had been prospect for uranium or thorium (none of the workings were in areas of anomalous radioacitivty.) This uranium and thorium occurrence is not reported in the literature.>

M220 <did not investigate any of the underground working. There are also several shallow pits and bulldozer scrapes throughout the northeast half of the stock. >

N5 <This trend is in contrast to the dominant nor nwest structural trend that in common to most of the area. The intrusive is intruded into the Prichard Formation, exposed in central portion of the Purcell anticlinorium.

N70 <veins is about N 25^{0} W and vertical. Other veins are steeply dipping to the north, but continue to have a dominant northwest trending direction. However, locally the veins occur in a random stockwork pattern.>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 1

Continuation from p. 1-5:

Label

K1 < The stock and the metasedimentary rocks are intruded by aplite dikes and less abundant pegmatites. The plutonic rocks are oversaturated with alkalis. The agpaitic coefficients of four samples (see text) are all greater than 1. The rocks are therefore peralkaline. The rocks were intruded at a fairly shallow depth as indicated by the roof pendants in the central part of the stock. Xenoliths of the surrounding metasedimentary rocks are also common near the contacts. The area containing the highest amount of radioactivity, sample site MKW 149, was collected along the contact between the central roof pendant and the intrusive. The sample contains fragments of both the metasedimentary rocks and the plutonic rocks. Both fractions contain hematite. Other areas of anomalous uranium and thorium are associated with the aplite dikes.>

C30 < of uranium rich thorite and uraninite. Thorite and possible thorian cheralite was also detected in MKW 055.>

N75 <intensely altered, containing epidote and possibly sericite after plagioclase.>

C43 <spectroscopic analysis of this sample indicated enrichments of F, Zr, Zn, Y, La, P, W, and possibly Pb and Ti.>

U6 <radioactivity ranging from 2.5 x Bkg to 30 x Bkg.>

Uranium Anayses:

Sample No.	Sample Description	(U_3O_8) Uranium Analysis
MKW 096	quartz syenite	3 ppm > *

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 1

Continuation from p. 1-7

Label

Uranium Analyses<

Sample No.	Sample Description	(U_3O_8) Uranium Analysis
MKW 097	Granitic dike	7 ppm
MKW 098	milky quartz vein	1 ppm
MKW 099	siltite	6 ppm
MKW 102	porphyrytic granite	30 ppm
MKW 103	granodiorite	41 ppm
MKW 104	quartz monzonite	16 ppm
MKW 148	silty quartzite	5 ppm
MKW 149	quartz monzonite - quartzite brecciated contact	5290 ppm
MKW 153	syenite	2 ppm
MKW 206	quartzite	3 ppm
MKW 207	quartzite	3 ppm
MKW 208	impure quartzite	3 ppm
MKW 217	alkali feldspar granite	5 ppm
MKW 218	monzonite	5 ppm
MKW 219	pegmatite dike	14 ppm >

F1 < 182 p.>

URANIUM-OCCURRENCE REPORT

Quad Name A90< Kalispell >

Quad Scale A100< 2,5,0,0,0,0 >

Deposit No. B40< 2 >

Deposit Name A10 < Raven >

Synonym Name(s) A11 < >

District or Area A30 < Libby >

Country A40 < U,S > | U,S | State Montana

State Code A50 < 3,0 > | 3,0 | County A60 < Lincoln >
(Enter code twice from List D)

Position from Prominent Locality A82 < Road: from Libby, Montana proceed northeast on Highway 37 for 4.7 mi (begin mile 0 at the north end of bridge that crosses the Kootenai River in Libby); turn left (north) on the Zonolite Mine Haul road > *

Field Checked G1 < 8,0 | 0,7 > By G2< Fleshman , Bill R. > *
Yr Mo Last name First Initial

Latitude A70 < 4,8 | 2,6 | 0,5, N > Longitude A80 < 1,1,5 | 2,6 | 3,2, W >
Deg Min Sec Deg Min Sec

Township A77 < 3,1 | N > Range A78 < 3,0 | W > Section A79 < 2,1 >
N/S E/W

FT/M

Meridian A81 < Montana > Altitude A107 < 3480 FT >

Quad Scale A91 < 2,4,0,0,0 > Quad Name A92 < Vermiculite Mtn. >
(7½' or 15' quad)

Physiographic Province A63 < 0,8 | Northern Rockies >
(List K)

Location Comments A83 < The occurrence is located approximately 1.8 mi west of Zonolite's open-pit vermiculite mine. >

Location Sketch Map:

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 2

Commodities Present:
C10 <TH U CU W?>

Commodities Produced:
MAJOR < > COPROD < >

MINOR < > BYPROD < >

Potential Commodities:
POTEN <TH U> OCCUR < >

Commodity Comments C50 <The uranium occurs with the thorium as urano-thorite or urano-thorite or thorian uraninite.>

Status of Exploration and Development A20 < 2 >
(1 = occurrence, 2 = raw prospect, 3 = developed prospect, 4 = producer)

Comments on Exploration and Development L110 < >

Property is A21 (Active) **(A22 circled)** (Inactive) (Circle appropriate labels)

Workings are **(M120 circled)** (Surface) M130 (Underground) M140 (Both)

Description of Workings M220< The main pit is 30 m in length exposing approximately 20 m of the contact. The maximum depth is 4.5 m. Additional shallow > *

Cumulative Uranium Production PROD YES **(NO circled)** SML MED LGE (circle)

DH2

G7<U> accuracy < > G7A< thousands of lb. > G7B <LB> G7C< years > G7D< grade % U308>

Source of Information D9 < >

Production Comments D10 < >

Reserves and Potential Resources

EH

E1<U> accuracy < > E1A< thousands of lb. > E1B<LB> E1C< year of est. > E1D< grade % U308>

Source of Information E7 < >

Comments E8 < >

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 2

Deposit Form/Shape M10 < Irregular disseminations and veins along fractured contact. >

		FT/M		Size M15 (circle letter):
Length	M40 < ? >	M41 < >		1b U308
Width	M50 < ? >	M51 < >		
Thickness	M60 < ? >	M61 < >		A 0 - 20,000
				B 20,000 - 200,000
Strike	M70 < ? >			C 200,000 - 2 million
				D 2 million - 20 million
Dip	M80 < ? >			E More than 20 million

Tectonic Setting N15 < Mobile belt >

Major Regional Structures N5 < The Raven property is one of four uranium and thorium occurrences associated with an alkaline stock (Rainy Creek stock) intruded into the low-grade metasedimentary rocks of the Belt Supergroup. The Rainy Creek > *

Local Structures N70 < The contact area is intersected by milky quartz veins and aplite dikes. Locally the contact is strongly fractured by N 15° E 85° W trending tightly spaced fractures. >

Host-FM. Name U1 < Rainy Creek stock > Member U2 < >

Host Rock K1 < C,R,E,T | V | The uranium and thorium at this occurrence
(Age) (Rock type, texture, composition, color,

is hosted at the contact between the low-grade metasedimentary rocks of the Belt
alteration, attitude, geometry, structure, etc.)

Supergroup and the generally syenitic rocks of the Rainy Creek stock. The contact is irregular and poorly exposed. The plutonic rocks along the contact consist > *

Host-Rock Environment U3 < plutonic-postorogenic >
(Sed. dep. environ., metamorphic facies, ign. environ.)

Comments on Associated Rocks U4 < The syenitic rocks are part of an alkaline ring complex that covers about 20 km^2. Two-thirds of the complex is comprised of pyroxenite, which is the oldest intrusives. At the center of the pyroxenite is a mass of nearly, > *

Ore Minerals C30 < The sample (MKW 057) with the highest concentration of uranium and thorium (see p. 5) was determined by SEM analysis to contain grungy patches > *

Gangue Minerals K4 < quartz, calcite, limonite, feldspar and clinopyroxene >

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 2

Alteration N75 < The rocks along the contact are generally fresh. However, a few of the samples do show signs of slight to moderate sericitic and argillic alteration. In addition, limonite occurs in several of the samples altering from > *

Reductants U5 <

>

Analytical Data (General) C43 < The samples from the occurrence average 43 ppm U_3O_8 and range from a low 4 ppm to a high of 115 ppm. The equivalent thorium (eTh) is considerably higher averaging 220 ppm and ranges between 29 and 642 ppm. > *

Radiometric Data (General) U6 <Mount Sophris SC-132 scintillometer. background (No. times background and dimensions)

(Bkg): 120-150 cps (overburden); 175-200 cps (plutonic and metasedimentary). In the trench there is an area 46 m^2 with 2 x Bkg radioactivity. In addition, there > *

Ore Controls K5 < The mineralization was possibly deposited as a result of hydrothermal fluids that originated from both contact-metasomatic processes and magmatic - hydrothermal processes.

>

Deposit Class C40 < magmatic-hydrothermal > Class No. U7 <3,3,0>

Comments on Geology N85 < See the discussions in the "Geologic setting" and "Favorable Area A" of the text.

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 2

Uranium Analyses:

Sample No.	Sample Description	Uranium Analysis
MKW 031	Chip sample across contact: metaquartzite and monzonite	4 ppm U_3O_8
MKW 032	Chip sample across contact: siltite and syenite	11 ppm U_3O_8
MKW 033	Grab sample of diorite	17 ppm U_3O_8
MKW 034	Grab sample of diorite	90 ppm U_3O_8
MKW 035	Grab sample of contact: siltite and diorite	20 ppm U_3O_8
MKW 057	Grab sample of monzonite	115 ppm U_3O_8

Geologic Sketch Map and/or Section, with Sample Locations:

References:

F1 <Johns, W.M., 1970, Geology and mineral deposits of Lincoln and Flathead Counties, Montana: Montana Burea of Mines and Geology, Bulletin 79, 182 p.>

F2 <

>

F3 <

>

F4 <

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 2

Continuation from p. 1-5:

Label

A83 < for 1.1 mi; turn left (southwest) for 0.4 mi; turn right (north) for 2.0 mi; the occurrence is located approximately due north on the ridge crest.>

G2 < and Siegmund, Bruce L.>

M220 < workings are found to the northwest along the intrusive contact.>

N5 < stock is intruded along the western flank of the Purcell anticlinorium, which is located on the northwesterly folded and Faulted Purcell Platform.>

K1 < of monzonite, diorites and syenites (Modal analysis are given in the text). A common features of the contact area is the strongly fractured nature of the rocks. Limonite is commonly found as a fracture filling ranging from only traces up to 20% of the rock. Calcite, fluorite and quartz also occur as a fracture filling in several of the samples.>

U4 < pure biotite (biotitite). Moving outward from this inner core are nearly concentric rings of biotite pyroxenite, magnetite pyroxenite and finally the syenitic rocks.>

C30 < of cheralite or brockite (Th, P, Ca) with inclusions of subhedral thorite and rims of questionable epidote. What is possibly cheralite also occurs in veins. In addition urano-thorite or thoriam uraninite occurs as anhedral grains. Other samples that contain uranium and thorium minerals include: MKW 034 which contains monazite (Ce, P, La, Th) associated with limonitic-looking clay also possible >

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 2

Continuation from p. 1- 6

Label

C30 <cheralite (Ca, Ce, La); MKW 033 contains possible cheralite (Ca, Si, Th); and MKW 032 contains thorite and cheralite.>

N75 <an unknown mineral (clinopyroxene). In sample MKW 035 limonite accounts for 10% of the plutonic portion of the sample.>

C43 <All of the samples contain anomalous amounts of fluorine. Other elements present in above average concentrations include: U, Ba, Cu, La, Li, Mn, Pb, Ti?, V, W, Zn, and Zr.>

U6 < are at least 5 local areas with 4-10 Bkg radiometric readings. Samples MKW 033-035 and MKW 057 were collected from these areas (see p. 5).>

URANIUM-OCCURRENCE

REPORT

Quad Name A90< Kalispell >

Quad Scale A100< | , 2, 5, 0, 0, 0, 0 >

Deposit No. B40< 3 >

Deposit Name A10 < Lucky Mac Claims >

Synonym Name(s) A11 < >

District or Area A30 < Libby >

Country A40 < U , S > | U , S | State Montana

State Code A50 < 3,0 > | 3,0 | County A60 < Lincoln >
(Enter code twice from List D)

Position from Prominent Locality A82 < Road log: from Libby, Montana proceed northeast on Highway 37 for 4.7 mi (begin mile 0 at the north end of the bridge that crosses the Kootenai River in Libby); turn left (north) on the Zonolite Mine > *

Field Checked G1 < 8,0 | 0,7 > By G2< Fleshman , Bill R. > *
Yr Mo Last name First Initial

Latitude A70 < 4,8 | 2,6 | 0,1, N > Longitude A80 < 1,1,5 | 2,6 | 2,4 , W >
Deg Min Sec Deg Min Sec

Township A77 < | , 3,1|N > Range A78 < , 3,0|W > Section A79 < 2,1 >
N/S E/W

FT/M

Meridian A81 < Montana > Altitude A107 < 3400 FT >

Quad Scale A91 < , , ,2,4,0,0,0 > Quad Name A92 < Vermiculite Mtn. >
(7½' or 15' quad)

Physiographic Province A63 < 0,8 | Northern Rockies >
(List K)

Location Comments A83 < The Raven Occurrence (U. Occ. Rept. No. 2) is also accessed by following the road log given in A82. >

Location Sketch Map:

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 3

Commodities Present:
C10 <T,H, , |U, , , |C,U, , |V, , , | , , , | , , , | , , , >

Commodities Produced:
MAJOR < , , , | , , , | , , , | , , , > COPROD < , , , | , , , | , , , >

MINOR < , , , | , , , | , , , | , , , > BYPROD < , , , | , , , | , , , >

Potential Commodities:
POTEN <U, , , | , , , | , , , > OCCUR < , , , | , , , | , , , >

Commodity Comments C50 < The uranium is apparently tied up with the thorium in uranothorite or thorian uraninite. >

Status of Exploration and Development A20 < 2 >
(1 = occurrence, 2 = raw prospect, 3 = developed prospect, 4 = producer)

Comments on Exploration and Development L110 < Workings in the area have consisted of a few bulldozer cuts, some have possibly been used for drill pads. There are > *

Property is A21 (Active) A22 (Inactive) (Circle appropriate labels)

Workings are M120 (Surface) M130 (Underground) M140 (Both)

Description of Workings M220<

>

Cumulative Uranium Production PROD YES NO SML MED LGE (circle)

DH2
accuracy thousands of lb. years grade
G7<U| , , > G7A< , , , , , , , , > G7B<LB> G7C< > G7D< % U3O8>

Source of Information D9 <

>

Production Comments D10 <

>

Reserves and Potential Resources

EH
accuracy thousands of lb. year of est. grade
E1<U| , , > E1A< , , , , , , , , > E1B<LB> E1C< , , , > E1D< % U3O8>

Source of Information E7 <

>

Comments E8 <

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 3

Deposit Form/Shape M10 < associated with intrusive contact >

	FT/M		FT/M
Length M40	?	M41	
Width M50	?	M51	
Thickness M60	?	M61	
Strike M70	?		
Dip M80	?		

Size M15 (circle letter): 1b U308

A 0 - 20,000
B 20,000 - 200,000
C 200,000 - 2 million
D 2 million - 20 million
E More than 20 million

Tectonic Setting N15 < Mobile belt >

Major Regional Structures N5 < The Lucky Mac occurrence is one of four uranium-thorium occurrences associated with alkaline plutonic rocks (Rainy Creek stock) intruded into the low-grade metasedimentary rocks of the Belt Supergroup. The > *

Local Structures N70 < The intrusive contact is irregular and strongly fractured. >

Host-FM. Name U1 < Wallace Formation > Member U2 < >

Host Rock K1 < P R E C (Age) | Sample MKE 036, which contains the highest (Rock type, texture, composition, color, amounts of uranium, is a quartzite. Thin-section analysis determine that the rocks alteration, attitude, geometry, structure, etc.) consists of 32% quartz and possible untwinned fledspar, 18% recognizable feldspar, 23% chlorite (after mica), 14% biotite or phlogopite (often replaced by > *

Host-Rock Environment U3 < metasedimentary - greenschist >
(Sed. dep. environ., metamorphic facies, ign. environ.)

Comments on Associated Rocks U4 < The occurrence occurs near the contact with the Rainy Creek stock which consists of syenites, monzonites and diorites. >

Ore Minerals C30 < Thorite was identified in MKW 058 associated with massive epidote. Also uranothorite or thorian uraninite was identified in a complex > *

Gangue Minerals K4 < epidote, sphene and quartz (see K1). >

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 3

Alteration N75 < Sample MKW 038 collected near the contact exhibits moderate to very strong argillic and sericitic alteration of the K-feldspar. The sample also contains 6% secondary K-feldspar. The clinopyroxenes are also slightly altered. > *

Reductants U5 <

>

Analytical Data (General) C43 < The two plutonic samples are fairly typical of the rest of the pluton averaging approximately 3-4 ppm. The two high graded samples average 270 ppm (see p. 5). >

Radiometric Data (General) U6 < Mount Sophris SC-132 Scintillometer. Approximately
(No. times background and dimensions)
4 x Bkg (sample MKW 036).

>

Ore Controls K5 < The fractured metasedimentary rocks are the principal host rock at this occurrence. The uranium and thorium mineralization probably has a similar origin as that at the Raven Occurrence, located approximately 240 m to the northwest. Hydrothermal fluids originating from contact-metasomatic processes is a possible origin for the uranium.

>

Deposit Class C40 < contact-metasomatic > Class No. U7 <1,5,0>

Comments on Geology N85 < see text.

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 3

Uranium Analyses:

Sample No.	Sample Description	Uranium Analysis
MKW 036	quartzite	328 ppm U_3O_8
MKW 037	quartz monzonite	4 ppm U_3O_8
MKW 038	epidosite and quartzite	212 ppm U_3O_8

Geologic Sketch Map and/or Section, with Sample Locations:

References:

F1 <

>

F2 <

>

F3 <

>

F4 <

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 3

Continuation from p. 1-5:

Label

A82 < Haul road for 1.1 mi, turn left (southwest) for 0.4 mi; turn right (north) for 2.0 mi; the occurrence is located on the opposite side (east) of the ridge and can be reached on foot.>

G2 < and Siegmund, Bruce L.>

M220 < also some shallow exploration pits excavated for copper mineralization.>

N5 < Rainy Creek stock is intruded along the western flank of the Purcell anticlinorium, which is located on the northwesterly folded and faulted Purcell Platform.>

K1 < chlorite), 6% epidote, 5% carbonate, and traces of opaques. Sample MKW 058 contains the second highest amount of uranium as well as large amounts of thorium (1192 ppm). The rock consists of quartzite which grades into an epidosite. The epidosite portion consists of 59% epidote, 12% sphene, 19% quartz, 8% plagioclase and 2% apatite. Thorite was identified by SEM analysis and was found in the massive epidote.>

C30 < oxide mineral containing Ca and Nb.>

N75 < Sample MKW 037 contains approximately 5% secondary clinopyroxene.>

URANIUM-OCCURRENCE REPORT

Quad Name A90< Kalispell >

Quad Scale A100< 2,5,0,0,0,0 >

Deposit No. B40< 4 >

Deposit Name A10 < Maybasket Claims >

Synonym Name(s) A11 < >

District or Area A30 < Libby >

Country A40 < U,S > |U,S| State Montana

State Code A50 < 3,0 > |3,0| County A60 < Lincoln >
(Enter code twice from List D)

Position from Prominent Locality A82 < Road log: from Libby, Montana proceed northeast on Highway 37 for 5.5 mi (begin mile 0 at the north end of the bridge that crosses the Kootenai River in Libby), turn left (east) on paved road for 0.4 mi. > *

Field Checked G1 < 8,0 | 0,8 > (Yr Mo) By G2< Fleshman (Last name), Bill (First) R. (Initial) > *

Latitude A70 < 4,8 | 2,4 | 1,7, N > (Deg Min Sec) Longitude A80 < 1,1,5 | 2,5 | 2,9, W > (Deg Min Sec)

Township A77 < ,3,1 |N > (N/S) Range A78 < ,3,0 |W > (E/W) Section A79 < 3,4 >

FT/M

Meridian A81 < Montana > Altitude A107 < 3900 FT >

Quad Scale A91 < ,,2,4,0,0,0 > (7½' or 15' quad) Quad Name A92 < Vermiculite Mtn. >

Physiographic Province A63 < 0,8 | Northern Rockies > (List K)

Location Comments A83 < >

Location Sketch Map:

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 4

Commodities Present:
C10 <TH U CU>

Commodities Produced:
MAJOR < > COPROD < >

MINOR < > BYPROD < >

Potential Commodities:
POTEN <TH U> OCCUR <CU>

Commodity Comments C50 < >

Status of Exploration and Development A20 < 2 >
(1 = occurrence, 2 = raw prospect, 3 = developed prospect, 4 = producer)

Comments on Exploration and Development L110 < Unlike the Raven and Lucky Mac occurrences which were prospected for precious and base-metals, this area > *

Property is A21 (Active) **(A22)** (Inactive) (Circle appropriate labels)

Workings are **(M120)** (Surface) M130 (Underground) M140 (Both)

Description of Workings M220< Shallow exploration pits and bulldozer cuts were the only apparent exploration activity. One pit was excavated along the contact > *

Cumulative Uranium Production PROD YES **(NO)** SML MED LGE (circle)

DH2

	accuracy	thousands of lb.		years	grade
G7< U >	< >	G7A< >	G7B<LB>	G7C< >	G7D< % U308>

Source of Information D9 < >

Production Comments D10 < >

Reserves and Potential Resources

EH

	accuracy	thousands of lb.		year of est.	grade
E1< U >	< >	E1A< >	E1B<LB>	E1C< >	E1D< % U308>

Source of Information E7 < >

Comments E8 < >

BFE 1236
4/19/78

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 4

Deposit Form/Shape M10 < Disseminations in dike and along fractures >

		FT/M
Length	M40 < >	M41 < >
Width	M50 < >	M51 < >
Thickness	M60 < >	M61 < >
Strike	M70 < >	
Dip	M80 < >	

Size M15 (circle letter):

1b U308

(A) 0 - 20,000
B 20,000 - 200,000
C 200,000 - 2 million
D 2 million - 20 million
E More than 20 million

Tectonic Setting N15 < Mobile belt >

Major Regional Structures N5 < The Maybasket and the Kennedy Gultch occurrences are located near the southeastern contact of the Rainy Creek stock. The stock is intruded into the Wallace Formation along the western flank of the Purcell anticlinorium

Local Structures N70 < The metasedimentary rocks strike N 20° E and dip 40° E. The fine-grained syenite dike trends N 50° W and is vertically dipping. >

Host-FM. Name U1 < > Member U2 < >

Host Rock K1 < CRET ? (Age) The occurrence occurs in an area disected by (Rock type, texture, composition, color,

syenite dikes. The sample (MKW 060) containing the highest amounts of uranium alteration, attitude, geometry, structure, etc.)

(192 ppm U_3O_8) and large amounts of thorium (4048 ppm eTh) was collected from a small pocket of gravel beneath the overburden. The gravel consists of (cont.) > *

Host-Rock Environment U3 < plutonic-postorogenic >
(Sed. dep. environ., metamorphic facies, ign. environ.)

Comments on Associated Rocks U4 < see occurrence reports 1, 2, 3, and 5 and also the text. >

Ore Minerals C30 < MKW 059 contains anhedral fibers of cheralite or brockite; MKW 060 contains cheralite in the limonitic clay matrix in addition to large > *

Gangue Minerals K4 < >

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 4

Alteration N75 < The feldspars are generally fresh or only show signs of slight argillic alteration. In sample MKW 061 the clinopyroxenes are generally altering to limonite. Other samples a'.o contain varying amounts of limonite, up to 12% > *

Reductants U5 <

>

Analytical Data (General) C43 < High graded sample contains 91 ppm U_3O_8 and 1838 ppm eTh. The sample also contains anomalous amounts of vanadium and phosphate. MKW 079, another high graded sample, contains 17 ppm U_3O_8 and 598 ppm eTh and is > *

Radiometric Data (General) U6 < Mount Sophris SC-132 Scintillometer. Background (No. times background and dimensions) (Bkg) = 170 cps (metasedimentary rocks). The highest radiometric reading obtained was 5200 cps (20 x Bkg) associated with a small channel of gravel (sample MKW 060).>*

Ore Controls K5 < The areas of highest concentration appear to be in strongly fractured dike rocks. Because the limonite content increases with the uranium values it appears that there has been secondary enrichment by weathering mechanisms of an originally hydrothermal deposit.

>

Deposit Class C40 < magmatic-hydrothermal > Class No. U7 <3,3,0>

Comments on Geology N85 < see text.

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 4

Uranium Analyses:

Sample No.	Sample Description	Uranium Analysis
MKW 059	syenite, heavily fractured	91 ppm U_3O_8
MKW 060	gravel, limonitic cement	104 ppm U_3O_8
MKW 061	clinopyroxene (?) quartz syenite (float)	192 ppm U_3O_8
MKW 076	syenite, near metasediments	16 ppm U_3O_8
MKW 077	quartzite	3 ppm U_3O_8
MKW 078	syenite	13 ppm U_3O_8 *

Geologic Sketch Map and/or Section, with Sample Locations:

References:

F1 < Johns, W.M., 1970, Geology and mineral deposits of Lincoln and Flathead Counties, Montana: Montana Bureau of Mines and Geology, Bulletin 79, 182 p.>

F2 <

>

F3 <

>

F4 <

>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 4

Continuation from p. 1-5:

Label

A82 < turn left on gravel road for 2.2 mi, turn left on second dirt road for 0.5 mi (end of road), the occurrence is on the ridge crest due north and can be accessed by following bulldozer trails to the ridge top.>

G2 < Siegmund, Bruce L. and Fleshman, John J.>

L110 < has been explored soley for uranium.>

M220 < between the impure quartzite of the Wallace Formation and fine-grained syenite. A second pit followed a quartz syenite dike, which contains a small area of anomalous radioactivity (MKW 079). Approximately 60 m southeast of MKW 079 a bulldozer cut has exposed another (or the same) syenite dike, which is also contains anomalous radioactivity (MKW 059). A few meters down slope from MKW 059 another bulldozer scrape exposed a small area of radioactive colluvium (MKW 060).>

K1 < pebble to gravel-sized, angular to subrounded particles of plutonic fragments which were at one time cemented by limonitic clay. Three other samples were collected from radioactive areas (MKW 059, MKW 061 and MKW 079), all are syenites or quartz syenites. Sample MKW 059 consists of 74% K-feldspar, 12% limonite, 8% quartz, 4% hematite and 2% of a fine-grained altered mineral. Sample MKW 061 consists of 65% K-feldspar, 13% quartz, 13% clinopyroxenes, 5% allonite (?), 3% opaques, 1% plagioclase, and traces of limonite. Sample MKW 079 contains 74% K-feldspar, 13% quartz, 10% clinopyroxenes and 3% iron oxides.>

C30 < thorite crystals and cheralite within individual rock fragments; MKW 061 > *

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 4

Continuation from p. 1-6

Label

C30 < contains thorite in seams and fracture fillings also questionable brockite, possible cheralite and subhedral uraninite; MKW 079 contains cheralite (?).>

C43 < also enriched in vanadium.>

U6 < Sample MKW 079 was collected in one of the pits where a point source in a fine-grained syenite dike gave a radiometric reading of 2750 cps or 11 x Bkg over an area of 0.5 m x 0.5 m. The outcrop of syenite where sample MKW 059 was collected gave a reading of 3300 cps (13 x Bkg).>

Uranium Analysis <

MKW 079	fine to medium grained syenite	17 ppm U_3O_8
MKW 080	impure quartzite	5 ppm U_3O_8 >

URANIUM-OCCURRENCE

REPORT

Quad Name A90< Kalispell >

Quad Scale A100< 1, 2, 5, 0, 0, 0, 0 >

Deposit No. B40< 5 >

Deposit Name A10 < Kennedy Gulch Claims >

Synonym Name(s) A11 < >

District or Area A30 < Libby >

Country A40 < U, S > |U, S| State Montana

State Code A50 < 3, 0 > |3, 0| County A60 < Lincoln >
(Enter code twice from List D)

Position from Prominent Locality A82 < Road log: from Libby, Montana proceed northeast on Highway 37 for 5.5 mi (mile 0 begins at bridge crossing the Kootenai River in Libby), turn left (east) on paved road for 0.4 mi, turn left on gravel > *

Field Checked G1 < 8, 0 | 0, 8 > By G2< Fleshman , Bill R. >
Yr Mo Last name First Initial

Latitude A70 < 4, 8 | 2, 3 | 5, 2, N > Longitude A80 < 1, 1, 5 | 2, 5 | 2, 0, W >
Deg Min Sec Deg Min Sec

Township A77 < 1, 3, 0 | N > Range A78 < 1, 3, 0 | W > Section A79 < 1, 3 >
N/S E/W

FT/M

Meridian A81 < Montana > Altitude A107 < 3020 FT >

Quad Scale A91 < 1, 2, 4, 0, 0, 0 > Quad Name A92 < Vermiculite Mtn. >
(7½' or 15' quad)

Physiographic Province A63 < 0, 8 | Northern Rockies >
(List K)

Location Comments A83 < >

Location Sketch Map:

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 5

Commodities Present:
C10 <U C U T H >

Commodities Produced:
MAJOR < > COPROD < >

MINOR < > BYPROD < >

Potential Commodities:
POTEN < > OCCUR <U C U >

Commodity Comments C50 <Malachite and azurite occurs as a very thin sporadic coating in the silicified area.>

Status of Exploration and Development A20 < 2 >
(1 = occurrence, 2 = raw prospect, 3 = developed prospect, 4 = producer)

Comments on Exploration and Development L110 <There appears to be very little activity in the area.>

Property is A21 (Active) (A22) (Inactive) (Circle appropriate labels)

Workings are (M120) (Surface) M130 (Underground) M140 (Both)

Description of Workings M220< Shallow side hill cuts were the only signs of workings in the area. The occurrence is along a 24 m side-hill out (possibly a drill > *

Cumulative Uranium Production PROD YES (NO) SML MED LGE (circle)

DH2
accuracy thousands of lb. years grade
G7< U > G7A< > G7B<LB> G7C< > G7D< % U308>

Source of Information D9 < >

Production Comments D10 < >

Reserves and Potential Resources

EH
accuracy thousands of lb. year of est. grade
E1< U > E1A< > E1B<LB> E1C< > E1D< % U308>

Source of Information E7 < >

Comments E8 < >

BFE 1236
4/19/78

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 5

Deposit Form/Shape M10 < Associated with silicified veins intersecting the > *

Length M40 < > M41 < > FT/M

Width M50 < > M51 < >

Thickness M60 < > M61 < >

Strike M70 < >

Dip M80 < >

Size M15 (circle letter): 1b U308

A 0 - 20,000
B 20,000 - 200,000
C 200,000 - 2 million
D 2 million - 20 million
E More than 20 million

Tectonic Setting N15 < Mobile Belt >

Major Regional Structures N5 < The Kennedy Gulch occurrence is one of four uranium occurrence associated with a peralkaline pluton intruded into low-grade metasedimentary rocks of the Belt series. The Belt rocks in this area are part of the >

Local Structures N70 < The area is underlain by metasedimentary rocks striking N 45° W and dipping approximately 50° N several silicified syenite (?) dikes intersect these rocks in a northeasterly trending direction and are steeply dipping >

Host-FM. Name U1 < Wallace Formation > Member U2 < >

Host Rock K1 < P R E C / C R E T | B | Contact between silicified dikes of monazite
(Age) (Rock type, texture, composition, color,

and altered rocks (epidosite) of the Wallace Formation. The epidosite is composed
alteration, attitude, geometry, structure, etc.)

of minute, rounded anhedral grains of epidote (pistacite) and minor to trace amounts of quartz, sphene, plagioclase (albite?) and iron oxides. The monzonite > *

Host-Rock Environment U3 < epidote hornfels in contact with monzonite >
(Sed. dep. environ., metamorphic facies, ign. environ.)

Comments on Associated Rocks U4 < >

Ore Minerals C30 < >

Gangue Minerals K4 < >

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 5

Alteration N75 <

Reductants U5 <

Analytical Data (General) C43 < A high graded sample contains only 34 ppm U_3O_8 and eTh. The sample is also anomalously enriched in copper and titanium.

Radiometric Data (General) U6 < Mount Sophris SC-132 Scintillometer. Bkg = 145 cps. One area 3.4 x Bkg 30 cm x 15 cm, sample MKW 085 was collected from this spot.
(No. times background and dimensions)

Ore Controls K5 < The mineralization appears to be a contact affect and is a very minor concentration.

Deposit Class C40 < contact-metasomatic > Class No. U7 < | | >

Comments on Geology N85 < see text.

URANIUM-OCCURRENCE REPORT

Quad Name _____

Deposit No. _____

Uranium Analyses:

Sample No.	Sample Description	Uranium Analysis
MKW 085	Radioactive hot spot in silicified vein cutting Wallace Fm.	34 ppm U_3O_8
MKW 086	Background sample of silicified veins	2 ppm U_3O_8

Geologic Sketch Map and/or Section, with Sample Locations:

References:

F1 <_____

_____>

F2 <_____

_____>

F3 <_____

_____>

F4 <_____

_____>

URANIUM-OCCURRENCE REPORT

Quad Name Kalispell

Deposit No. 5

Continuation from p. 1-5:

Label

A82 <road for 2.2 mi., turn left on second dirt road for 0.3 mi, the occurrence is off to the right (east).>

M220 < road). Approximately 0.5 mi to the east drilling has been carried at apparantly exploring for copper sulfide mineralization.>

M10 < Wallace Formation.>

N5 < stable Purcell Plateform which are gently folded and vertically faulted in a northwesterly trending direction.>

N70 < to the south.>

K1 < is equigranular, fine-to medium-grained with laths of plagioclase, microcline, quartz and epidote.>