TABLE 1. SULFUR AND LEAD ISOTOPE COMPOSITIONS OF CENTRAL AND EASTERN GREAT BASIN METAL DEPOSITS

SAMPLE NO.	LOCATION	FORMATION	MINERAL		Pb 206/204	Pb 207/204	Pb 208/204	Age of associated intrusion	Source	TDS Contribution Pb[21]	TDS Contribution S[22]
LATE PROTEROZOIC-EARLY PALEOZOIC ROCKS IN SOUTHERN NEVADA											
VM96-1py	Key West mine dump, Copper	Precambrian(?)	pyrite	-2.86	22.613	16.051	41.937	Middle Proterozoic (?)	1	NC	NC
	King district, S21, T15S, R69E, Clark Co., NV	hornblendite dike in gneiss and schist									
VM96-2	Great Eastern mine dump, Copper	Precambrian(?)	pyrrhotite	-0.41	18.712	15.636	37.583	Middle Proterozoic (?)	1	NC	NC
	King district, S15,T15S, R69E Clark Co., NV	hornblendite dike in gneiss and schist									
DPX97-1	Duplex mine dump	Precambrian gneiss,	galena	-1.8	18.04	15.581	38.879	Tertiary	1	NC	NC
CAS97-1	Big Casino mine, Searchlight dist. S34, T28S, R63 E, Clark Co., NV	Tertiary quartz monzonite	galena	-2.5							NC
CHF97-1	Lucky Hobo mine, Chief district, T3S, R67E, Lincoln Co., NV	Cambrian Wood Canyon fm.	galena	8.3	18.073	15.575	38.465	Oligocene	1	14	43
LATE PROTEROZOIC AND EARLY PALEOZOIC ROCKS IN CENTRAL AND EASTERN NEVADA											
Eureka district, Eureka, Co., NV											
713-1287p	T53N, R18, 19E	Cambrian Eldorado	pyrite	14.78	19.399	15.701	38.939	Cretaceous	1		
713-1430	Eureka Co., NV;	dolomite, Hamburg	plagioclase		19.442	15.722	39.008	Cretaceous	1		
720-1265g	D.D.H , FAD shaft area	dolomite	galena		19.57	16.012	39.967	Cretaceous	1		
726-2393			galena	11.93	19.363	15.653	38.952	Cretaceous	1		
726-2393p			pyrite	15.82	19.532	15.909	39.581	Cretaceous	1		
729-1897			galena	10.59	19.41	15.766	39.146	Cretaceous	1	100	73
729-1897p			pyrite	15.03	19.37	15.73	39.002	Cretaceous	1		
ED9110p	Windfall mine		pyrite	13.2	19.057	15.712	39.251		1		
ED9112r	Ratto Canyon mine		realgar	18.7(2)	19.388	15.761	39.271		1		
ED91-13	Locan shaft dike		plagioclase		19.625	15.789	39.465	Oligocene	1		
	Diamond mine		galena		19.3	15.71	38.85	Cretaceous	2		
			average		19.405						
Pioche district, Lincoln Co., NV											
PID93-1	Ely Valley mine dump,	Cretaceous	plagioclase		17.822	15.554	39.104	Cretaceous	1	3.2	
	S17, T1N, R67E	granodiorite	galena	14.88[3]	18.435	15.569	39.08			38	76

BM96-01	Bristol mine dump T2N, R66E	Cambrian Lyndon Limestone	galena	3.98	18.275	15.607	39.232	Oligocene	1	27	20
IMM96-01	Ida May Mine T2N, R66E	Cambrian Lyndon Limestone	galena	5.85	18.579	15.641	38.296	Oligocene	1	47	30
BMS96-2	Blind Mountain stock S25, T2N, R65E	skarn, Cambrian limestones	chalcopyrite bornite chalcopyrite	7.14 3.17 10.2	18.616	15.646	39.223	Oligocene	1	50	37 16 52
PID96-11	Pacific Tunnel dump S23, T1N, R67E	Cambrian Prospect Mountain quartzite	galena	13.49	18.499	15.751	39.849	Cretaceous	1	42	69
CM1-93-2	Combined Metals mine, shaft No. 1, S22, T1N, R67E	Cambrian Pioche Shale	galena	11.6	18.364	15.554	39.17	Cretaceous	1,4	33	60
PM96-1	Prince Mine dump. S33, T1N, R67E	Cambrain Lyndon Limestone	pyrite + sphalerite pyrite galena sphalerite	16.8 11.58 15.57 2.44	18.589	15.739	39.603	Cretaceous	1,4	48	86 59 80
	Comet Mine dump S5, T1S, R66E	Cambrian Pioche Shale	galena		18.524	15.627	38.348	Cretaceous	1	44	
KM77-3-1238	DDH, Bristol mine T2N, R66E	Cambrian Pioche Shale vein cutting skarn	pyrite pyrrhotite pyrite	11.34 20.5 3.48	18.73	15.592	39.103	Cretaceous Oligocene	1,4	42	58 100 18
NEW-6-1503	DDH, Iron mine T2N, R66E	Cambrian Pioche Shale	pyrrite	3.48	18.629	15.568	39.981	Oligocene	1	63	18
PID96-10	Non-Pareil mine dump, T1N, R65E	Cambrian Prospect Mountain quartzite	galena	10.71				Cretaceous	1		55
MAN96-1	Manhattan stock skarn, S8,T1N, R66E	Cambrian Highland Peak fm.	galena	19.64; 14.4	19.361	15.8	38.967	Cretaceous	1	100	87
MS96-1		vein cutting skarn	molybdenite	4.96	18.494	15.603	38.408	Oligocene	1	42	25
	Pan American Mine dump T25N, R66E	Cambrian Pioche Shale	galena	12.7	18.595	15.685	39.581	Cretaceous	1,14	49	65
			average average	14.4 5.3	18.546 18.523	15.652 15.605		Cretaceous Oligocene		44 45	72 27

Groom district, Lincoln Co., NV											
3044	Groom mine dump, S8, T7S,	Cambrian Pioche	galena	21.85	18.725	15.697	38.534	Cretaceous(?)	1	57	98
3040	R55.5E	Shale	galena	16.38							84
3006	Black Metal mine dump, S17, T7S, R55.5E	Cambrian Lyndon Limestone	galena	11.78	18.734	15.726	38.608	Cretaceous(?)	1	58	61
Cortez district, Lander and Eureka Co., NV											
	veins in Early Paleozoic rocks	Silurian Wenban	pyrite, sphalerite,	6.58							100
		Limestone	galena (8)		19.4	15.7	38.83	Oligocene(?)	7,1	100	
		Tertiary intrusions	feldspars (2)		19.31	15.71	39.13	Oligocene	7		
	veins in Jurassic quartz monzonite		pyrite, sphalerite,	12.79							
			galena (2)		19.45	15.74	38.87	Jurassic	7,1		65
		quartz monzonite	feldspars (2)		19.62	15.77	39.06	Jurassic	7	100	
COR94-1	Arctic mine dump, Cortez district, S6, T26N, R48E,	Cambrian Hamburg dolomite	tetrahedrite	7.66	19.34	15.64	38.71	Jurassic	7	98	39
PMT96-1	Piermont mine dump S28, T19N, R66E White Pine Co., NV	Late Proterozoic McCoy Creek Group	pyrite	14.73	19.236	15.826	39.719		1	91	76
MR97-1	unnamed mine, Mineral Ridge Silver Peak district, S10, T2S, R38E, Esmeralda Co., NV	Late Proterozoic . Wyman fm.	galena	7.3 (4)	19.48	15.718	39.109	Mesozoic(?)	1	100	37
OAK98-1	Rainstorm mine, Oak Springs dist., T8S, R53E, Nye Co., NV	Late Proterozoic Johnnie fm., Stirling quartzite	galena	6.1	19.183	15.894	39.556	Mesozoic(?)	1, 25	88	31
MiM98-1	Mine Mountain S11, T11S, R52E, Nye(?) Co., NV	Devonian Devils Gate limestone	cerrusite, minor galena	6.6				Mesozoic(?)	1, 24		34
JM95-1	Johnnie mine dump, S20, T17N, R53E, Nye Co., NV	Late Proterozoic Johnnie fm.	galena	12.59	18.667	15.715	38.786	Mesozooic(?)	1	53	65
WCD95-1	White Caps mine, Manhattan district, S29, T8N, R44E Nye Co., NV	Late Proterozoic-Early Cambrian Gold Hill fm.	realgar	11.04				Cretaceous(?)	1		57
STER96-1	Sterling mine, S5,8, T13S, R48E,	Late Proterozoic	pyrite	10.91	18.844	15.641	38.801	Mesozoic(?)	1	65	56
STER96-2	Nye Co., NV	Bonanza King fm; Cambrian Wood Canyon fm.	pyrite	3.76							19

GTM97-1	General Thomas mine, S7, T1N, R41E, Esmeralda Co., NV	Cambrian Mule Spring Limestone	galena	7.2(4)	19.242	15.691	39.011	Cretaceous	1	92	37
MZ97-1	unnamed mine, Montezuma district, S35, T2S, 41E, Esmeralda Co., NV	Cambrian Poleta fm.	galena	13.5 (2)				Mesozoic(?)	1		69
OSC96-1	Osceola district, T14N, R67E, White Pine Co., NV	Cambrian Prospect Mountain quartzite	galena	12.46	19.073	15.672	38.71	Jurassic(?)	1	81	64
CCK96-1	Cherry Creek district, T24N, R63E, White Pine Co., NV	Cambrian Prospect Mountain quartzite	galena + sulfides	17.69	19.196	15.781	38.98	Tertiary(?)	1	89	91
MH92-2	White Pine district, S14,T16N, R57E, White Pine Co., NV	Cambrian Prospect Mountain quartzite	tetrahedrite galena	18.09 0.26	19.15	15.68	39.1	Cretaceous	2	86	93
KM96-1	Keystone mine dump, Tybo district, S36, T7N, R50E, Nye Co., NV	Cambrian Hales limestone	sphalerite galena galena	8.02 11.7 14.26	19.3	15.71	39.14	Cretaceous	1,6	96	41 60 73
BC95-1	Battle Creek mine, S1, T30N, R58E, Elko Co., NV	Cambrian marble	galena sphalerite	10.9 8.85	18.322	15.692	38.342	Tertiary(?)	1	30	56 45
BVW95-1	Bellview mine dump, S35, T26N, R56E, White Pine Co., NV	Cambrian Secret Canyon shale	galena	12.81	18.919	15.734	38.213	Tertiary (?)	1	70	66
KIN95-1	Phalen mine dump, Kinsley dist., S18,T26N, R68E, Elko Co., NV	Cambrian limestone	galena	3.2	18.63	15.738	39.894	Oligocene	1	51	16
	Bald Mountain district T24N, R57E, White Pine Co., NV	Cambrian and Ordovician carbonate	pyrite	ave. 15.76				Jurassic(?)	8		81
SUM95-1	Sumich mine, S21, T16N, R43E, Lander Co., NV	Cambrian-Ordovician Broad Canyon sequence	galena	13.38	19.579	15.978	39.791	Mesozoic(?)	1	100	69
DIJ97-1	Diamond Jim mine, Island Mountain district S34, T45N, R56E, Elko Co., NV	Cambrian Prospect Mountain Quartzite	galena	6.3	19.06	15.742	38.678	Mesozoic(?)	1	80	32
FD96-1	Freiberg mine dump, S19, T1N, R57E, Lincoln Co., NV	Ordovician Pogonip Group llimestone	galena	12.32	19.112	15.751	39.113	Mesozoic(?)	1	83	63
SPM97-1	Monarch mine, Spruce Mountain district, S23, T31N, R63E, Elko Co., NV	Ordovician Pogonip Group limestone	sulfides	8.9 (2)	18.391	15.649	39.572	Tertiary(?)	1	35	46

BEL91-1	Belmont district vein, S36, T9N, R45E, Nye Co., NV	Ordovician Palmetto fm.	galena, tetra-hedrite, et al.	10.11	19.319	15.714	39.048	Cretaceous(?)	1	97	52
BON97-1	Betty O'Neal mine, Lewis district, S22, T30N, R45E, Lander Co., NV	Ordovician Valmy fm.	galena and tt	5.9	19.28	15.67	38.96	Oligocene	1,11	94	30
GAR95-1	Garamandi mine dump, S18, T38N, R56E, Elko Co.,NV	Ordovcian Vinini shale	pyrite	18.09				Ordovician(?)	1	NC	
RMN92-1	Kelly mine, Antelope district, S33, T24N, R50E, Eureka Co., NV	Ordovician Hanson Creek dolomite	galena sphalerite	15.76 15.82	19.446	15.79	38.938	Cretaceous(?)	1	100	81
RIO97-1	Rio Tinto mine, S	Ordovician Valmy fm.	sphalerite	0.5				Ordovician(?)	1		
RIO97-2			pyrite	3.3	18.251	15.539	37.71		1	NC	NC
RIO97-3			chalcopyrite	1.4					1		
IND97-1	Independence mine, S Mountain City district, T45,46N, R53,54E, Elko Co., NV	quartz monzonite	galena, et al.	1.8	19.092	15.647	38.761	Cretaceous	1	82	8
IND97-2			sphalerite	1.3					1		
MIDDLE AND UPPER PALEOZOIC ROCKS IN EASTERN AND SOUTHERN NEVADA											
RMN92-3	Baldwin mine, Antelope district, S25, T24N, R50E, Eureka Co., NV	Devonian Devils Gate limestone	galena sphalerite	1.52 8.82	18.5	15.651	39.552	Cretaceous(?)	1 1	42	8 45
TAY96-1	Taylor district, T14N, R65E, White Pine Co., NV	Devonian carbonate rocks	galena	11.12	20.041	16.163	39.663	Mesozoic(?)	1	100	59
MSMM-7855	Railroad district, T30,31N, R53E, Elko Co., NV	Devonian carbonate rocks	galena	7.16	19.32	15.81	39.55	Oligocene	1,10,11	97	37
MSMM-1905				5.17							27
M3792	Crescent mine, Reveille district, T2N, R51 1/2E, Nye Co., NV	Devonian-Penn. carbonate rocks	galena	13.9	19.377	15.721	38.956	Mesozoic(?)	1	100	71
M2597	Mineral Hill district, S1, T26N, R52E, Eureka Co., NV	Devonian limestone	galena	10.9	19.42	15.802	39.054	Cretaceous(?)	1	100	56
TEM97-1A	Lincoln mine, Tem Piute district, S , T3S, R56E, Lincoln Co., NV	Devonian and Miss. carbonate rocks	sphalerite					Cretaceous	1		
TEM97-1B			sphalerite	11.6	19.25	15.612	38.417		1	92	60
TEM97-1C			pyrite	11.5					1		60
TEM97-1D			molybdenite	13.8					1		71

Goodsprings district, Clark Co., NV											
IG96-1	Iron Gold mine dump, S21, T24S, R58E	Jurassic granite porphyry	pyrite	0.41	17.987	15.518	38.073	Jurassic	1	8	2
KEY96-1	Chiquita mine dump T24S, R57E	Jurassic granite porphyry	pyrite	0.39	17.443	15.578	38.226	Jurassic	1	0	2
BFT96-1	Bearfoot mine dump, T24S, R57E	Cambrian Goodsprings dolomite	pyrite	0.38	17.591	15.526	38.034	Jurassic	1	0	2
GDS96-1A	Yellow Pine mine dump, S20, T24S,R58E	Missippian Monte Cristo Limestone	galena	6.04	21.343	15.899	40.27	Paleozoic(?)	5	100	31
GDS96-2B GDS96-2C	Potosi mine dump, S12, T23S, R57E	Missippian Monte Cristo Limestone	galena sphalerite	7.72 8.2	21.29	15.869	40.164	Paleozoic(?)	5	100	40 42
CON97-1	unnamed mine, Contact district, T45N, R63E, Elko Co., NV	Miss.-Permian meta-sedimentary rocks; granodiorite	chalcopyrite	1.5	19.763	15.753	39.652	Jurassic	1	100	8
	Ferber district, T27N, R70E, Elko Co., NV	Penn.-Permian carbonate rocks	galena		18.671(3)	15.76	40.046	Cretaceous(?)	11	54	
	Battle Mountain district, T31N, R43,44E, Lander Co., NV	Penn.-Permian Antler Peak limestone; Battle formation	galena; other sulfides	~5	19.19(5)	15.768	38.75	Oligocene	9,10,11	82	26
WDM96-1	Ward mine, Ward district, S11, T14N, R63E, White Pine Co., NV	Mississippian carbonate rocks	galena	-0.81	19.1	15.76	39.81	Oligocene	1,2,20	82	0
EJM96-1	Elijah mine, Robinson district, S12, T16N, R62E, White Pine Co., NV	Pennesylvanian Ely limestone	galena	1.18	19.02	15.67	38.69	Cretaceous	1,2,10	82	6
DEL97-1	Cleveland mine dump, Delano district, S28, T44N, R68E, Elko CO., NV	Permian Grandeur and Pequop fms.	galena	1.7	19.662	15.753	39.678	Cretaceous?	1,10,11	100	9
MTH97-1A MTH97-1B	Mt. Hope mine dump, Mt. Hope district, S , T22N, R51,52E, Eureka Co., NV	Permian Garden Valley formation	galena sphalerite	6 6	19.487	15.706	39.105	Oligocene	1	100	31 31
VIP97-1	Vista Pit vein, Twin Creeks mine, T39N, R43E, Humboldt Co., NV	Permian Etchart fm.	galena, et al.	3.4	19.328	15.742	39.042	Cretaceous(?)	1	98	17

VIC98-1A VIC98-1B	Victoria mine, Dolly Varden dist., S6, T28N, R66E, Elko Co., NV	Permian Pequop fm., and Park City Group	bismuthinite chalcopyrite	8.8 7.7	19.5	15.773	39 754	Jurassic	1,23	100	45 40
COV97-1	Cove mine, T28N, R42E, Lander Co., NV	Triassic Augusta Mountain formation	galena	2.5	19.28	15.671	38.936	Eocene	1	94	13
TERTIARY VOLCANIC ROCKS IN NEVADA											
	Mizpah mine, Tonopah district, S35, T3N, R42E, Nye Co., NV	Miocene Mizpah fm.	galena	-2.11	19.188	15.659	38.909	Miocene	1,14,15	88	0
NMNH77404241	January mine, Goldfield district, S2, T35, R42E, Esmeralda Co., NV	Miocene andesite	galena	-1.9	19.213	15.705	39.098	Miocene	1	90	0
NEVADA MINES WEST OF ISr = 0.706											
SI95-1	Simon mine, T8N, R37E, Mineral Co., NV	Triassic Luning fm.	galena	-0.7	19.08	15.624	38.712	Cretaceous(?)	1		
0D13297	Union mine, Comstock district., S28, T17N, R21E, Storey Co., NV	Miocene Alta Andesite	galena	-6.4	18.934	15.621	38.626	Miocene	12,13		
M2470	Leadville mine, Leadville district, S8, T37N, R23E, Washoe Co., NV	Oligocene South Willow fm.	galena	-0.4	18.913	15.621	38.566	Oligocene?	1,14		
COM96-1	Commonwealth (Union Lead) mine, S7, T17N, R20E, Washoe Co., NV		galena, arsenopyrite	-7.4	18.713	15.625	38.49	Mesozoic	1,2		
DOW97-1	Downeyville mine, Gabbs district, S11, T12N, R36E, Nye Co., NV	Triassic Luning Fm.	galena	-2.2	19.045	15.659	38.659	Mesozoic	1		
QTZM97-1	San Rafael mine, Quartz Mtn.dist., T14N, R36E, Mineral Co., NV	Triassic Excelsior fm.	galena	0	19.114	15.611	38.707	Mesozoic?	1		
F-11	Friedman level, Rochester dist., S16, T28N, R34E, Pershing Co., NV	Permian-Triassic Koipato rhyolite	galena	4.37	19.322	15.863	39.479	Cretaceous	1		
MSMM-3319	Webster mine, Grantsville dist., T11N, R39E, Nye Co., NV		sphalerite	0.1	19.015	15.627	38.687	Mesozoic?	1		

MINES IN SOUTHEASTERN CALIFORNIA

NM95-1	Noonday mine, Tecopa district,	Proterozoic Noonday	galena	5.51	18.266	15.621	39.553	Mesozoic(?)	1,14	27	28
	S14,15, T20S, R8E, Inyo Co., CA	dolomite	sphalerite	10.1							52
NM95-2	War Eagle mine, Tecopa district,	Proterozoic Noonday	galena	6.54				Mesozoic(?)	1		34
	S23, T20S, R8E, Inyo Co., CA	dolomite									
	Darwin district, S13, T19S, R40E	Mississippian-Permian	galena	0.47	18.535	15.626	38.759	Mesozoic(?)	14	45	2
	Inyo Co., CA	carbonate rocks									
CG96-1	Cerro Gordo district, T15,16S,	Devonian marble	galena	0.67	18.59	15.634	38.626	Mesozoic(?)	1,14	48	3
CG96-2	R38,39E, Inyo Co., CA		pyrite	2.71							14

MINES IN WESTERN UTAH

San Francisco district											
OKD95-1	Old King David mine dump,	Cambrian(?) limestone	galena	-0.07	18.141	15.651	38.458	Oligocene	1,16	18	0
	S23, T27S, R13W, Beaver Co.		sphalerite	-8.57							0
		Tertiary intrusions	feldspars		18.59	15.68	38.76	Oligocene	16		
IMLM95-1	Independence mine dump,	Silurian Laketown	galena	3.06				Oligocene	1		16
	S20, T26S, R11W, Beaver Co.	dolomite									
Tintic district	T10S, R2,3W, Utah Co.	fissure veins in Silver	galena	-1.3 [12]	18.607	15.728	39.036	Oligocene	16,17	49	0
		City stock		-2.1 [12]							0
		Tertiary intrusions	feldspars		18.77	15.71	39.07	Oligocene	16		
Bingham district	T3,4S, R2,3W,	Oligocene intrusions	pyrite,	-0.5	17.739(41)	15.699	38.65	Oligocene	16,18	0	0
	Salt Lake, Tooele Cos.	porphyry ores	chalcopyrite								
		Tertiary monzonite	feldspars		17.83	15.7	38.72	Oligocene	16		
Gold Hill district	Rube gold mine	Miss. Ochre Mountain	galena, cerrusite,		19.015	15.741	38.856	Eocene (?)	1,19,20	77	
	S1,2, T7S, R17W, Tooele Co.	limestone	pyrite	14.6							75
	Spotted Fawn/Silver Hill mine	Cambrian and Silurian	galena	11.3	19.325	15.776	39.06	Eocene (?)	1,19,20	97	58
	S14, T7S, 18W, Tooele Co.	dolomites									
		Tertiary quartz monzonite	feldspars		18.728	15.764	40.047	Eocene	19,20		
	U.S. mine	Miss. Chainman Shale	galena,		19.395	15.814	39.778	Jurassic	1,19,20	100	

	S1, T8S, R18W		arsenopyrite	4.7									24
			pyrite	8.4									43
	Climax mine	granodiorite, skarn, bx	galena	4.9		19.641	15.83	40.115	Jurassic		1,19,20	100	25
	S17, T8S, R17W, Tooele Co.												
	Seminole mine	Penn. Oquirrh fm.	galena,			19.724	15.827	40.216	Jurassic		1,19,20	100	
	S24, T8S, R18W, Tooele Co.		chalcopyrite,	3.2									16
			molybdenite	3.8									20
		Jurassic granodiorite	feldspars			19.662	15.837	40.295	Jurassic		19,20		
Fish Springs district													
CRYPTO97-1	Crypto Project DDH,	Cambrian and Ord.	galena		9.2	19.121	15.796	40.041		Oligocene	1	84	47
	S17, T11S, R14W, Juab Co., UT	limestone and shale	sphalerite	10.3									53

1 This paper; analyses by K. Shelton (Columbia, MO), Coastal Sciences Laboratories (Austin, TX), and S. Bowring (Cambridge, MA)
2 Doe (1976); White Pine district lead isotope galena sample is from the Wheeler mine; Robinson district lead isotope galena sample is from the Liberty Pit; Ward district lead isotope galena sample is from the Welcome mine
3 Pyrite, Ely Valley mine
4 Armstrong-Reinthal (1983)
5 J. Tingley (pers com.)
6 Quinlivan and Rogers (1974)
7 Rye, et al. (1974)
8 Hitchborn, et al., (1996)
9 T. Theodore, pers. com.
10 Maldonado, et al. (1988)
11 Doe and Rohrbough (1977)
12 Vikre (1989)
13 B.R. Doe, per com.
14 Zartman (1974); Newberry, et al., (1991); Cerro Gordo lead isotope galena sample frrom Devonian marble; Darwin lead isotope galena sample from Miss.-Permian carbonate rocks
15 Average of several ore samples from various mines
16 Stacey, et al., (1968); Stein and Hannah, (1991)
17 Ames (1962); Hildreth and Hannah (1996)
18 Field, C.W., (1966)
19 Stacey and Zartman (1978)
20 Robinson, et al., 1993; Nolan, 1935
21 % 206Pb from TDS = 100 - (67(19.363 - 206Pb/204Pb deposit)), for 206Pb/204Pb > 19.363; 19.363 = ave. 206Pb/204Pb in TDS pyrite; if 206Pb/204Pb >19.767, %Pb = 100 pyrite; if 206Pb/204PB > 19.363, %Pb = 0.
22 %S from TDS = 100(deposit, if>0)/19.47; 19.47% = ave. in TDS pyrite (Table 2); if deposit > 19.47, %S = 100; equation derived assuming in non-TDS rocks is 0 permil.
23 Zamudio and Atkinson, (1995)
24 Kral (1951)
25 Tingley, et al. (1997)
NC means not calculated because no TDS present

TABLE 2. SULFUR AND LEAD ISOTOPE COMPOSITIONS (‰) OF PYRITE FROM OIL EXPLORATION DRILL HOLES

Sample No.	Hole location	Depth	Formation	$\delta^{34}S$‰	Pb 206/204	Pb 207/204	Pb 208/204
Hi-Lo 22-1	S. 1, T7S, R58E Lincoln Co., NV	4800-5160	Cambrian Pioche Shale, Prospect Mtn. quartzite	16.25	19.932	15.793	38.749
USA 1-30	S. 30, T1N, R66E, Lincoln Co., NV	5100-5170	Late Proterozoic Johnnie fm.	15.1	18.580	15.595	38.945
		6430-6440		15.9	18.531	15.637	39.327
		6980-7000A	Mississippian sedimentary rocks	12.7	18.556	15.616	39.007
		6980-7000B		11.5			
		9170-9260		44.1	19.032	15.688	38.984
		11,410-11,510		-1.3	19.319	15.717	39.375
Soda Springs Unit No. 1	S. 15, T8N, R57E Nye Co., NV	7970-8090	Cambrian Prospect Mtn. quartzite	11.44			
Kog No. 1	S. 22, T22S, R60E Clark Co., NV	6600-6760	Cambrian Pioche shale	31.44			
Big Smoke No. 14-20	S. 20, T13N, R44E Nye Co., NV	4810-4860*	Cambrian Prospect Mtn. quartzite	19.63	19.321	15.731	39.852
		5120-5210A†		34.10			
		5120-5210B§		31.08			
Stone Cabin No. 1	S.6, T5N, R48E, Nye Co., NV	9630-9660; 9800-9815	Cambrian Gold Hill formation?	12.25	19.267	15.699	39.177
Indian Cove	S. 23, T7N, R7W, Box Elder Co., UT	12060-12230	Paleozoic(?) dolomite;	-19.47	19.636	15.861	40.814
		12420-12450A	Precambrian slate and schist	-0.23	20.089	15.859	42.250
		12420-12450B		2.68			
No. 1 Jensen	S. 7, T13N, R4W, Box Elder Co., UT	7250-7320	Precambrian crystalline rocks	6.23			
Federal No. 1	S. 15, T26S, R17W, Beaver Co., UT	8520-8550	Cambrian Prospect Mountain quartzite	22.20	20.548	15.860	38.777
			Average#	19.47	19.363		

* 0.2 to 0.5 mm subhedrons (20%) and <0.2 mm subhedrons (80%) attached to quartz grains.
† 0.2 to 0.5 mm pyrite euhedrons
§ <0.2 mm pyrite subhedrons in quartzite and siltstone.
\# Late Proterozoic-Early Cambrian siliciclastic rocks only

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