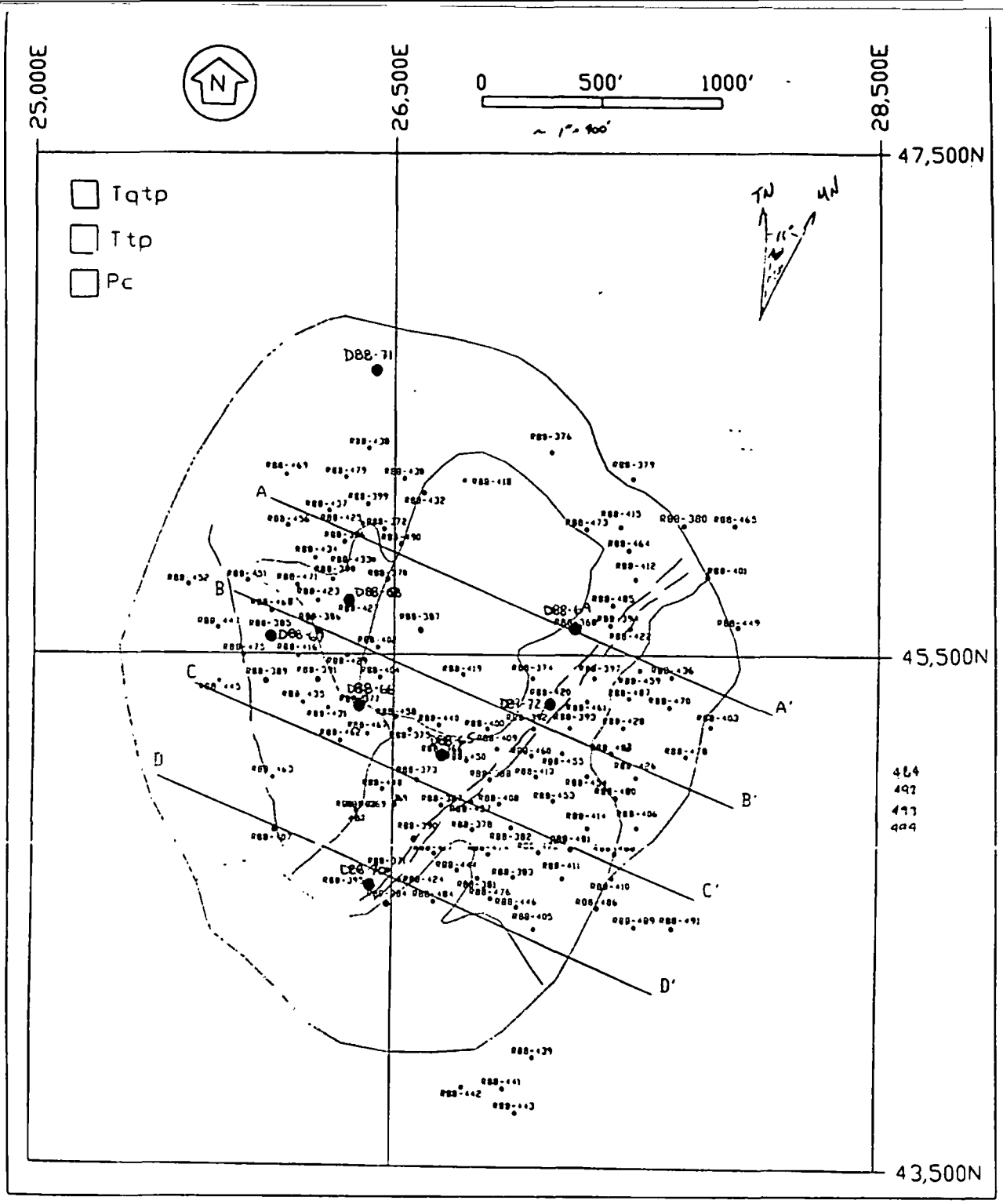
BECHTEL-SUPERVISED MET TESTS



CURRENT STATUS - 1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM

GILT EDGE, SOUTH DAKOTA

NOVEMBER 3, 1988

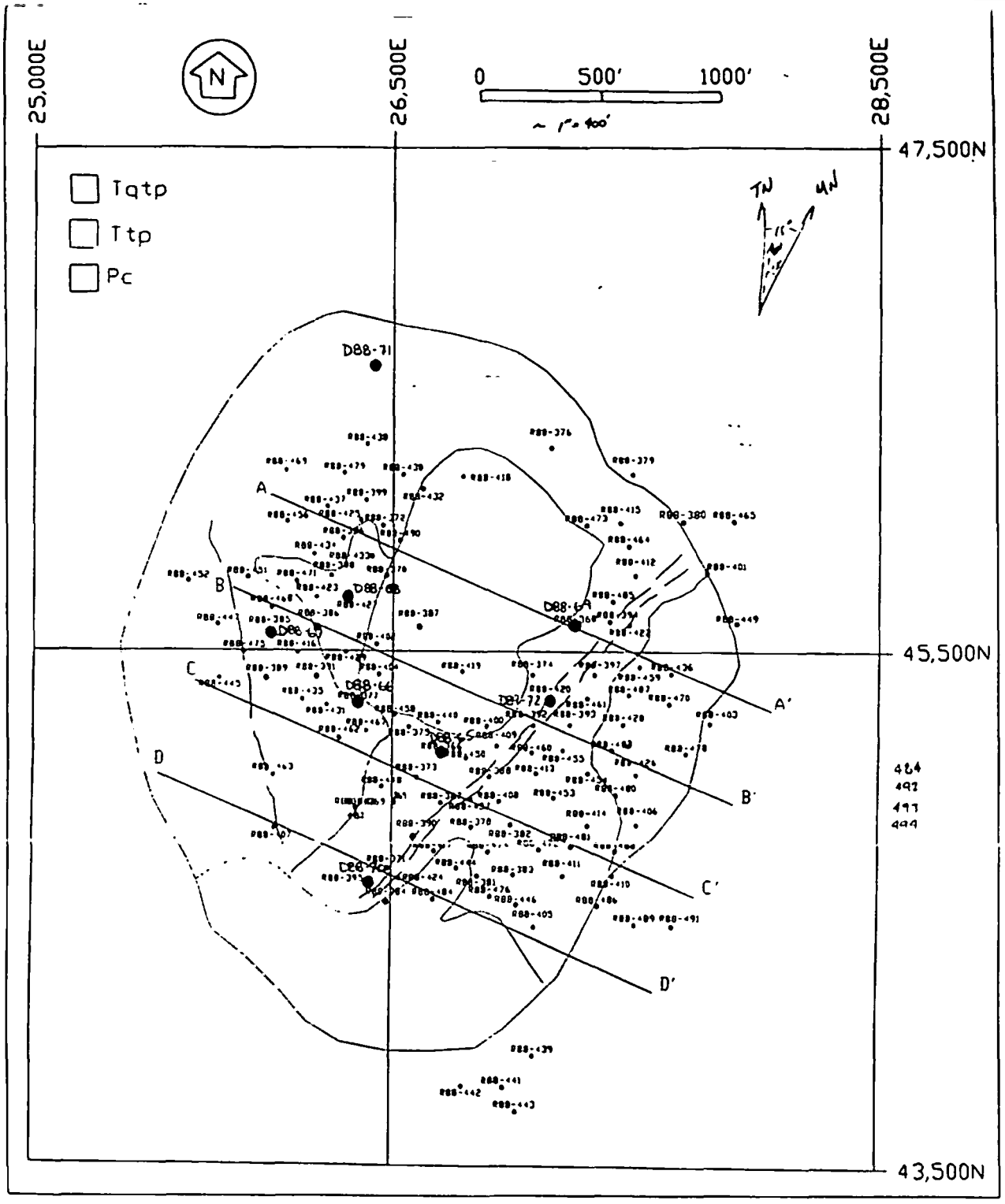
MAP 4

1988 SIX-INCH CORE HOLE LOCATIONS

- ● D88-65 CORE HOLE LOCATION, CORE READY FOR SHIPMENT
- ● D88-72 PROPOSED CORE HOLE LOCATION

(SEE ATTACHED LISTING FOR CORE INTERVAL ELEVATIONS FOR EACH 6" CORE HOLE)

SUPPLIED TO BECHTEL 12/20/88



CURRENT STATUS - 1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM

GILT EDGE, SOUTH DAKOTA

NOVEMBER 3, 1988

MAP 4

1988 SIX-INCH CORE HOLE LOCATIONS

- ● D88-65 CORE HOLE LOCATION, CORE READY FOR SHIPMENT
- ● D89-72 PROPOSED CORE HOLE LOCATION

(SEE ATTACHED LISTING FOR CORE INTERVAL ELEVATIONS FOR EACH 6" CORE HOLE)

SUPPLIED TO BERLITEL 12/20/88

DATE:	**JUNE 28, 1990**
TO:	**MIKE ATTAWAY**
FROM:	**JIM BARRON**
SUBJECT:	**ROTARY CHIP METALLURGICAL SAMPLE (.03 OPT Au)**

In our continuing attempts to compile a 0.03 OPT Au sulphide-bearing sample for the gold recovery testwork, a 240 pound sample having a weighted average grade of 0.0295 OPT Au was shipped to Hazen today. The attached listing shows the hole number, sample depth, original assay value and weight shipped. This sample is composed of trachyte porphyry rotary drill cutting from below the level of oxidation. Data pertaining to the range and overall estimated sulphide content was not compiled but can be obtained if necessary.

SUMMARY OF ROTARY CHIP REJECT SAMPLES SENT TO HAZEN LABS, INC.

Hole No.	Interval	Grade	Weight (Lbs)
R88-391	350-355	.029	13
R88-385	115-120	.030	6
R88-505	110-115	.030	7
R88-408	765-770	.030	16
R89-567	290-295	.030	4
R88-450	455-460	.029	12
R89-573	570-575	.029	7
R88-385	950-955	.029	10
R88-377	190-195	.030	9
R88-386	500-505	.030	5
R88-468	910-915	.028	8
R89-571	500-505	.027	8
R88-416	140-145	.029	10
R88-440	400-405	.030	12
R89-467	945-950	.030	6
R88-459	135-140	.029	7
R89-619	235-240	.030	9
R89-636	310-315	.027	5
R89-572	405-410	.029	7
R89-622	640-645	.028	12
R89-574	275-280	.030	12
R88-368	870-875	.032	7
R88-485	810-815	.030	8
R88-397	845-850	.030	11
R89-556	675-680	.030	14
R89-624	720-725	.030	5
R89-557	590-595	.031	10

TOTAL = 240 LBS @ .0295 W.A.G.

Jim

JNB/SR/rrl

cc: Al Wilder

DATE:	**JUNE 22, 1990**
TO:	**MIKE ATTAWAY**
FROM:	**JIM BARRON**
SUBJECT:	**SIX-INCH CORE COMPOSITE: 384 LBS @ .0287 OPT AU**

On June 15, 1990, approximately 384 pounds of six-inch core samples were shipped to Hazen Research in Golden, Colorado. This composite sample is comprised of various amounts of six-inch core having a grade of between 0.025 and 0.035 OPT Au. The weighted average grade of the composite is estimated to be 0.0287 OPT Au. The composite consists of 43 individual pieces of six-inch core ranging in weight from 3 to 19.5 pounds, and with the exception of four mixed oxide and sulphide samples, is comprised of sulphide ore type (see attachments). Also attached is a chart depicting the elevation of the sampled interval. About 60% of the composited footage represents trachyte porphyry (Ttp) above the 5,000 foot elevation with the remaining 40% coming from Ttp below the 5,000 foot elevation to a maximum depth of about 4,500 feet. The plan distribution of the subject drill holes is shown on the attached map.

Jim

Attachments

JNB/rrl

cc: Al Wilder

Note: Results of 3 assays of this material by Hazen were

.042, .044, .048

Summary of bulk 6 in. core sample @ approx. 0.030 OPT avg. grade sent for metalurgical work to Hazen labs.

TOTAL WEIGHT OF CORE SENT: 384 lbs. @ 0.0287 OPT Au

D88-65: 26 lbs. @ 0.027 W.A.G.

D88-66: 71 lbs. @ 0.029 W.A.G.

D88-67: 78.5 lbs. @ 0.029 W.A.G.

D88-68: 53.5 lbs. @ 0.034 W.A.G.

D88-69: 79 lbs. @ 0.028 W.A.G.

D88-70: 30 lbs. @ 0.027 W.A.G.

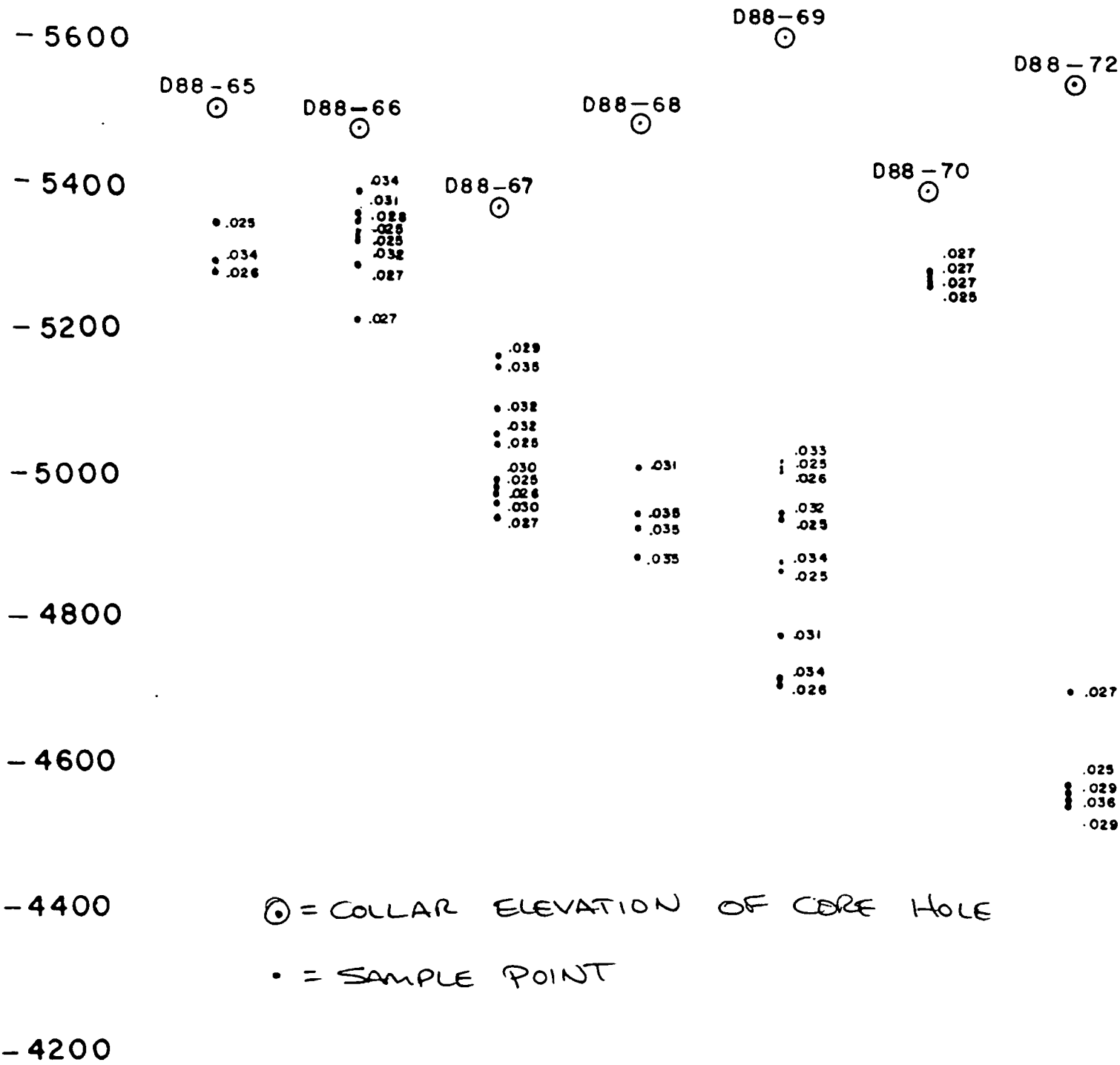
D88-72: 46 lbs. @ 0.028 W.A.G.

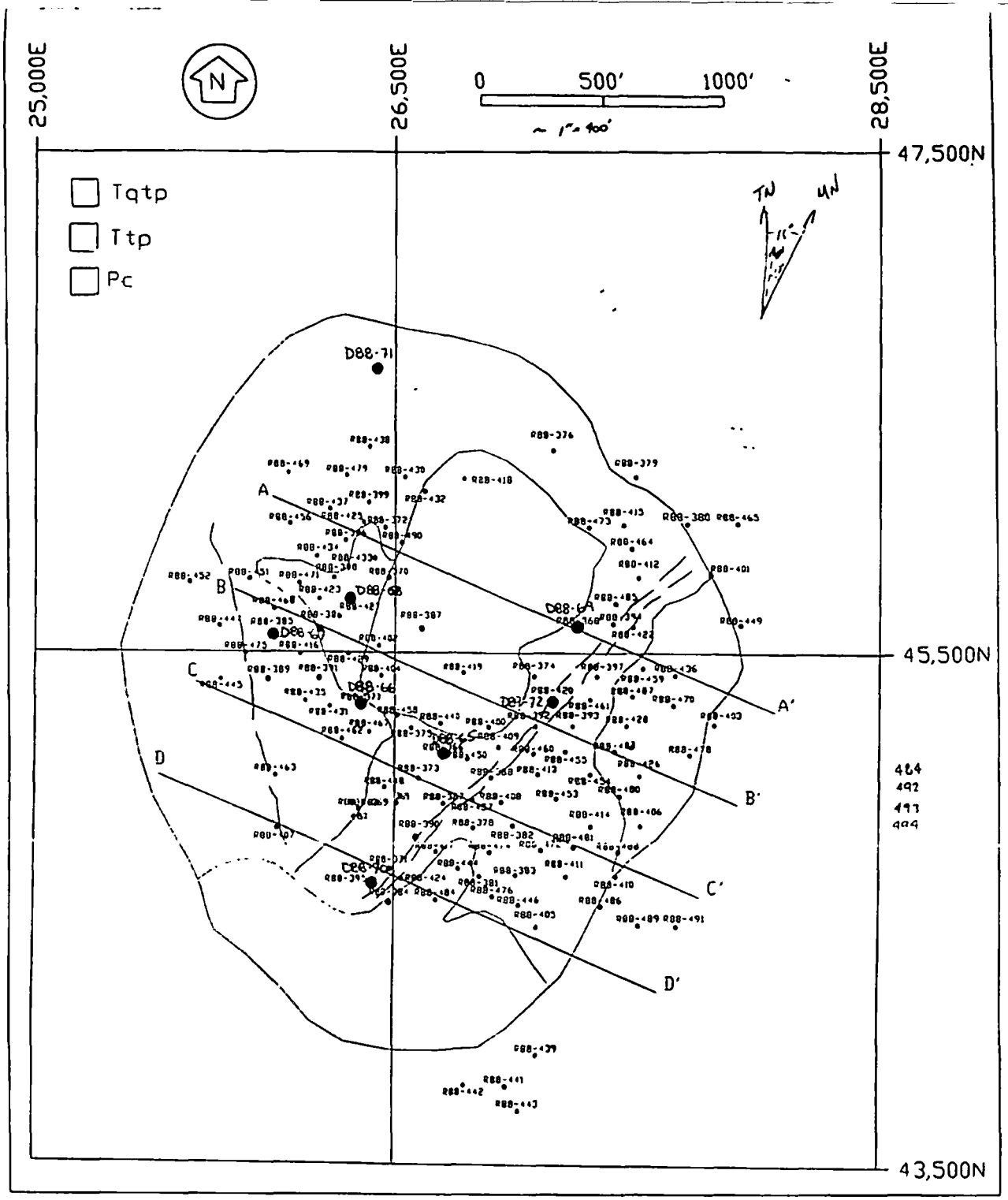
Calculated W.A.G. above 5000' elevation: 20.5 ft. @ 0.0289

Calculated W.A.G. below 5000' elevation: 14.3 ft. @ 0.0275

Hole #	Box #	Interval sampled		Ore code	Actual wt.(lbs.)	Grade
D88-65	41	152.4-153.1	.7'	1	14	.025
	33	214.8-215.6	.8'	1	6	.034
	32	223.4-223.8	.4'	1	6	.026
			1.9'		26 lbs.	
D88-66	24	84.1-84.8	.7'	1	10	.034
	20	117.7-118.0	.3'	1	10	.031
	18	128.1-128.6	.5'	1	9	.028
	16	144.2-145.0	.8'	1	9	.025
	16	147.9-148.8	.9'	1	8	.025
	15	152.9-153.6	.7'	1	8.5	.032
	10	189.1-189.8	.7'	1	8	.027
	1	261.4-262.4	1'	1	8.5	.027
			5.6'		71 lbs.	
D88-67	32	218.9-219.9	1.0'	1	9	.035
	25	277.1-277.8	.7'	1	8.5	.032
	21	310.5-311.9	1.4'	1	12	.032
	19	325.0-326.0	1.0'	1	13	.025
	13	376.4-377.0	.6'	1	7	.030
	12	384.8-385.5	.7'	1	7	.025
	11	389.7-390.6	.9'	1	4	.026
	10	407.0-408.0	1.0'	1	13	.030
	7	425.7-426.4	.7'	1	5	.027
			9.1'		78.5 lbs.	
D88-68	19	597.3-598.2	.9'	1	11	.035
	3	473.5-474.1	.6'	1	19.5	.031
	11	535.3-536.2	.9'	1	15	.035
	14	553.5-554.1	.6'	1	8	.035
			6.2'		53.5 lbs.	
D88-69	2	587.0-587.9	.9'	1	10	.033
	2	590.6-591.3	.7'	1	10	.025
	3	598.1-598.7	.6'	1	12	.026
	8	656.0-657.0	1.0'	1	6	.032
	9	661.4-662.0	.6'	1	11	.025
	15	726.7-727.2	.5'	1	8	.034
	16	736.8-737.2	.4'	1	8	.025
	23	828.3-829.0	.7'	2	3	.031
	29	887.1-887.5	.4'	1	3	.034
	29	890.5-890.9	.4'	1	8	.026
			6.2'		79 lbs.	
D88-70	7	109.2-110.0	.8'	2	8	.027
	8	113.4-114.4	1.0'	2	5	.027
	8	118.9-121.0	2.1'	2	12	.027
	9	123.8-124.3	.5'	1	5	.025
			4.4'		30 lbs.	
D88-72	9	837.5-838.0	.5'	1	8.5	.027
	14	968.7-969.8	1.1'	1	13	.025
	14	976.4-977.0	.6'	1	9	.029
	15	988.8-989.5	.7'	1	7	.032
	16	993.6-994.0	.4'	1	8.5	.029
			3.3'		46 lbs.	

Vertical distribution of 6in. core samples with grades ≥ .025 ≤ .035 OPT Au





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GILT EDGE, SOUTH DAKOTA

NOVEMBER 3, 1988

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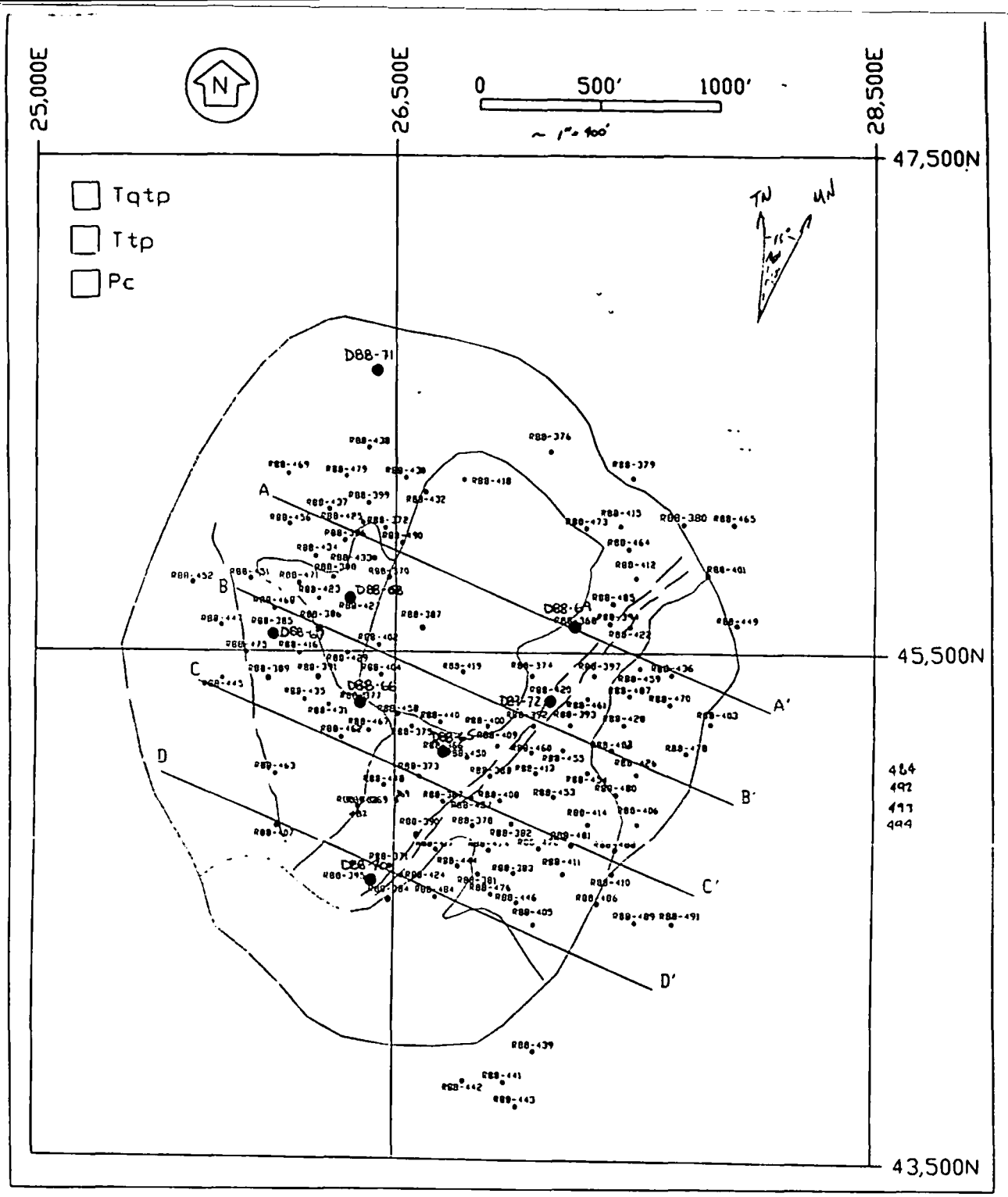

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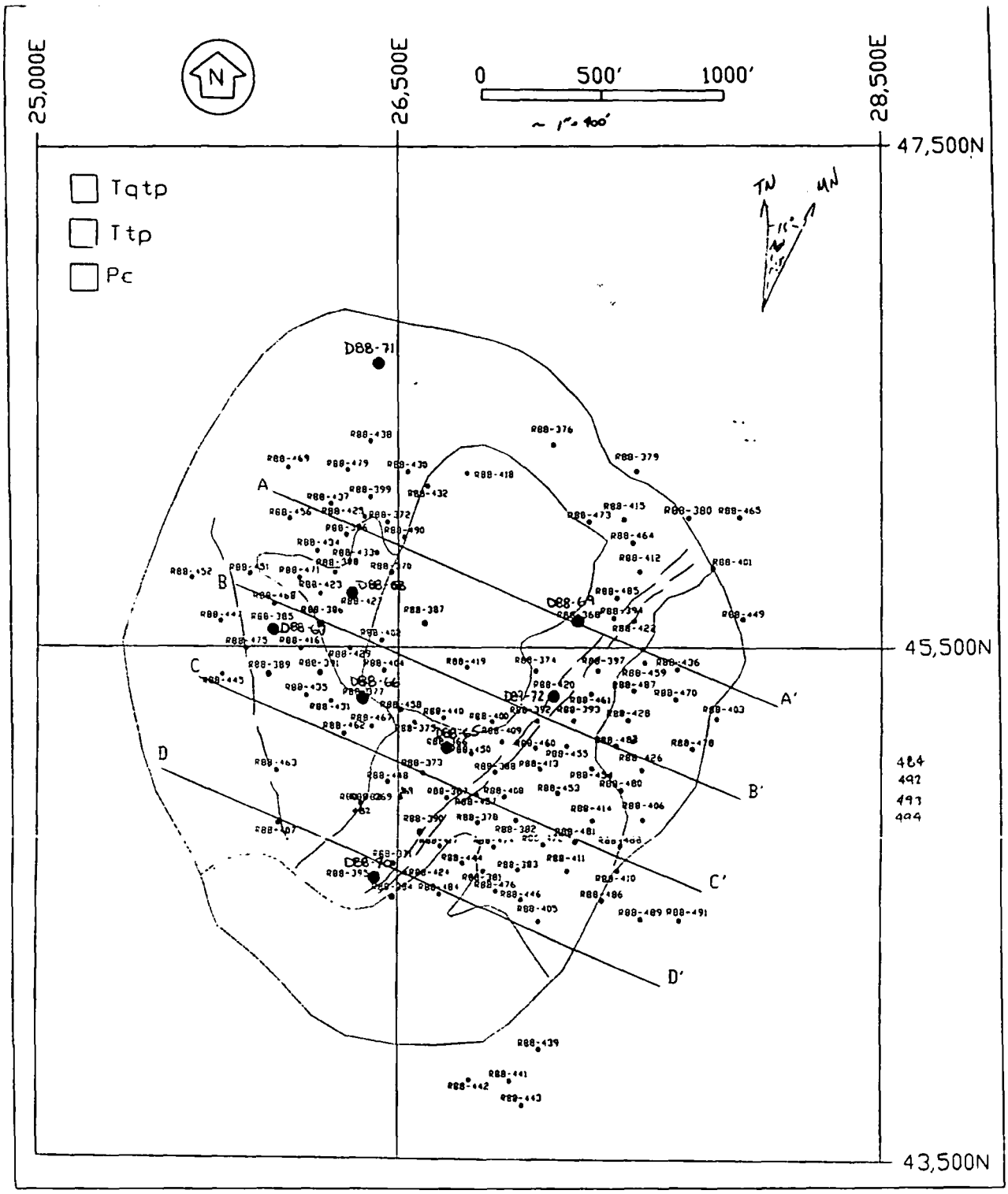
SUPPLIED TO BECHTEL 12/30/88 \GORDON



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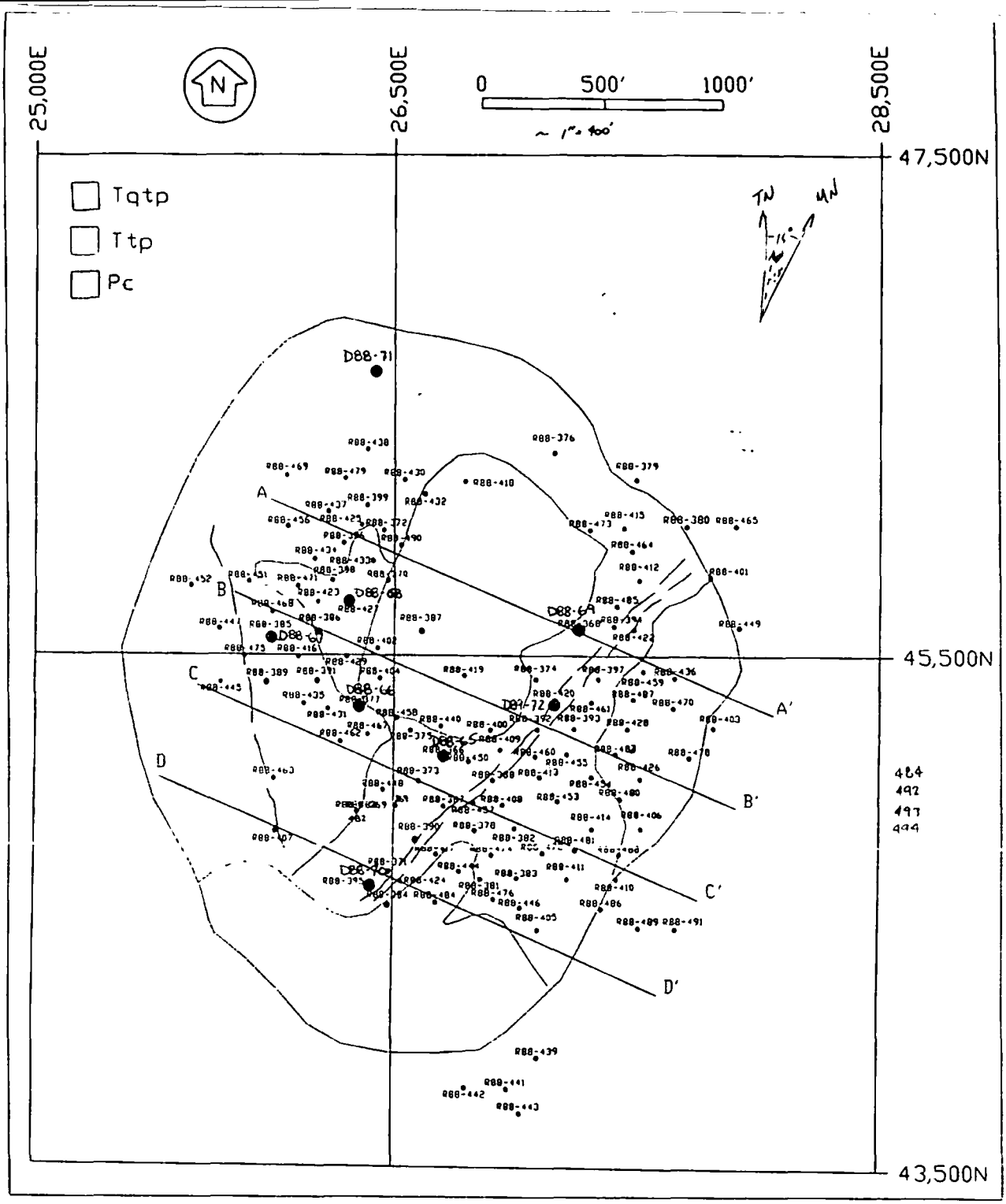

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	23	828.3-829.0	.7'	2	3	.031
	29	887.1-887.5	.4'	1	3	.034
	29	890.5-890.9	.4'	1	8	.026
			6.2'		79 lbs.	
D88-70	7	109.2-110.0	.8'	2	8	.027
	8	113.4-114.4	1.0'	2	5	.027
	8	118.9-121.0	2.1'	2	12	.027
	9	123.8-124.3	.5'	1	5	.025
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D88-72	9	837.5-838.0	.5'	1	8.5	.027
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	14	976.4-977.0	.6'	1	9	.029
	15	988.8-989.5	.7'	1	7	.032
	16	993.6-994.0	.4'	1	8.5	.029
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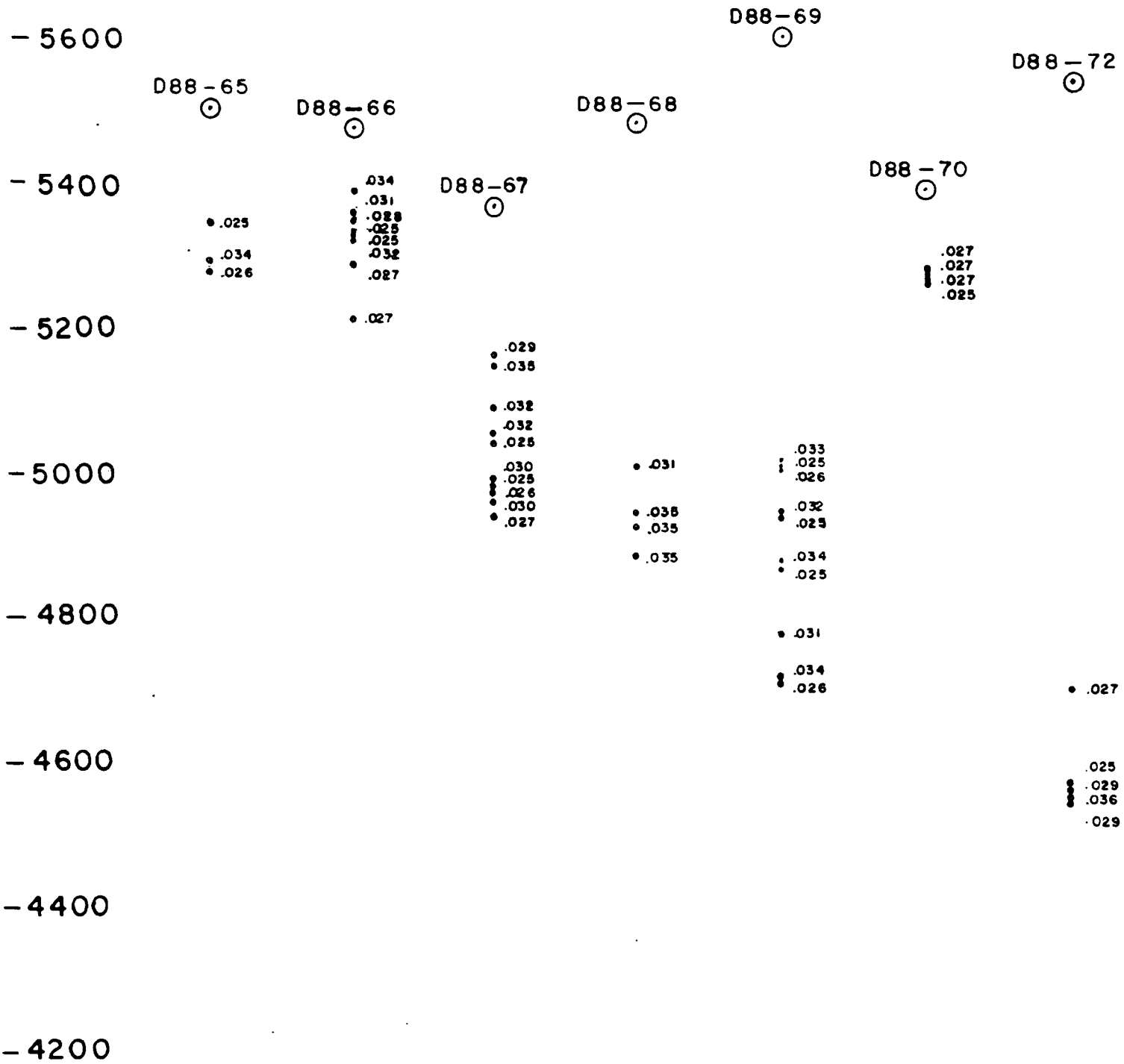


DATE: JANUARY 2, 1989

TO: DOUG STEWART

FROM: JIM BARRON

SUBJECT: INFORMATION SUPPLIED TO BECHTEL

During the past week we supplied the following geologic information to Messrs. K. Ashley and F. Tomerson of Bechtel:

1) Map 1; showing rotary drill hole locations from which samples were obtained for 1987 metallurgical testing (copy attached).
2) Map 2; showing core (2" - 2 1/2") hole locations from which samples were obtained for 1987 metallurgical testing (copy attached).
3) Map 3; showing rotary drill hole locations from which samples were obtained for 1988 metallurgical testing (copy attached).
4) Map 4; showing six-inch core hole locations (copy attached).
5) Map 5; showing all Brohm-drilled core hole locations (copy attached).
6) All assay comparison information pertaining to the 1987 core/rotary twin holes and for some 1988 rotary duplicate assays.
7) Typical core and rotary geologic logs.

During the visit, both Rod MacLoed and I spent several hours with Mr. Ashley in reviewing cross sections and in general, geologic discussions pertaining to geologic controls on gold mineralization at Gilt Edge. I believe he walked away with a good familiarization of Gilt Edge geology.

Jim

Jim Barron

JB/dvl

Attachments:

DATE: OCTOBER 17, 1988

TO: DOUG STEWART

FROM: JIM BARRON

SUBJECT: ROTARY CHIP METALLURGICAL SAMPLE

McClelland Labs received the samples shown on the attached list on Saturday, October 15, 1988.

In total, 197 samples were sent. Total sample weight was 990.9 pounds. The attached sample listing is divided into two grade categories, i.e., 513.3 pounds of sample having a weighted average grade (WAG) of 0.059 OPT Au, and 477.6 pounds having a WAG of 0.024 OPT Au. By combining both grade categories we would have a sample of 990.9 pounds having a WAG of 0.042 OPT Au.

I have instructed Gene McClelland to blend individually the "high-grade" (513.3 # @ .059) and the "low-grade" (477.6 # @ .024) groups of samples. This will be followed by combining one-half of each into a 495.4 pounds composite having a WAG of 0.042 OPT. The remaining 256.6 pounds of "high-grade" and 238.8 pounds of "low-grade" will be kept separate for possible future work, either individually or they can be later combined.

Jim

Jim Barron

JB/dvl

cc: Rex Outzen
Fred Lightner

Bondar-Clegg, Inc.
12980 West Cedar Dr.
Lakewood, Colorado
U.S.A. 80228
Phone: (303) 989-1404
Telex: 46-693

BONDAR-CLEGG

Geochemical Lab Report

HIGH GRADE MATERIAL					LOW GRADE MATERIAL				
HOLE #	INTERVAL	GRADE	LBS	GRADEXLBS	HOLE #	INTERVAL	GRADE	LBS	GRADEXLBS
R88-398	715-720	0.022	5.2	0.114	R88-366	145-150	0.020	0.9	0.018
	745-750	0.060	5.3	0.318		180-185	0.020	6.2	0.124
	775-780	0.055	6.0	0.330		200-205	0.024	7.2	0.173
						255-260	0.023	8.3	0.191
R88-402	260-265	0.046	3.0	0.138		265-270	0.021	7.7	0.162
	595-600	0.047	10.2	0.479					
	605-610	0.106	6.2	0.657	R88-367	570-575	0.020	3.7	0.074
	665-670	0.033	8.1	0.267		675-680	0.020	2.1	0.042
						800-805	0.020	3.9	0.078
NOT SENT R88-403	~~210-215~~	~~0.031~~	~~5.5~~	~~0.171~~		955-960	0.020	5.1	0.102
	~~225-230~~	~~0.088~~	~~7.4~~	~~0.651~~		1250-1255	0.020	3.1	0.062
R88-405	790-795	0.029	4.2	0.122	R88-371	535-540	0.025	6.6	0.165
						615-620	0.022	4.9	0.108
R88-408	385-390	0.060	6.4	0.384		665-670	0.020	4.5	0.090
	570-575	0.050	4.1	0.205		940-945	0.024	4.3	0.103
	710-715	0.040	12.1	0.484		1040-1045	0.023	3.2	0.074
						1200-1205	0.021	3.3	0.069
R88-409	400-405	0.031	4.7	0.146					
	435-440	0.183	8.5	1.556	R88-377	55-60	0.025	5.2	0.130
	555-560	0.046	4.9	0.225		215-220	0.020	2.9	0.058
	715-720	0.029	7.2	0.209		315-320	0.020	3.8	0.076
	775-780	0.044	3.9	0.172		475-480	0.020	5.6	0.112
	830-835	0.173	8.9	1.540		615-620	0.021	8.9	0.187
						670-675	0.022	6.2	0.136
R88-411	330-335	0.038	1.9	0.072		845-850	0.021	6.6	0.139
	425-430	0.034	3.7	0.126					
	440-445	0.122	5.0	0.610	R88-398	90-95	0.020	7.9	0.158
	465-470	0.022	5.3	0.117		100-105	0.022	6.8	0.150
R88-412	140-145	0.039	3.5	0.137	R88-399	410-415	0.021	10.8	0.227
	300-305	0.068	3.5	0.238		415-420	0.025	10.9	0.273
	355-360	0.046	3.7	0.170		445-450	0.022	7.6	0.167
	525-530	0.045	3.9	0.176					
	805-810	0.051	4.6	0.235	R88-400	420-425	0.024	1.7	0.041
	930-935	0.229	5.7	1.305		430-435	0.024	3.8	0.091
						760-765	0.023	5.0	0.115
R88-415	1010-1015	0.038	6.5	0.247		850-855	0.020	5.2	0.104
						1065-1070	0.020	6.1	0.122
R88-416	175-180	0.043	5.1	0.219					
	240-245	0.041	5.3	0.217	R88-402	265-270	0.021	3.7	0.078
	790-795	0.059	8.3	0.490		325-330	0.022	2.8	0.062
R88-420	295-300	0.030	4.3	0.129	R88-405	680-685	0.020	4.2	0.084
	695-700	0.058	5.9	0.342		785-790	0.020	3.8	0.076
	750-755	0.032	7.0	0.224		855-860	0.023	2.6	0.060
	935-940	0.036	4.3	0.155		1005-1010	0.023	4.7	0.108
R88-422	220-225	0.039	6.0	0.234	R88-408	285-290	0.020	2.5	0.050

Bondar-Clegg, Inc.
12980 West Cedar Dr.
Lakewood, Colorado
U.S.A. 80228
Phone: (303) 989-1404
Telex: 45-693

BONDAR-CLEGG

Geochemical Lab Report

	430-435	0.081	2.8	0.227		330-335	0.025	5.9	0.148	
	530-535	0.045	3.4	0.153		390-395	0.023	3.4	0.078	
	600-605	0.041	2.9	0.119		410-415	0.022	2.7	0.059	
	670-675	0.200	2.4	0.480		415-420	0.024	3.3	0.079	
	710-715	0.028	1.1	0.031		420-425	0.023	3.4	0.078	
	770-775	0.032	2.4	0.077		425-430	0.025	2.7	0.068	
						430-435	0.020	5.1	0.102	
R88-423	435-440	0.042	6.8	0.286		530-535	0.022	1.8	0.040	
	515-520	0.038	7.7	0.293		1045-1050	0.021	7.2	0.151	
						1265-1270	0.022	8.2	0.180	
R88-424	250-255	0.042	5.6	0.235		1300-1305	0.022	5.0	0.110	
	325-330	0.042	5.7	0.239						
	1290-1295	0.042	7.7	0.323	R88-409	535-540	0.020	4.8	0.096	
	1385-1390	0.054	3.1	0.167		550-555	0.022	5.2	0.114	
	1425-1430	0.046	2.9	0.133		840-845	0.025	3.6	0.090	
						855-860	0.020	5.7	0.114	
R88-425	385-390	0.096	11.0	1.056		1150-1155	0.020	4.9	0.098	
R88-427	110-115	0.048	3.6	0.173	R88-412	85-90	0.021	3.1	0.065	
	140-145	0.073	4.3	0.314		95-100	0.023	4.1	0.094	
	180-185	0.052	2.5	0.130		110-115	0.022	2.8	0.062	4.8#
	240-245	0.099	4.5	0.446		275-280	0.023	2.8	0.064	
	375-380	0.064	4.8	0.307		505-510	0.022	2.0	0.044	
	475-480	0.043	10.7	0.460		530-535	0.021	3.2	0.067	
	1135-1140	0.036	6.6	0.238		635-640	0.021	7.3	0.153	
						940-945	0.022	5.4	0.119	
R88-429	45-50	0.043	4.8	0.206		1070-1075	0.025	3.4	0.085	
	145-150	0.045	4.0	0.180						4.9#
	295-300	0.034	3.0	0.102	R88-413	450-455	0.020	7.4	0.148	
	405-410	0.023	2.0	0.046		455-460	0.020	6.2	0.124	
	470-475	0.050	3.0	0.150		475-480	0.022	4.5	0.099	NOT SENT, REPLACED with
	670-675	0.044	9.1	0.400		~~645-650~~	~~0.021~~	~~6.4~~	~~0.134~~	640-645 .025 / 5.7#
	755-760	0.067	8.7	0.583		735-740	0.021	7.4	0.155	
						870-875	0.022	7.4	0.163	
R88-392	495-500	0.049	4.0	0.196						
	595-600	0.034	2.8	0.095	R88-416	250-255	0.020	3.8	0.076	
	715-720	0.041	6.7	0.275		315-320	0.022	6.4	0.141	
						350-355	0.020	4.8	0.096	
R88-368	415-420	0.056	8.3	0.465		425-430	0.020	4.9	0.098	
	425-430	0.036	5.9	0.212		535-540	0.024	2.4	0.058	+ 4.5#
	495-500	0.028	9.3	0.260		625-630	0.023	2.0	0.058	+4.0#
	630-635	0.043	8.2	0.353		720-725	0.023	1.3	0.030	weights
	720-725	0.217	8.7	1.888		1005-1010	0.021	3.0	0.063	SAMPLES, combined
	865-870	0.052	2.6	0.135		1180-1185	0.023	1.9	0.044	+3.0#
	1190-1195	0.048	9.5	0.456						
	1430-1435	0.064	1.8	0.115	R88-423	280-285	0.023	3.6	0.083	
						505-510	0.022	6.4	0.141	
R88-366	90-95	0.053	8.0	0.424		755-760	0.020	6.8	0.136	
	195-200	0.025	9.0	0.225						
	310-315	0.044	8.5	0.374	R88-424	375-380	0.024	5.7	0.137	
						825-830	0.023	4.8	0.110	
R88-369	450-455	0.034	8.7	0.296		840-845	0.020	6.8	0.136	
	550-555	0.024	2.4	0.058		920-925	0.021	3.2	0.067	

Bondar-Clegg, Inc.
12980 West Cedar Dr.
Lakewood, Colorado
U.S.A. 80228
Phone: (303) 989-1404
Telex: 45-693

BONDAR-CLEGG

Geochemical Lab Report

	640-645	0.102	6.0	0.612
	810-815	0.054	2.9	0.157
	1285-1290	0.024	2.5	0.060
R88-371	660-665	0.044	1.1	0.048
	775-780	0.087	3.9	0.339
	1070-1075	0.035	6.8	0.238
	1205-1210	0.040	4.0	0.160
R88-367	485-490	0.055	4.0	0.220
	605-610	0.045	3.5	0.158
	795-800	0.095	4.0	0.380
	1040-1045	0.040	3.3	0.132
	1200-1205	0.065	4.1	0.267
	1395-1400	0.025	2.8	0.070
R88-377	130-135	0.050	4.0	0.200
	265-270	0.035	3.9	0.137
	485-490	0.062	6.0	0.372
	565-570	0.055	4.7	0.259
	750-755	0.032	2.9	0.093
		~~400~~ 98	~~523.2~~ 513.3	~~30.0907~~ 30.0338
	AVG GRADE			~~0.059~~ .0585
			513.3	.059

2.9#

	1035-1040	0.020	5.3	0.106
	1160-1165	0.020	4.4	0.088
	1300-1305	0.020	6.8	0.136
R88-427	925-930	0.023	3.2	0.074
	1185-1190	0.021	2.9	0.061
R88-429	135-140	0.022	4.1	0.090
	175-180	0.021	4.2	0.088
	275-280	0.022	3.3	0.073
	360-365	0.023	3.6	0.083
	365-370	0.020	2.8	0.056
	375-380	0.020	2.1	0.042
	410-415	0.020	3.3	0.066
		99	~~484.9~~ 477.6	~~10.0548~~ .024
	AVERAGE GRADE			~~0.022~~ .0244

116551

COMBINED WEIGHT ~~992.1~~ 990.9

COMBINED AVG GRADE ~~0.041~~ .042

1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM SUMMARY (Revised 10-28-88)

Drill Hole	Driller	North	East	Elevation	TD
R88-366	Lang	45092	26698	5507.3	1385
R88-367	Lang	44900	26700	5480.0	1500
R88-368	Tonto	45595	27430	56230	1455
R88-369	Lang	44873.3	26503.5		1320
R88-370	Tonto	45803.5	26499.1	5578.2	1470
R88-371	Lang	44651.8	26492.39	5419.9	1320
R88-372	Tonto	46000.0	26560.0	5585.0	1055
R88-373	Lang	44984.8	26588.4	5455.0	1360
R88-374	Tonto	45416.0	27074.0	5628.0	1305
R88-375	Lang	45204.6	26571.5	5516.7	1415
R88-376	Lang	46275.3	27158.7	5559.6	1005
R88-377	Lang	45309.0	26350.0	5479.0	1305
R88-378	Tonto	44795.7	26821.2	5526.3	1210
R88-379	Davis	46192.17	27492.76	5567.0	800
R88-380	Davis	46004.36	27698.57	5578.0	400
R88-381	Davis	44596.27	26855.42	5555.2	830
R88-382	Davis	44805.16	26987.14	5579.3	1165
R88-383	Davis	44606.83	26995.68	5572.2	1380

1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM SUMMARY

Drill Hole	Driller	North	East	Elevation	TD
R88-384	Davis	44501.30	26468.40	5445.19	600
R88-385	Tonto	45578.1	25988.1	5373.8	1000
R88-386	Tonto	45600.8	26182.5	5453.3	925
R88-387	Tonto	45597.6	26612.6	5620.8	1265
R88-388	Tonto	44997.4	26870.1	5705.3	1350
R88-389	Tonto	45397.8	25967.5	5367.98	760
R88-390	Davis	44,751.8	26,574.7	5429.7	1275
R88-391	Tonto	45402.06	26176.77	5429.3	1145
R88-392	Tonto	45,200	27,080.5	5599.0	1325
R88-393	Tonto	45199.7	27229.3	5600.6	1230
R88-394	Tonto	45610	27395	5600	1165
R88-395	Davis	44575.7	26395.1	5395.6	715
R88-396	Tonto	45948.6	26293.5	5472.6	725
R88-397	Davis	45400.2	27330.9	5598.6	1130
R88-398	Tonto	45801.3	26236.8	5472.9	1200
R88-399	Tonto	46100.3	26391.2	5499.0	1185
R88-400	Lang	45205.5	26894.9	5578.7	1305
R88-401	Davis	45800	127790	5535	1040

1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM SUMMARY

Drill Hole	Driller	North	East	Elevation	TD
R88-402	Tonto	45532.8	26431.8	5557.3	1330
R88-403	Davis	45210.2	27778.5	5454.1	790
R88-404	Tonto	45410.4	26443.8	5542.5	1450
R88-405	Lang	44405.8	27079.3	5558.9	1125
R88-406	Davis	44795.7	27482.9	5444.2	700
R88-407	Tonto	44870.4	26039.3	5329.9	540
R88-408	Tonto	44904.9	26944.9	5561.1	1305
R88-409	Lang	45122.2	26928.9	5580.8	1400
R88-410	Davis	44607.0	27373.6	5436.5	720
R88-411	Davis	44622.5	27196.4	5505.8	1065
R88-412	Lang	45792.6	27504.7	5596.4	1265
R88-413	Tonto	45006.2	27086.7	5580.2	1135
R88-414	Davis	44805.9	27289.4	5512.2	1015
R88-415	Lang	46001.9	27444.6	5593.6	1120
R88-416	Lang	45514.15	26114.38	5422.6	1390
R88-417	Tonto	44704.8	26670.8	5472.4	1350
R88-418	Lang	46193.5	26803.5	5525.8	1000
R88-419	Tonto	45423.9	26793.2	5581.1	800

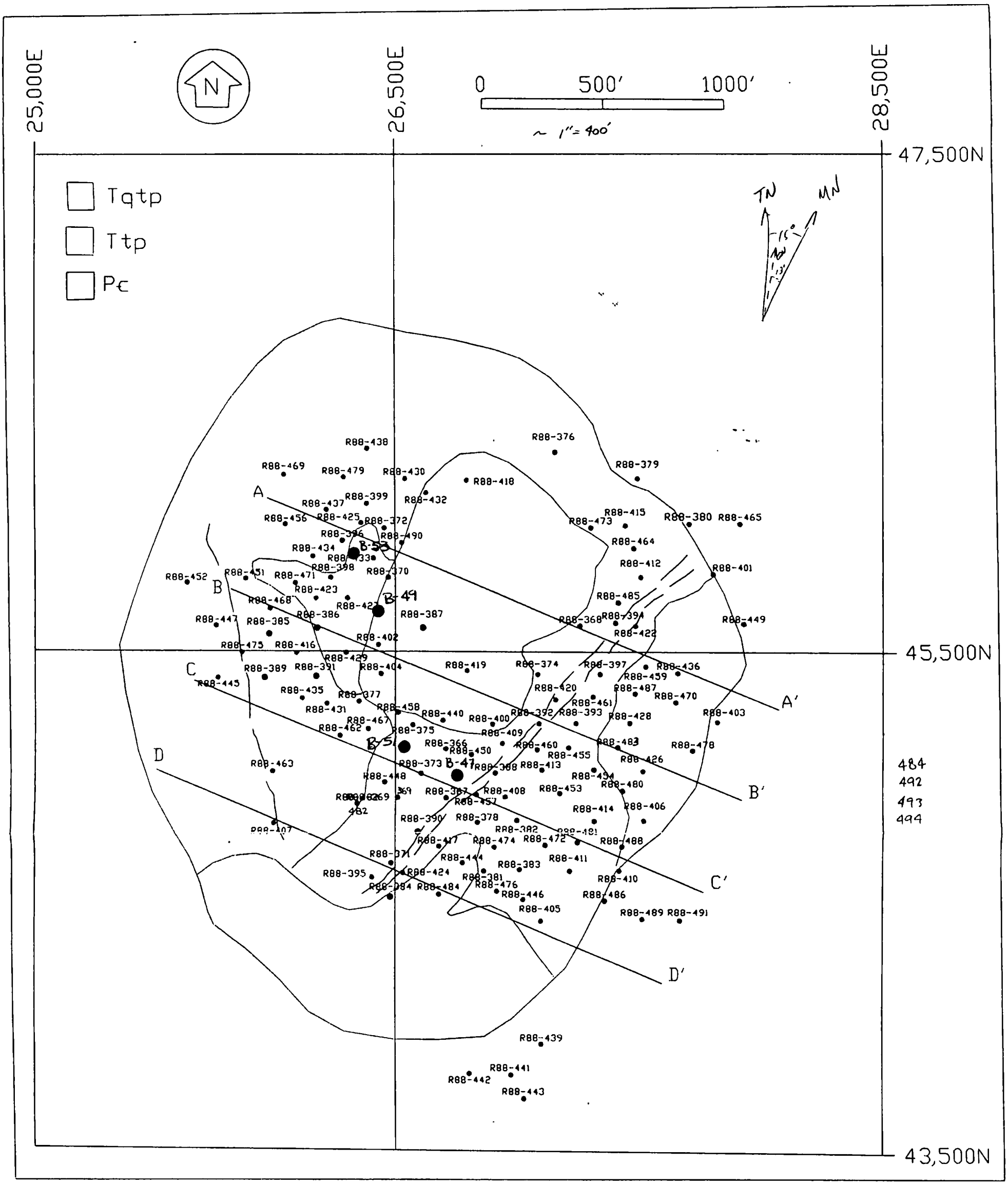
1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM SUMMARY

Drill Hole	Driller	North	East	Elevation	TD
R88-420	Lang	45300.7	27146.9	5579.7	1180
R88-421	Tonto	46214.58	26058.87	5447.6	85
R88-422	Lang	44876.06	26577.12	5430.0	845
R88-423	Tonto	45703.66	26183.13	5451.9	905
R88-424	Lang	44601.01	26524.11	5440.6	460
R88-425	Tonto	46040.57	26375.21	5493.0	905
R88-426	Davis	44993.59	27490.43	5501.9	820
R88-427	Tonto	45775.68	26308.63	5487.7	1225
R88-428	Davis	45198.5	27458.1	5527.6	995
R88-429	Lang	45504.71	26253.64	5429.4	1190
R88-430	Tonto	46218.38	26546.26	5533.4	600
R88-431	Lang	45293.92	26216.55	5427.3	1200
R88-432	Tonto	46102.58	26652.78	5573.1	750
R88-433	Tonto	45877.47	26415.34	5530.6	675
R88-434	Lang	45886.78	26169.57	5435.5	700
R88-435	Tonto	45312.27	26120.38	5394.7	580
R88-436	Davis	45400.8	27644.4	5527.9	1020
R88-437	Lang	46075.97	26228.26	5438.6	700

DON'T INCLUDE IN TOTALS FOR FOOTAGE OR # OF D.H.'S

1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM SUMMARY

Drill Hole	Driller	North	East	Elevation	TD
R88-438	Lang	46322.86	26396.28	5463.5	525
R88-439	Tonto	43903.68	27075.96	5463.1	605
R88-440	Lang	45217.3	26689.2	5557.4	1600
R88-441	Tonto	43779.57	26952.45	5474.3	245
R88-442	Tonto	43786.39	26782.60	5451.6	445
R88-443	Tonto	43686.07	27002.61	5426.0	660
R88-444	Davis	44635.8	26762.7	5511.2	1200
R88-445	Tonto	45399.04	25778.45	5345.5	545
R88-446	Lang	44489.2	27008.97	5559.7	1000
R88-447	Tonto	45613.81	25772.62	5349.1	785
R88-448	Davis	44965.49	26450.43	5414.5	1000
R88-449	Lang	45600.7	26911.2	5601.8	600
R88-450	Lang	45075.0	26803.3	5539.0	1125 ~~1000~~
R88-451	Tonto	45799.36	25896.78	5363.5	~~1100~~ 860
R88-452	Tonto	45785.25	25655.65	5371.1	365
R88-453	Lang	44913.3	27162.2	5559.1	820
R88-454	Tonto	45000.1	27300.5	5559.3	800
R88-455	Lang	45099.7	27200.4	5559.3	785



CURRENT STATUS - 1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM

GILT EDGE, SOUTH DAKOTA

NOVEMBER 3, 1988

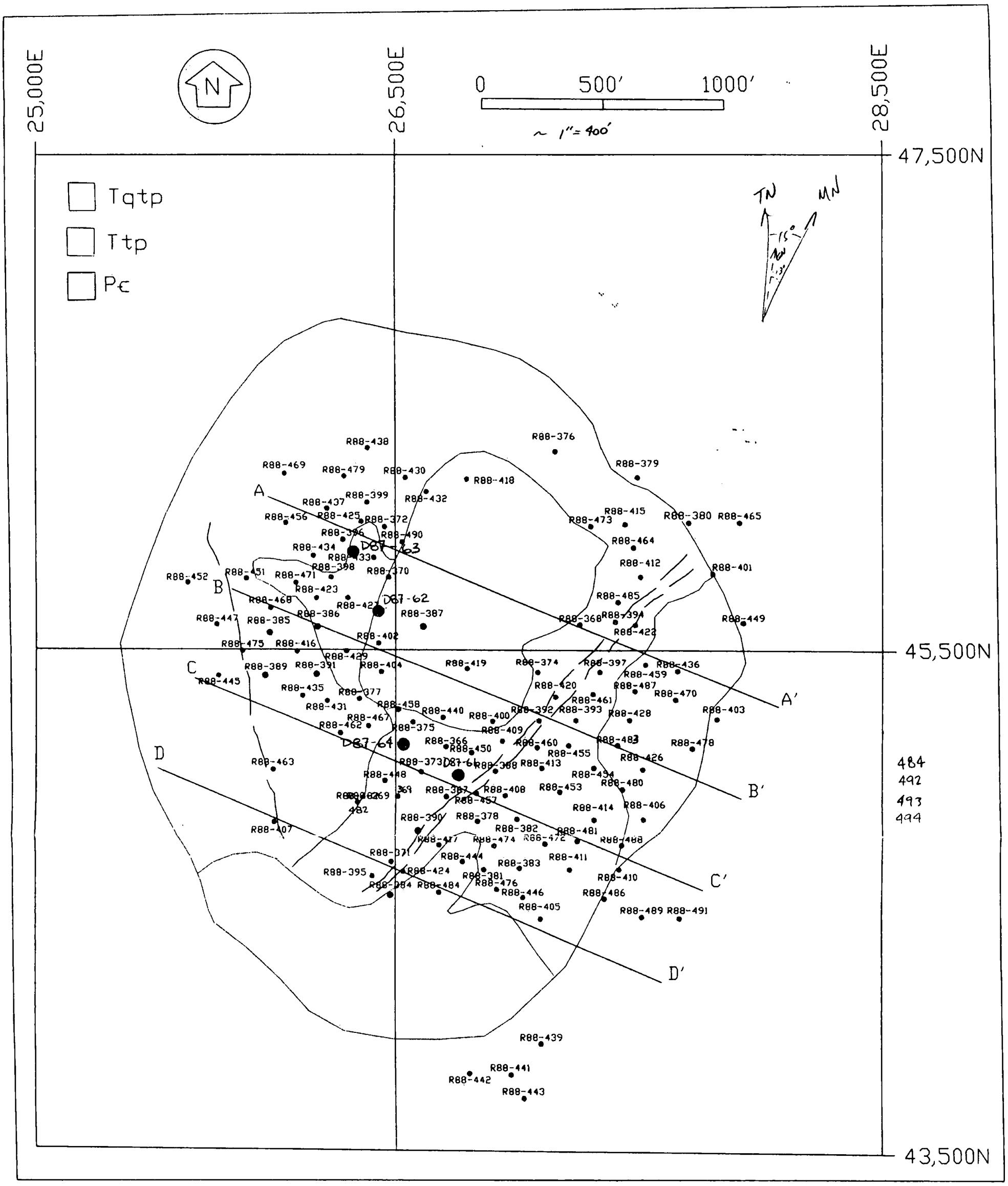
MAP 1

1987 ROTARY* DRILL SAMPLE LOCATIONS FOR MET TEST WORK

DRILL HOLE #	COLLAR ELEVATION	DRILL DEPTH	FINAL ELEVATION
B-47 (R87-350)	5502.0'	765'	4737'
B-49 (R87-352)	5558.2'	600'	4958.2'
B-51 (R87-354)	5453.8'	365'	5088.8'
B-53 (R87-356)	5483.4'	400'	5083.4'

* REVERSE-CIRCULATION AIR ROTARY METHOD — ALL WERE VERTICAL

SUPPLIED TO BECHTEL 12/30/88 J. BARRON



CURRENT STATUS - 1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM

GILT EDGE, SOUTH DAKOTA

NOVEMBER 3, 1988

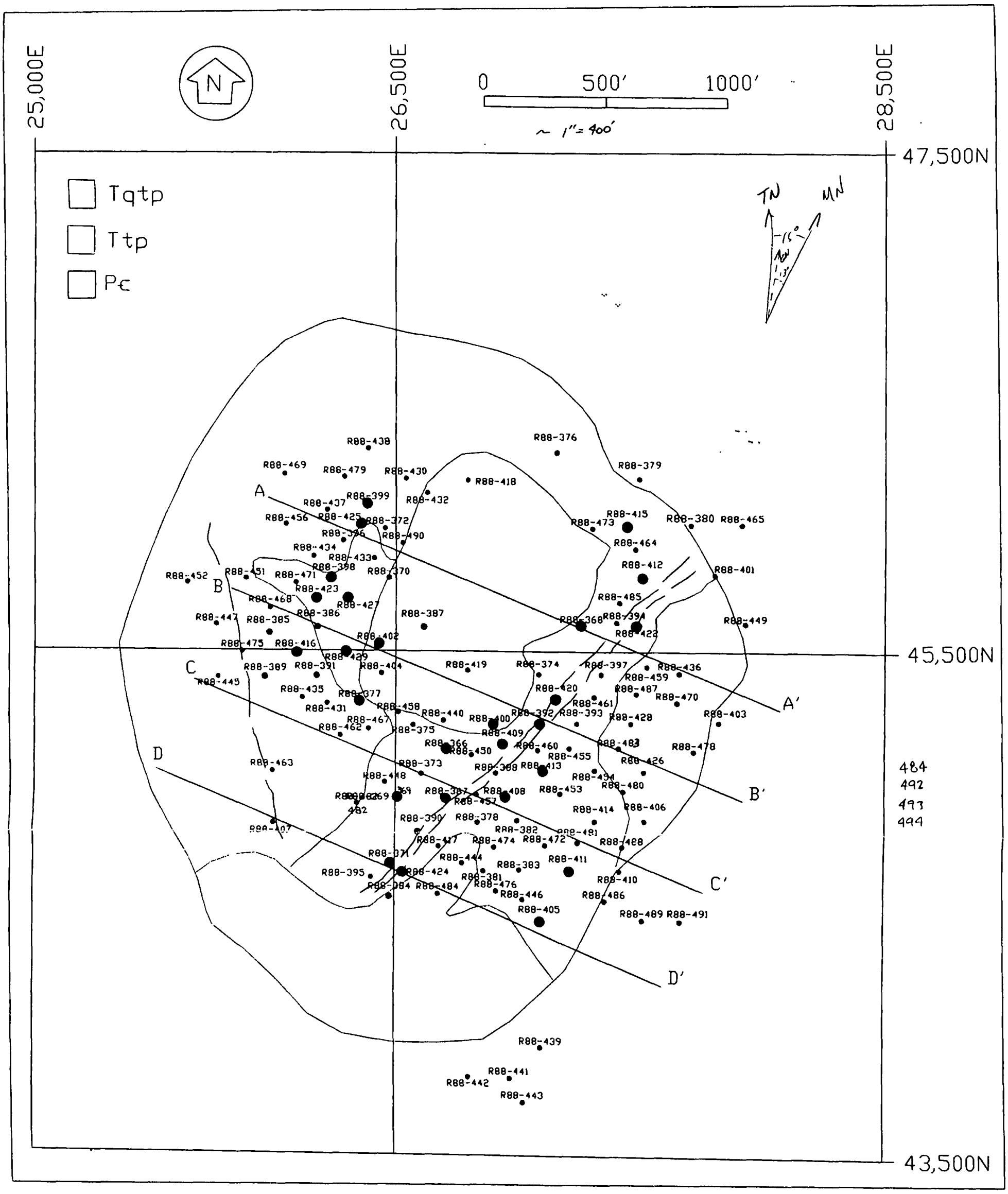
MAP 2

1987 CORE* HOLE LOCATIONS FOR MET TEST WORK

CORE HOLE #	ROTARY HOLE TWIN	COLLAR ELEVATION	CORE DEPTH	FINAL ELEVATION
D87-61	B-47 (R87-350)	5502.2'	602'	4900.2'
D87-62	B-49 (R87-352)	5560.3'	600'	4960.3'
D87-63	B-53 (R87-356)	5483.6'	600'	4883.6'
D87-64	B-51 (R87-354)	5454.3'	600'	4854.3'

SUPPLIED TO BECHTEL 12/30/88 J. BARRON

* CORE SIZE (DIAM.) IS 2"-2.5" (NQ-HQ) - ALL WERE VERTICAL & WITHIN 12' OF ROTARY TWIN



CURRENT STATUS - 1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM

GILT EDGE, SOUTH DAKOTA

NOVEMBER 3, 1988

MAP 3

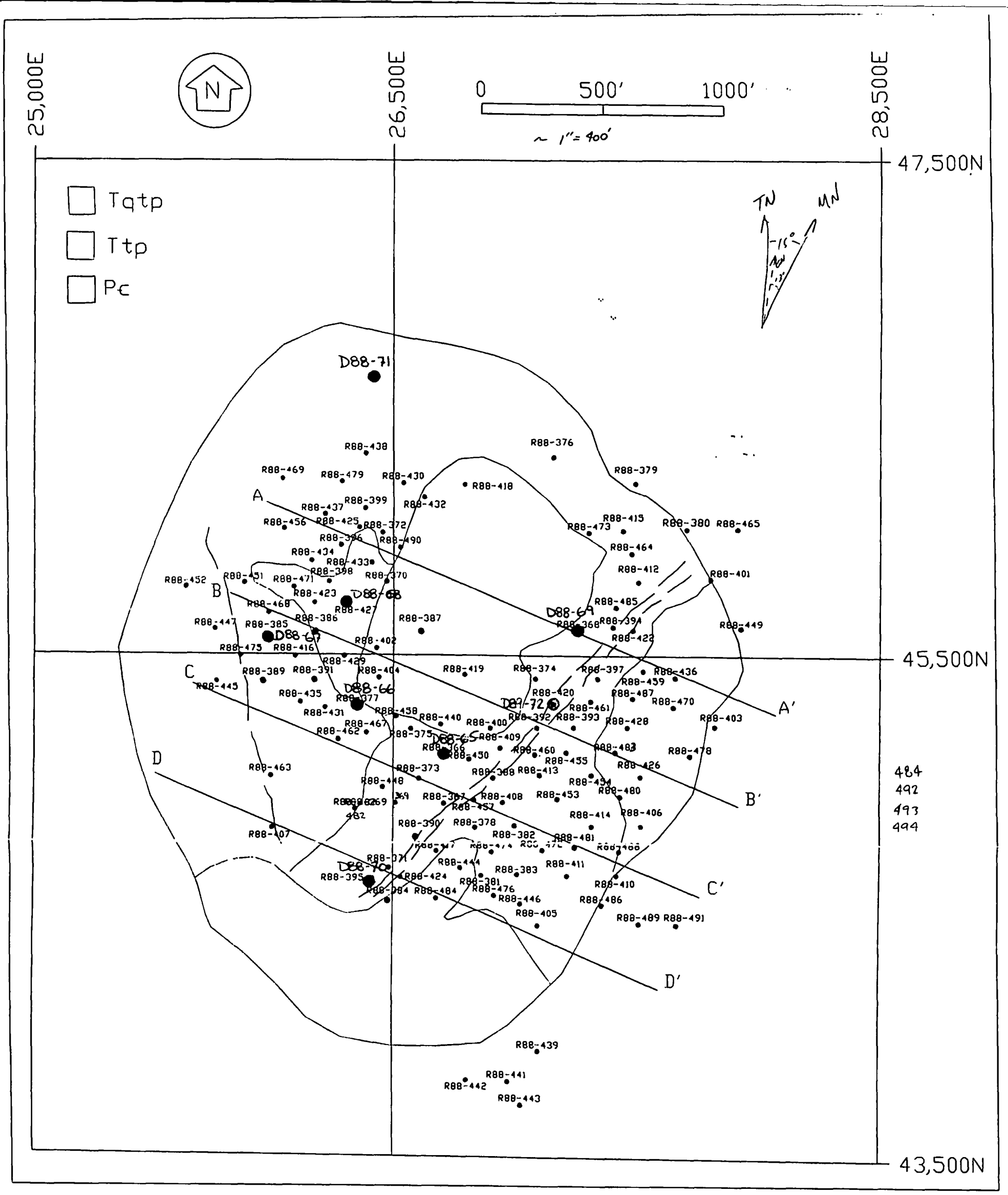
1988 ROTARY* DRILL HOLE LOCATIONS FOR MET TEST WORK PERFORMED BY McCLELLAND LABS. ALL SAMPLES ARE OF THE MAJOR ORE HOST ROCK (TRACHYTE PORPHYRY).

SEE ATTACHED INFORMATION FOR SAMPLE DATA DETAILS.

SUPPLIED TO BECHTEL 12/30/88

J. BARRON

* ROTARY = REVERSE-CIRCULATION AIR ROTARY



CURRENT STATUS - 1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM

GILT EDGE, SOUTH DAKOTA

NOVEMBER 3, 1988

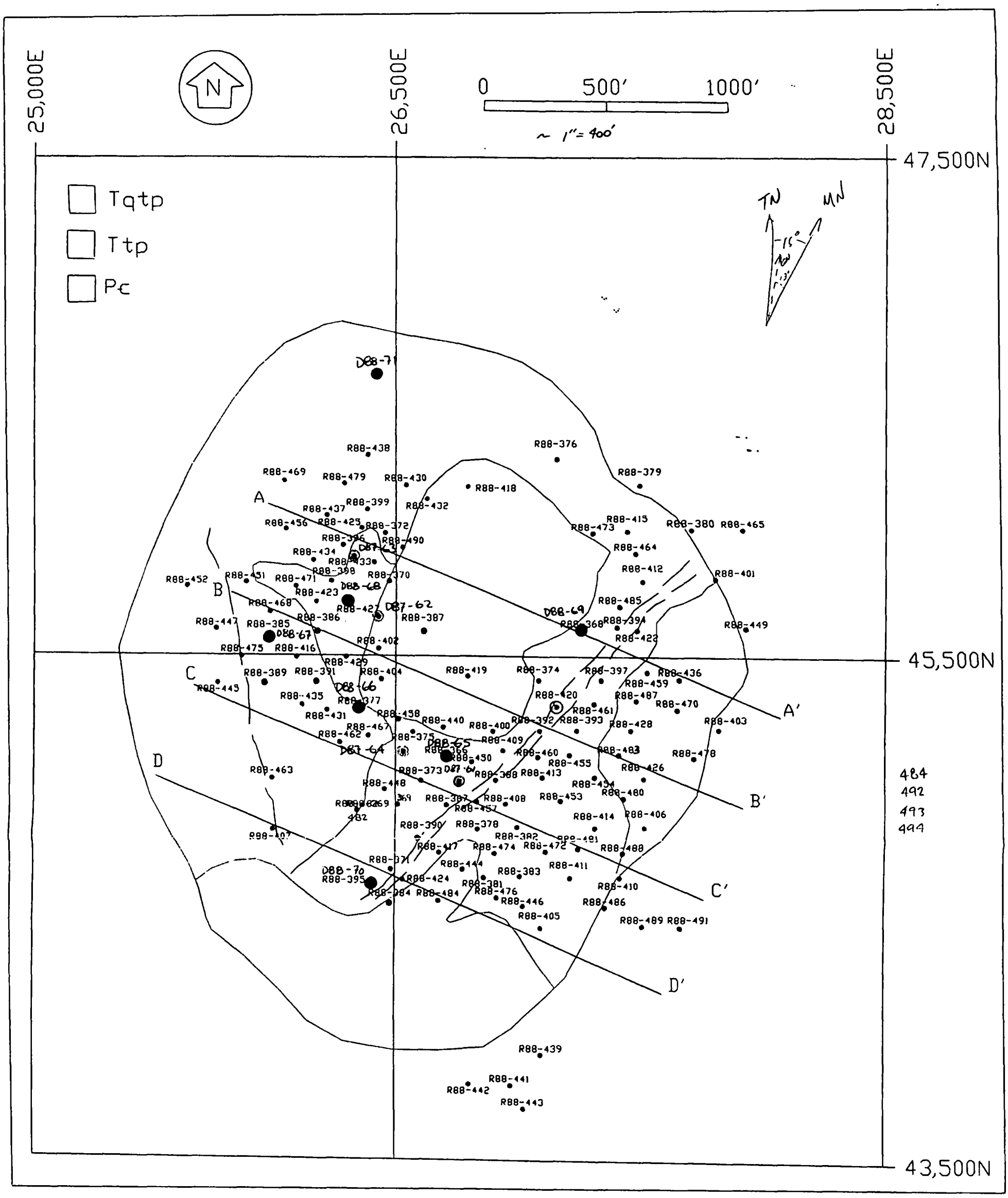
MAP 4

1988 SIX-INCH CORE HOLE LOCATIONS

- ● D88-65 CORE HOLE LOCATION, CORE READY FOR SHIPMENT
- ⊗ D89-72 PROPOSED CORE HOLE LOCATION

(SEE ATTACHED LISTING FOR CORE INTERVAL ELEVATIONS FOR EACH 6" CORE HOLE)

SUPPLIED TO BECHTEL 12/30/88
J. BARRON



CURRENT STATUS - 1988 SULPHIDE DEVELOPMENT DRILLING PROGRAM

GILT EDGE, SOUTH DAKOTA

NOVEMBER 3, 1988

MAP 5

1987 AND 1988 CORE HOLE LOCATION FOR MET TEST WORK

- ● 1987 2"-2.5" CORE HOLE LOCATION
- ● 1988 6" CORE HOLE LOCATION
- ⊙ PROPOSED 1989 6" CORE HOLE LOCATION

SUPPLIED TO
BECHTEL 12/30/88
J.N. BARRON

HAZEN

Hazen Research, Inc.
4601 Indiana St. • Golden, Colo. 80403
Tel: (303) 279-4501 • Telex 45-860

FAX TRANSMITTAL

No. 12357

Date: 10-12-89

Time: 5:19

No. Pages: 2 + notice

Charge: 7245

To:

MR. DAN BLAKEMAN	MR. FRANK TOMERSON
BROHM MINING	BECHTEL
DEADWOOD, S.D.	SAN FRANCISCO
1-605-578-1709	1-415-768-3378

FAX Number:

From: Doug Shaw
HAZEN RESEARCH, INC.
(303) 278-1528 Cannon FAX 230

Message: ATTACHED ARE FIRE ASSAYS OF FOUR HEAD SPLITS FROM EACH OF THE NINE DRUMS OF GILT EDGE 6-INCH CORE SAMPLES. THE ASSAY AGREEMENTS FOR THE REPLICATE HEAD SPLITS ARE GOOD FOR MOST OF THE SAMPLES.
I LOOK FORWARD TO RECEIVING YOUR INSTRUCTIONS FOR COMPOSITING.
REGARDS, D. SHAW

IF YOU DO NOT RECEIVE ALL PAGES, PLEASE PHONE AS SOON AS POSSIBLE.

Sample Description	#	MATX.	EST. OUR of Au	IDEN.				OZ/TON	AU	AG	
~~43347-1A~~ RUN 1		[illegible]	.046	1	14.58	2.498	2.553	.026	.052	.13	
B		[illegible]		2	14.58	2.498	2.468	.03	.060	<.02	.066
C		[illegible]		3	14.58	2.498	2.554	.037	.074	.11	
D		[illegible]		4	14.58	2.498	2.549	.039	.078	.10	
~~43347-2A~~ RUN 2		[illegible]	.043	5	14.58	2.498	2.612	.022	.044	.26	
B		[illegible]		6	14.58	2.498	2.59	.021	.042	.22	.044
C		[illegible]		7	14.58	2.498	2.658	.024	.048	.35	
D		[illegible]		8	14.58	2.498	2.558	.02	.040	.15	
~~43347-3A~~ RUN 3		[illegible]	.079	9	14.58	2.498	2.609	.039	.078	.22	
B		[illegible]		10	14.58	2.498	2.49	.037	.074	<.02	.074
C		[illegible]		11	14.58	2.498	2.569	.035	.070	.15	
D		[illegible]		12	14.58	2.498	2.58	.037	.074	.16	
~~43347-4A~~ RUN 4		[illegible]	.032	13	14.58	2.498	2.551	.019	.038	.14	
B		[illegible]		14	14.58	2.498	2.508	.02	.040	.05	.041
C		[illegible]		15	14.58	2.498	2.538	.018	.036	.12	
D		[illegible]		16	14.58	2.498	2.609	.025	.050	.25	
~~43347-5A~~ RUN 5		[illegible]	.056	17	14.58	2.498	2.421	.028	.056	<.02	
B		[illegible]		18	14.58	2.498	2.54	.027	.054	.10	.054
C		[illegible]		19	14.58	2.498	2.524	.028	.056	.07	
D		[illegible]		20	14.58	2.498	2.549	.025	.050	.13	

Special Instructions:

Please identify hazardous sample components:

Area 1 2% SULFUR....BY THURS PM PLEASE....36 TOTAL SAMPLES FOR AUAG

Sample Description	#	MATX.	EST.	IDEN.				OZ/TON	AU	AG	
43347-6A			.042	21	14.58	2.498	2.527	.025	.050	.08	
Drum 6 B				22	14.58	2.498	2.538	.024	.048	.11	.052
C				23	14.58	2.498	2.543	.026	.052	.11	
D				24	14.58	2.498	2.529	.028	.056	.08	
43347-7A			.049	25	14.58	2.498	2.599	.021	.042	.24	
Drum 7 B				26	14.58	2.498	2.647	.029	.058	.32	
C				27	14.58	2.498	2.647	.028	.056	.32	.050
D				28	14.58	2.498	2.556	.022	.044	.15	
43347-8A			.056	29	14.58	2.498	2.564	.024	.048	.16	
Drum 8 B				30	14.58	2.498	2.554	.023	.046	.14	.050
C				31	14.58	2.498	2.539	.022	.044	.11	
D				32	14.58	2.498	2.546	.03	.060	.11	
43347-9A			.061	33	14.58	2.498	2.914	.024	.048	.86	
Drum 9 B				34	14.58	2.498	2.626	.025	.050	.28	.051
C				35	14.58	2.498	2.615	.028	.056	.25	
D				36	14.58	2.498	2.591	.025	.050	.21	
				1R	14.58	2.498	2.512	.03	.060	.04	
				19R	14.58	2.498	2.539	.035	.070	.09	
				31R	14.58	2.498	2.683	.029	.058	.39	
					. . . . . NO RESULT						
				STD	14.58	2.498	3.864	.03	.060	2.75	

Special Instructions: Please identify hazardous sample components:

Area 1 2% SULFUR....BY THURS PM PLEASE....36 TOTAL SAMPLES FOR AUAG

Overall

.050 (ours)

.054 (Theirs)

DATE: SEPTEMBER 14, 1989

TO: DAN BLAKEMAN

FROM: JIM BARRON

SUBJECT: 6-INCH CORE SENT TO HAZEN ON 9/11/89

A total of nine (9) barrels of core was shipped to Hazen for continued metallurgical testing. The core is similar to the 37,000 lbs subjected to earlier testing by Lakefield Research in that it is composed entirely of rock codes 60 and 70 (trachyte porphyry and breccia, respectively). Assuming a full barrel contains about 500 lbs of core, the total amount shipped is estimated to be about 2.125 tons. The list below shows the arithmetic average of the samples contained in each barrel. No consideration was given to individual sample weight for purposes of computing a weighted grade calculation. Very simply, approximately one-half of the rock types mentioned, which was on hand, was shipped.

Barrel #	Approx. Average Grade (OPT)	Number of Samples
1	.046	45
2	.043	43
3	.079	28
4	.032	27
5	.056	32
6	.042	36
7	.049	41
8	.056	33
9	.061	18
	======	====
	.050 (W.A.G.)	303

Jim

Jim Barron

JB/dvl

cc: Doug Stewart

DATE: FEBRUARY 10, 1989

TO: DAN BLAKEMAN

FROM: JIM BARRON

SUBJECT: VARIABILITY TEST SAMPLE

The following is a finalized listing of 6" core samples compiled during Ian Callow's visit. These samples will be prepared for shipment and should be ready to load by 2/15/89.

Ten TRACHYTE PORPHYRY VARIABILITY SAMPLES (Approximately 815 lbs).

Partial Pallet

Variability Sample No.	Box No.	Rock Code	Drill Hole No./Depth Interval (footage)
V1	171	60	D88-65 / 232 - 234.5 (2.5')
V2	114	60	D88-66 / 153.6 - 155.9 (2.3')
V3	88	60	D88-67 / 158.4 - 161.4 (3.0')
V4	79	60	D88-67 / 240 - 242.7 (2.7')
V5	3	60	D88-67 / 463.3 - 465.9 (2.6')
V6	205	60	D88-69 / 584.3 - 586.8 (2.5')
V7	265	60	D88-69 / 737.2 - 739.7 (2.5')
V8	292	60	D88-69 / 887.5 - 890 (2.5')
V9	225	60	D88-70 / 160.4 - 162.5 (2.1')
V10	356	60	D89-72 / 1032.3 - 1035.9 (3.6')

COMPOSITE SAMPLES

Partial Pallet

Composite No.	Box No.	Rock Type	Drill Hole No./Depth Interval (footage)
Trachyte Porphyry			
C-1	174	60	D88-65 / 211 - 214 (3.0')
C-1	108	60	D88-66 / 185.6 - 188.4 (2.8')
C-1	68	60	D88-67 / 305.8 - 309.2 (3.4')
C-1	34	60	D88-68 / 582.7 - 585.5 (2.8')
C-1	264	60	D88-69 / 733.4 - 736.3 (2.9')
C-1	224	60	D88-70 / 156.5 - 159.2 (2.7')
C-1	353	60	D89-72 / 1008.7 - 1012 (3.3')
			Approximately 648 lbs.

Partial pallet

Composite No.	Box No.	Rock Type	Drill Hole No./Depth Interval (footage)
Deadwood Formation			
C-4	296	30	D88-71 / 42 - 44.8 (2.8')
C-4	299	30	D88-71 / 56.5 - 59 (2.5')
C-4	305	30	D88-71 / 90 - 92.3 (2.3')
C-4	302	30	D88-71 / 109.5 - 111.6 (2.1')
C-4	311	30	D88-71 / 161.2 - 163.9 (2.7')
C-4	314	40	D88-71 / 180 - 182.8 (2.8')
C-4	315	40	D88-71 / 183.5 - 186.3 (2.8')
C-4	307	50	D88-71 / 100.4 - 103.5 (3.1')
			Approximately 654 lbs.

COMPOSITE SAMPLES (continued)

Composite No.	Box No.	Rock Type	Drill Hole No./Depth Interval (footage)
Precambrian			
C-5	49	10	D88-68 / 668.2 - 670.8 (2.6')
C-5	50	10	D88-68 / 672.9 - 675.2 (2.3')
C-5	51	10	D88-68 / 680.7 - 683.3 (2.6')
C-5	52	10	D88-68 / 685 - 687 (2.0')
C-5	113	10	D88-66 / 157.4 - 160.2 (2.8')
			Approximately 381 lbs.
Trachyte Porphyry from Pit			
C-6	Barrel #C-6 (1 of 1)	60	Approximately 580 lbs.
Quartz Trachyte Porphyry			
C-7	92	80	D88-68 / 802.2 - 804.8 (2.6')
C-7	248	80	D88-69 / 644.5 - 647 (2.5')
C-7	249	80	D88-69 / 648 - 650.5 (2.5')
C-7	Barrel #C-7 (1 of 1)	80	D88-68 / 782 - 834 (13.5') (Broken)
			Approximately 654 lbs.
	TOTAL WEIGHT OF ALL COMPOSITES (1-7) = 2,917 LBS.		

Partial Pallet

In addition to the above listed variability samples and composites we will be shipping the following:

A) ~~26~~ 25 Barrels containing Trachyte Porphyry and Breccia (composed mostly of Trachyte Porphyry) having a total weight of approximately 12,220 lbs.

B) 291 Core boxes containing Trachyte Porphyry and Breccia (composed mostly of Trachyte Porphyry) having a total weight of approximately 25,600 lbs.

Therefore, the total weight of this shipment will be approximately 41,552 lbs plus the weight of 27 barrels and 324 wooden core boxes which may amount to an additional 3000 lbs for a total of 44,552 lbs (22.3 tons). This of course does not include the shipment of the large bulk sample from the pit.

Jim

Jim Barron

JB/dvl

cc: Doug Stewart
Ian Callow - Bechtel

Pallets —

5 partial

11 @ 25 ea

275
16
291
33

324 Total boxes

Boxes 115 & 116 — Tbxa which should be Around —

Memo

To: Dan Blakeman

from: Jim Barron

Subject: 6" Core Inventory By Rock Type

Rock Code	Rock Type	Tons* Boxed (lbs.)		Tons* in Barrels (lbs.)		Total	
60	Trachyte Porphyry	9.95	(19,911#)	5.22	(10,447#)	15.17	(30,358#)
70	Breccia	2.40	(4,802#)	1.00	(2,015#)	3.40	(6,817#)
80	Quartz Trachyte Porphyry	0.31	(623)	0.25	(502)	0.56	(1,125#)
10	Precambrian Schist	0.21	(428#)	0.07	(152)	0.28	(580#)
30	Cambrian Deadwood Hornfels	0.54	(1076#)	0.46	(918#)	1.00	(1994#)
40	Cambrian Deadwood Quartzite	0.17	(335#)	0.10	(192)	0.26	(527#)
50	Hornblende Trachyte Porphyry	0.15	(298#)	—		0.15	(298#)
—	Fault Zone Rubble	0.29	(586#)	0.21	(415#)	0.50	(1001#)
Total		14.03	(28,059#)	7.32	(14,641#)	21.35	(42,700#)

cc: Doug Stewart

MEMO

TO: DAN BLAKEMAN

FROM: JIM BARRON

SUBJECT: VARIABILITY TEST SAMPLE

BECAUSE SEVEN SAMPLES REQUESTED BY IAN CALLOW, OF BECHTEL, WERE SEPARATED AND STORED IN BARRELS AND THEREFORE DIFFICULT TO RETRIEVE IN TACT, THE FOLLOWING SAMPLES SHOULD BE ~~st~~ SUBSTITUTED.

ORIGINAL SAMPLE REQUESTED			SUBSTITUTE SAMPLE		
FROM P.1 OF CALLOW'S REQUEST...					
D88-67 (Ttp)	166.2 - 169	(2.8')	158.4 - 161.4	(3')	(BOX 88)
D88-70 (Ttp)	152.6 - 155.3	(2.7')	160.4 - 162.5	(2.1')	(BOX 225)
FROM P.2 OF CALLOW'S REQUEST...					
Ttp D88-66	182 - 184.7	(2.7')	185.6 - 188.4	(2.8')	(BOX 108)
Edh D88-71	60 - 63.3	(3.3')	56.5 - 59	(2.5')	(BOX 299)
Edh " "	93.4 - 96.3	(2.9')	90 - 92.3	(2.3')	(BOX 305)
Edg " "	175.8 - 179.4	(3.6')	183.5 - 186.3	(2.8')	(BOX 315)

APPARENTLY CALLOW HAS REQUESTED ALL AVAILABLE PRECAMBRIAN SCHIST FROM HOLE D88-68. TWO INTERVALS, AMOUNTING TO 4.9 FEET ARE STORED IN BARREL #3 AND SHOULD BE FAIRLY EASILY RETRIEVED.

DECNTEL

CALCULATION SHEET

0512 (11-81)

RECEIVED 2/6/89

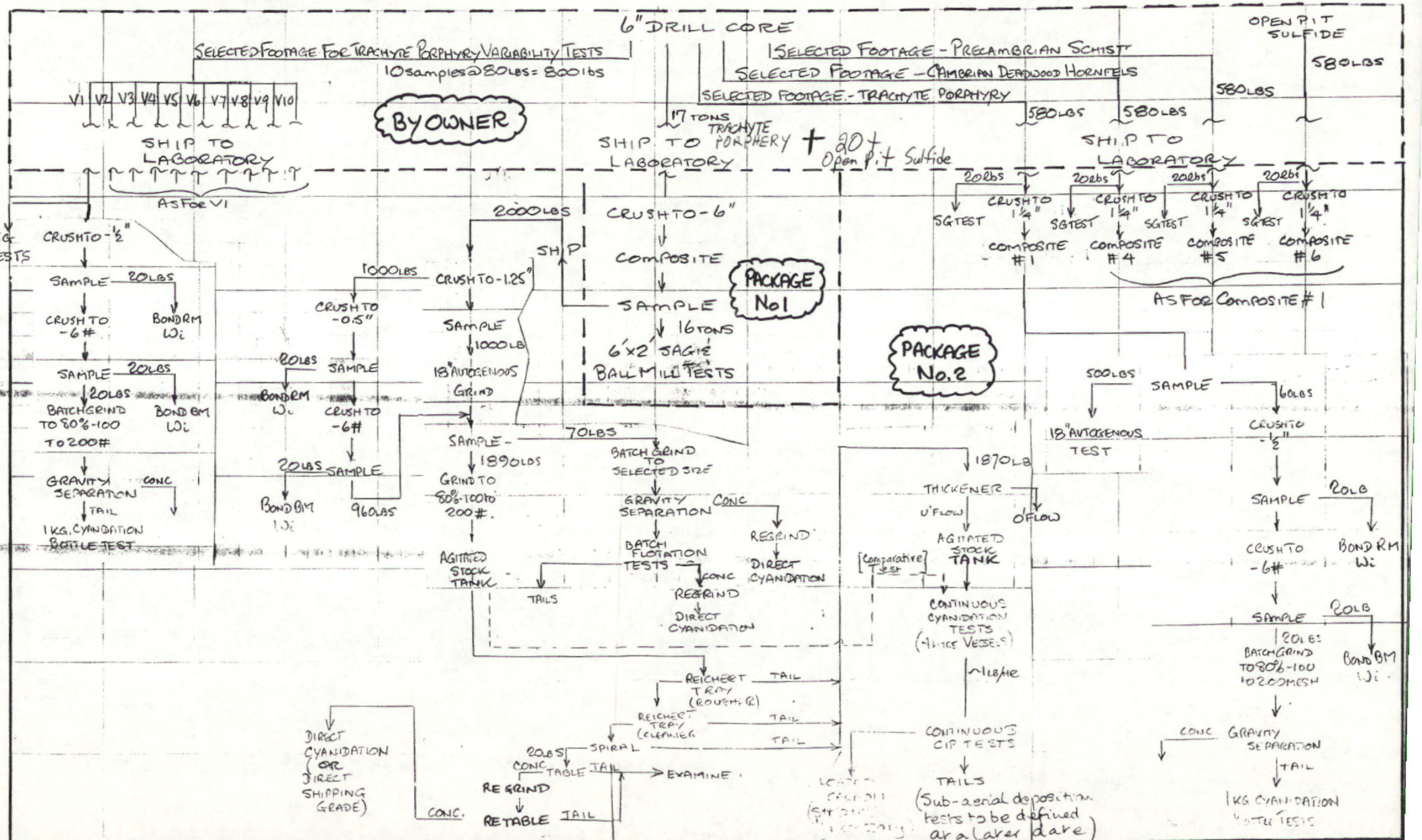
Revised

DATE

DESIGN BY M.I. CALLOW DATE 2.1.89 CHECKED BY SHEET NO.

PROJECT BROHM-GILT EDGE SULFIDE PROJECT JOB NO. 20060

SUBJECT METALLURGICAL TEST PROGRAM DIAGRAM - REV 1. FILE NO.



1988 6" CORE INVENTORY / TO ACCOMPANY MAP 4

CORE HOLE #	COLLAR ELEV.	ELEV. OF CORE INTERVAL(S)	INTERVAL THICKNESS
D88-65	5506.7'	5456.7 TO 5045.9'	410.8'
D88-66	5478.6'	5398.6' TO 5208.6'	190.0'
D88-67	5373.3'	5215.3' TO 5201.3'	14.0'
		5173.3' TO 4893.4	279.9'
D88-68	5488.1'	5033.1' TO 4798.1'	235.0'
		4703.1' TO 4654.0'	49.1'
D88-69	5601.2'	5026.2' TO 4698.2'	328.0'
D88-70	5395.6'	5340.6' TO ~~5134.1'~~ 5144.1'	196.5' ~~206.5'~~
D88-71	5425.2'	5391.2' TO 5310.2'	81.0'
		5271.2' TO 5229.9'	41.3'
D88-72			
		TOTAL	~~1835.6'~~ 1825.6'

@ ~64'/TON ⇒ 28.7 TONS

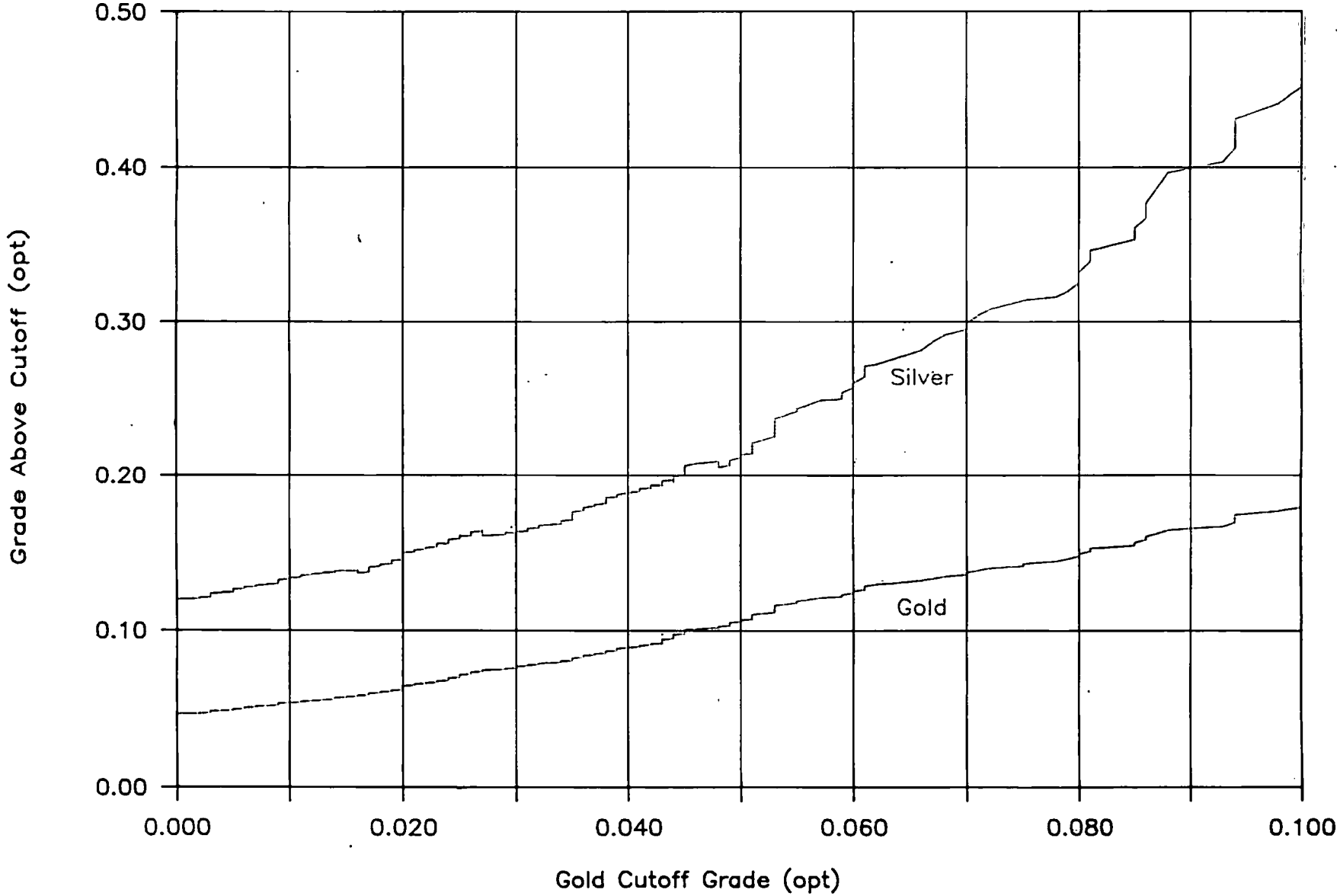
AVAIL. FOR IMMED. SHIPMENT = 17 TONS

12/30/88

J.N.B.

Brohm Mining Corp.

Grades Above Gold Cutoff Plot



Tim – Important to use these Bulk Densities –

Expansion Project Met Testing Summary

Trachyte Porphery Variability Samples

Sample	S.G.	Bulk Density	Ball Mill Work Index	Total Sulfur %	Au oz/ton	Corrected Autog. W_i
V_1	2.91	12.97 ft³/ton	13.3 kwh/ton	3.09	.011	
V_2	2.81	12.56 ↓	11.9 ↓	6.80	.025	
V_3	2.65	12.66	15.3	1.84	.033	
V_4	2.74	12.66	13.3	4.77	.173	
V_5	2.71	12.51	15.5	4.55	.017	
V_6	2.61	12.46	16.1	1.30	.047	
V_7	2.62	12.41	17.8	0.03	.016	
V_8	2.66	12.76	15.3	2.09	.139	
V_9	2.65	13.02	17.9	2.26	.013	
V_{10}	2.63	12.51	17.9	1.11	.007	
AVE	2.70	12.61	15.4	2.78	.048	
Ttp – C_1	2.71	12.13	16.7	3.88	.092	14.5
Deadwood C_4	2.91	11.12	18.1	4.21	.029	18.6
Precambrian C_5	2.88	10.78 Repeat 11.16	13.4	0.98	.029	13.0
Trach. Porph Pit C_{6A}	2.67	12.61	14.7	2.36	.006	14.5
C_{6B}		14.05	15.4	3.07	.068	13.5
Quartz Trach Porph C_7	2.64	11.44	18.5	1.84	.051	15.0
SAG Drill Core Comp DC1	2.76	–	13.5	5.16	.060	14.6

EXPANSION PROJECT

CONTINUOUS LEACH / CARBON-IN-PULP

PILOT TEST

PRELIMINARY SUMMARY OF RESULTS

Agitators out of Alignment, i.e. carbon lost

Date	4/20	4/21	4/22	4/23	4/24	4/25	4/26	4/27	4/28	4/29	4/30	5/1	5/2	5/3
Calc Head oz/ton	.0314	.0401	.0466	.0515	.0534	.0616	.0573	.0356	.0384	.0363	.0391	.0418	.0377	
Leach Tail oz/ton	.0055	.0084	.0106	.0104	.0123	.0158	.0153	.0133	.0086	.0092	.0094	.0121	.0121	
Leach Ext %	82.48	79.05	77.25	79.81	76.97	74.35	73.30	62.64	77.60	74.66	75.96	71.06	67.90	
CIP Tail oz/ton	.0064	.0078	.0094	.0097	.0094	.0101	.0109	.0111	.0102	.0088	.0093	.0098	.0105	.0096
Overall Ext %	79.62	80.55	79.83	81.17	82.40	83.60	80.98	68.82	73.44	76.31	76.21	76.56	72.15	
Loaded Carbon oz/ton	---	103.2	---	---	98.9	86.5	125.7	109.0	132.2	---	85.9			
Barren Soln oz/ton	.0002	.0004	.0005	.0006	.0008	.0010	.0008	.0009	.0007	.0007	.0008	.0006	.0007	

	Au	Ag	NaCN Shake Extraction	
Jim 1	.074	.15	.054	(73%)
Jim 2	.037	.16	.022	(59%)
Doug 1	.047	.15	.036	(77%)
Doug 2	.040	.14	.024	(60%)
Jim Special –	.120	.140	.080	(66%)

20 Ton Pit Sample of 2/24/89
Sulfide material being packaged to send to Lakefield Lab for crushing/grinding/gravity circuit testing

	Au	Ag
Jim 1	.074	.15
Jim 2	.037	.16
Doug 1	.047	.15
Doug 2	.040	.14
Jim Special –	.120	.140

"Jim 1&2 & Doug 1&2" are grabs from top of pile prior to filling barrels. Est. Pyrite % @ 3-4% overall.

"Jim Special" was a very small area of high (+50% pyrite) sulfide sample.

Variability Sample

Rock Type (code)	Drill Hole #/Interval (footage)	Box #	
Trachyte Porphyry (60)	D88-65 / 232-234.5 (2.5')	171	V1 X
" " "	D88-67 / 158.4-161.4 (3.0')	88	V3 X
" " "	" " / 240-242.7 (2.7')	79	V4 X
" " "	" " / 463.3-465.9 (2.6')	3	V5 X
" " "	D88-69 / 584.3-586.8 (2.5')	205	V6 X
" " "	" " / 737.2-739.7 (2.5')	265	V7 X
" " "	" " / 887.5-890 (2.5')	292	V8 X
" " "	D88-70 / 160.4-162.5 (2.1')	225	V9 X
" " "	D88-66 / 153.6-155.9 (2.3')	114	V2 X
" " "	D89-72 / 1032.3-1035.9 (3.6')	356	V10 X
	(26.3') [815#]		

Composites

Composite #	Rock Type	Drill Hole / Interval (footage)		Box #
1	Trachyte Porphyry	D88-65 / 211-214'	(3.0')	174 ✓
		D88-66 / 185.6-188.4	(2.8')	108 ✓
NEED 1 MORE		D88-67 / 305.8-309.2	(3.4')	68 ✓
		D88-68 / 582.7-585.5	(2.8')	34 ✓
		D88-69 / 733.4-736.3	(2.9')	264 ✓
		D88-70 / 156.5-159.2	(2.7')	224 ✓
	NEW →	D89-72 / 1008.7-1012	(3.3') 20.9 648#	353 ✓
4	Ꞓdh ~~Ꞓdg~~	D88-71 / 42-44.8	(2.8')	296 ✓
		" / 56.5-59	(2.5')	299 ✓
		" / 90-92.3	(2.3')	305 ✓
NEED 2 MORE 1 - sh 1 - gtaite		" / 109.5-111.6	(2.1')	302 ✓
		" / 161.2-163.9	(2.7')	311 ✓
	Ꞓdg	" / 183.5-186.3	(2.8')	315 ✓
NEW →	Ꞓdg	" / 180-182.8	(2.8')	314 ✓
NEW →	~~Ꞓdg~~ Thtp	" / 100.4-103.5	(3.1') 21.1' 654.1#	307 ✓
5	pꞒ	D88-66 / 157.4-160.2	(2.8')	113 ✓
		D88-68 / 668.2-670.8	(2.6')	49 ✓
		" / 672.9-675.2	(2.3')	50 ✓
		" / 680.7-683.3	(2.6')	51 ✓
		" / 685-687	(2.0') 12.3 381.3#	52 ✓
6	Trachyte Porphyry	—	600#	
7	Tqtp		580#	

Composite #	Rock Type	DH # / Interval	Box (BBL)
7	Tgtp	D88-68 / 782 - 834 (Broken) (13.5') (418#)	BBL-7 ✓
	Quartz Trachyte	D88-68 / 802.2 - 804.8 (2.6')	92 ✗
		D88-69 / 644.5 - 647 (2.5')	248 ✗
		D88-69 / 648 - 650.5 (2.5')	249 ✗
		21.1 / 654.1#	

Barrels

To Lakefield

C-7

1, 2, 4, 5, 6, 7
8, 9, 10, 11, 12,
13, 14, 15, 16, 17,
18, 19, 20, 21, 22,
23, 26, 27, 28, 29

Stay/Deadwood

3, 12, 24, 25

Box

Stay in Deadwood

40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50
89, 90, 91, 93, 94
115, 116
129, 130
185, 186
295, ~~296~~, 297, 298, 300, 301, 303, 304, 306
308, 309, 310, 312, 313, 316,

42-381 50 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE
NATIONAL

M.I. Callaw | 2.9.89.

WEIGHT TO BE SHIPPED TO LAKEFIELD.

TRACHYTE PORPHYRY BULK SAMPLE.

BARRELS.

TONS

TOTAL WT. ALL TYPES IN BARRELS = 7.32

HELD BACK:

BARREL #3	22.8'	
#12	19.6'	
#24	22.6'	
#25	13.2'	
	78.2' @ 31lb/ft = 2424 lb.	= 1.21

Net shipped. 6.11

BOXES.

TOTAL WT ALL TYPES = 14.03

HELD BACK:

40 to 48	=	19.1'
89, 90, 91, 93, 94	=	12.5'
115, 116	=	4.2'
129, 130	=	4.7'
185, 186	=	4.1'
295, 297, 298, 300, 301, 303	=	15.1'
304, 306, 308, 309, 310, 312	=	14.3'
313, 316.	=	5.2'

79.2' @ 31lb/ft = 2455 lb = 1.23

12.80

TOTAL WT. TRACHYTE PORPHYRY BULK SAMPLE 18.91 TONS.

			TONS.
2) TRACHYTE PORPHYRY VARIABILITY SAMPLE 815#			= 0.41
3) COMPOSITES			
#1		648#	0.32
#4		654#	0.33
#5		381#	0.19
#7	Barrel 418# Boxes 236. 654#	654#.	0.33.
#6	(Proposed)	600#	0.30.
			1.88 TONS
		+ Previous Page.	18.91
			20.79 TONS.

2/9/89

Variability Sample

Rock Type (code)	Drill Hole #/Interval (footage)	Box #		
Trachyte Porphyry (60)	D88-65 / 232-234.5 (2.5')	171	V1	X
" " "	D88-67 / 158.4-161.4 (3.0')	88	V3	X
" " "	" " / 240-242.7 (2.7')	79	V4	X
" " "	" " / 463.3-465.9 (2.6')	3	V5	X
" " "	D88-69 / 584.3-586.8 (2.5')	205	V6	X
" " "	" " / 737.2-739.7 (2.5')	265	V7	X
" " "	" " / 887.5-890 (2.5')	292	V8	X
" " "	D88-70 / 160.4-162.5 (2.1')	225	V9	X
" " "	D88-66 / 153.6-155.9 (2.3')	114	V2	X
" " "	D89-72 / 1032.3-1035.9 (3.6')	356	V10	X
	(26.3') [815#]			

Composites

Composite #	Rock Type	Drill Hole / Interval (Footage)		Box #
1	Trachyte Porphyry	D88-65 / 211-214'	(3.0')	174 ✓
		D88-66 / 185.6-188.4	(2.8')	108 ✓
NEED 1 MORE		D88-67 / 305.8-309.2	(3.4')	68 ✓
		D88-68 / 582.7-585.5	(2.8')	34 ✓
		D88-69 / 733.4-736.3	(2.9')	264 ✓
		D88-70 / 156.5-159.2	(2.7')	224 ✓
	NEW →	D89-72 / 1008.7-1012	(3.3') 20.0 648#	353 ✓
4	Ꞓdh	D88-71 / 42-44.8	(2.8')	296 ✓
		" / 56.5-59	(2.5')	299 ✓
		" / 90-92.3	(2.3')	305 ✓
NEED 2 MORE 1 - sh 1 - gtzite		" / 109.5-111.6	(2.1')	302 ✓
		" / 161.2-163.9	(2.7')	311 ✓
	Ꞓdg	" / 183.5-186.3	(2.8')	315 ✓
NEW →	Ꞓdg	" / 180-182.8	(2.8')	314 ✓
	→ Ꞓtp	" / 100.4-103.5	(3.1') 21.1' 654.1#	307 ✓
5	pꞒ	D88-66 / 157.4-160.2	(2.8')	113 ✓
		D88-68 / 668.2-670.8	(2.6')	49 ✓
		" / 672.9-675.2	(2.3')	50 ✓
		" / 680.7-683.3	(2.6')	51 ✓
		" / 685-687	(2.0') 12.3 381.3#	52 ✓
6	Trachyte Porphyry	—	600#	
7	Tgtp		580#	

Composite #	Rock Type	DH# / Interval	Box (BBL)
7	Tgtp	D88-68 / 782 - 834 (Rubble) (13.5') (418#)	BBL-7 ✓
	Quartz Trachyte	D88-68 / 802.2 - 804.8 (2.6')	92 ✗
		D88-69 / 644.5 - 647 (2.5')	248 ✗
		D88-69 / 648 - 650.5 (2.5')	249 ✗
		21.1 654.1#	

Barrels

To Lakefield

C-7

1, 2, 4, 5, 6, 7
8, 9, 10, 11, 12,
13, 14, 15, 16, 17,
18, 19, 20, 21, 22,
23, 26, 27, 28, 29

+1

27

Stay/Deadwood

3, 12, 24, 25

Box

Stay in Deadwood

40, 41, 42, 43, 44, 45, 46, 47, 48,
89, 90, 91, 93, 94
115, 116
129, 130
185, 186
295, ~~296~~, 297, 298, 300, 301, 303, 304, 306
308, 309, 310, 312, 313, 316,

3A

M.I. Callan | 2.9.89.

WEIGHT TO BE SHIPPED TO LAKEFIELD.

TRACHYTE PORPHYRY BULK SAMPLE.

BARRELS.

TONS

TOTAL WT. ALL TYPES IN BARRELS = 7.32

HELD BACK:

BARREL #3	22.8'	
#12	19.6'	
#24	22.6'	
#25	13.2'	
	78.2' @ 31lb/ft = 2424 lb.	= 1.21

Net shipped. 6.11

BOXES.

TOTAL WT ALL TYPES = 14.03

HELD BACK.

40 to 48	=	19.1'
89, 90, 91, 93, 94	=	12.5'
115, 116	=	4.2'
129, 130	=	4.7'
185, 186	=	4.1'
295, 297, 298, 300, 301, 303	=	15.1'
304, 306, 308, 309, 310, 312	=	14.3'
313, 316.	=	5.2'

79.2' @ 31lb/ft = 2455 lb = 1.23

12.80

TOTAL WT. TRACHYTE PORPHYRY BULK SAMPLE 18.91 TONS

			TONS.
2) TRACHYTE PORPHYRY VARIABILITY SAMPLE		815#	0.41
3) COMPOSITES			
#1		648#	0.32
#4		654#	0.33
#5		381#	0.19
#7	Barrel 418# Boxes 236. 654#	654#.	0.33.
#6	(Proposed)	600#	0.30.
			1.88 TONS
		+ Previous Page.	18.91
			20.79 TONS.

BARRON

0510 (11-74)

CALCULATION SHEET

BECHTEL

DATE

DESIGN BY M.I. CALLOW DATE 2.1.89 CHECKED BY SHEET NO. 1 of 3

PROJECT BROHM GILT EDGE SULFIDE PROJECT JOB NO. 20060

SUBJECT TRACHYTE PORPHYRY - VARIABILITY TEST CALCULATION NO. FILE NO.

SELECTED FOOTAGE OF 6" CORE FOR VARIABILITY TESTS.

BASIS OF SELECTION:

- Select two widely spaced deep holes and select footage to represent three equally spaced intervals (6 samples)
- Select four holes and select footage from the mid-point. (4 samples)

SAMPLE QUANTITY.

Each of the ten samples is approx. 80 lbs.
6" core weighs ~ 64'/ton ≡ $\frac{80}{2000} \times 64 = 2.5$ ft per 80 lb sample.

FOOTAGE SELECTION

The footage designations are taken from the Brohm document "Six Inch Core 1988 Sample Inventory"

	TOP	MIDDLE	BOTTOM	
D88-65	-	232 to 234^5 [2.5']	-	Box 171
D88-66	-	157^4 to 160^2 [2.8']	-	Box 113
D88-67	Barrel 6 166^2 to 169 [2.8']	240 to 242^7 Box 79 [2.7']	Box 3 463^3 to 465^9 [2.6']	Total
D88-68	-	-	802^2 to 804^8 [2.6']	Box 92
D88-69	Box 205 584^3 to 586^8 [2.5']	Box 265 737^2 to 739^7 [2.5']	887^5 to 890 [2.5']	Box 292
D88-70	-	152^6 to 155^3 [2.7'] Barrel 18	-	

0510 (11-74)

CALCULATION SHEET

DATE

DESIGN BY DATE CHECKED BY SHEET NO. 2 of 3

PROJECT JOB NO.

SUBJECT DIFFERENT ORE TYPES - VARIABILITY TESTS CALCULATION NO. FILE NO.

FOOTAGE SELECTION

BASIS FOR SELECTION

- COMPOSITE #1 - 580 lb sample composed of six 3 ft sections of drillcore taken at the midpoint of each of the six holes drilled in the trachyte porphyry.
- COMPOSITES #4 & 5 - 580 lb samples of each, taken at selected intervals
- COMPOSITE #6 - Large chips taken from the sulfide ore exposed in the open pit. Chips shall be larger than 1.25 in. which is the feed size of the 18" Autogenous Mill Test. (580 lbs)

COMPOSITE No.	ROCK TYPE	DRILL HOLE	FOOTAGE
1	TRACHYTE PORPHYRY	D88-65	211' to 214' [3.0'] Box 174
		" -66	182 to 184.7 [2.7'] Barrel 9
		" -67	305.8 to 309.2 [3.4'] Box 68
		" -68	582.7 to 585.5 [2.8'] Box 34
		" -69	733.4 to 736.3 [2.9'] Box 264
		" -70	156.5 to 159.2 [2.7'] Box 224
4	CAMBRIAN DEADWOOD HORNFELS	D88-71	42' to 44.8 [2.7'] Box 296
		"	60' to 63.3 [3.3'] Barrel 24
		"	93.4 to 96.3 [2.9'] Barrel 24
		"	109.5 to 111.6 [2.1'] Box 302
			161.2 to 163.9 [2.7'] Box 311
			175.8 to 179.4 [3.6'] Barrel 25

0510 (11-74)

CALCULATION SHEET

DATE

DESIGN BY DATE CHECKED BY SHEET NO. 3 of 3.

PROJECT JOB NO.

SUBJECT DIFFERENT ORE TYPES (cont). CALCULATION NO. FILE NO.

COMPOSITE No.	ROCK TYPE	DRILL HOLE	FOOTAGE
5	PRECAMBRIAN SCHIST	D88-68	ALL CORE FROM 657 TO 687
6	OPEN PIT SULFIDE	-	+1¼" CHIP SAMPLES

Box 47, 48, 49
50, 51, 52
Barrel 3.

0510 (11-74)

CALCULATION SHEET

DATE

DESIGN BY M.I. CALLOW DATE 2.1.89 CHECKED BY SHEET NO. 1 of 3

PROJECT BROHM GILT EDGE SULFIDE PROJECT JOB NO. 20060

SUBJECT TRACHYTE PORPHYRY - VARIABILITY TEST CALCULATION NO. FILE NO.

SELECTED FOOTAGE OF 6" CORE FOR VARIABILITY TESTS.

BASIS OF SELECTION:

- Select two widely spaced deep holes and select footage to represent three equally spaced intervals (6 samples)
- Select four holes and select footage from the mid-point. (4 samples)

SAMPLE QUANTITY.

Each of the ten samples is approx. 80 lbs.
6" core weighs ~ 64'/ton ∴ $\frac{80}{2000} \times 64 = 2.5$ ft per 80 lb sample.

FOOTAGE SELECTION

The footage designations are taken from the Brohm document "Six Inch Core 1988 Sample Inventory"

	TOP	MIDDLE	BOTTOM
D88-65	-	$232^{\ }$ to 234^{5} [2.5']	-
D88-66	-	157^{4} to 160^{2} [2.8']	-
D88-67	166^{2} to 169 [2.8']	240 to 242^{7} [2.7']	463^{3} to 465^{9} [2.6']
D88-68	-	-	802^{2} to 804^{8} [2.6']
D88-69	584^{3} to 586^{8} [2.5']	737^{2} to 739^{7} [2.5']	887^{5} to 890 [2.5']
D88-70	-	152^{6} to 155^{3} [2.7']	-

0510 (11-74)

CALCULATION SHEET

DATE

DESIGN BY DATE CHECKED BY SHEET NO. 2 of 3

PROJECT JOB NO.

SUBJECT DIFFERENT ORE TYPES - VARIABILITY TESTS CALCULATION NO. FILE NO.

FOOTAGE SELECTION

BASIS FOR SELECTION

- COMPOSITE #1 - 580 lb sample composed of six 3 ft sections of drillcore taken at the midpoint of each of the six holes drilled in the trachyte porphyry.
- COMPOSITES #4 & 5 - 580 lb samples of each, taken at selected intervals
- COMPOSITE #6 - Large chips taken from the sulfide ore exposed in the open pit. Chips shall be larger than 1.25 in. which is the feed size of the 18" Autogenous Mill Test. (580 lbs)

COMPOSITE No.	ROCK TYPE	DRILL HOLE	FOOTAGE
1	TRACHYTE PORPHYRY	D88-65	211' to 214' [3.0']
		" -66	182 to 184^7 [2.7']
		" -67	305^8 to 309^2 [3.4']
		" -68	582^7 to 585^5 [2.8']
		" -69	733^4 to 736^3 [2.9']
		" -70	156^5 to 159^2 [2.7']
4	CAMBRIAN DEADWOOD HORNFELS	D88-71	42' to 44^8 [2.7']
		"	60' to 63^3 [3.3']
		"	93^4 to 96^3 [2.9']
		"	109^5 to 111^6 [2.1']
			161^2 to 163^9 [2.7']
			175^8 to 179^4 [3.6']

0510 (11-74)

CALCULATION SHEET

DATE

DESIGN BY DATE CHECKED BY SHEET NO. 3 of 3

PROJECT JOB NO.

SUBJECT DIFFERENT ORE TYPES (cont) CALCULATION NO. FILE NO.

COMPOSITE No.	ROCK TYPE	DRILL HOLE	FOOTAGE
5	PRECAMBRIAN SCHIST	D88-68	ALL CORE FROM 657 TO 687 + 1¼" CHIP SAMPLES
6	OPEN PIT SULFIDE	–	

BECHTEL, INC.
Mining & Metals Operations
P. O. BOX 3965
SAN FRANCISCO, CA 94119

FACSIMILE: (415) 768-3398

CONFIRMATION:

DATE: JANUARY 10, 1989

TO : MR. DOUGLAS E. STEWART _ FAX NO. (605) 578-1709

FROM: F. J. TOMERSON, BECHTEL, S.F.

SUBJECT: GRINDING TESTWORK PROGRAM - DRAFT REPORT
GILT EDGE SULFIDE PROJECT - BROHM MINING CORP.

NUMBER OF PAGES FOLLOWING TRANSMITTAL: 5

Bechtel, Inc.
Engineers — Constructors

Fifty Beale Street
San Francisco, California
Mail Address: P. O. Box 3965, San Francisco, CA 94119

BY FAX -(605) 578-1709

January 10, 1989

Mr. Douglas E. Stewart
Project Manager
Brohm Mining Corporation
P. O. Box 485
Deadwood, South Dakota 57732

Subject: Gilt Edge Sulfide Project
Grinding Testwork Program
Job No. 20060

Dear Mr. Stewart:

We transmit the draft of Grinding Testwork Program for your comments. Other parts of the testwork program will follow later this week and will include:

- Ore Variability with Depth (Characterization Tests)
- Batch Tests on Composites
- Other Tests

Very truly yours,

F. J. Tomerson

F. J. Tomerson

FJT:dnl
Attachment

cc: K. R. Coyne
M. I. Callow
J. D. McLain

DRAFT
January 10, 1989

BECHTEL, INC.

GILT EDGE SULFIDE GOLD PROJECT
JOB NO. 20060

GRINDING TESTWORK PROGRAM

OBJECTIVE

To determine parameters for the grinding circuit by testwork on the 6" drill core samples.

BACKGROUND DATA

Recent drilling at the site has produced about 28 tons of 6" drill core of which 18 tons are currently available for testwork. Recent leach testwork by McClelland in Reno suggests a primary grind in the range 80% - 100 mesh to 80% - 200 mesh. Bechtel concurs with the conclusion of previous investigators that SAG milling is likely to be the preferred grinding method; now to be followed by second stage ball milling to meet the new finer grind requirement.

A preliminary MacPherson autogenous grindability test at Hazen indicated the ore was suitable for SAG milling. Bond Work Index tests by Hazen gave the following:

Rod Mill - 14 mesh - 13.2
Ball Mill - 100 mesh - 13.4

It is understood that accessible sulfide ore is also available from the oxide pit.

OVERALL TEST PROGRAM

The 6" drill core should be composited and crushed as necessary to provide samples for:

1. Gravity, Leaching and Gold Recovery Tests (to be described in a later program)
2. Bond Rod Mill and Ball Mill Work Index Tests
3. MacPherson 18" Autogenous Grinding Tests
4. 6' x 2' SAG Mill Grinding Tests.

The grinding tests are described in more detail later in this report.

SAMPLES

6" drill core logs will be provided by Brohm Mining at a later date. However, for the purposes of this testwork program we assume, and expect, that the same four ore types previously tested and listed below will be available in suitable proportions to meet the needs of the program.

1. Composite #1 - Trachyte Porphyry Run-of-Mine
2. Composite #2 - Trachyte porphyry High Grade
3. Composite #3 - 4 - Deadwood Formation
4. Composite #5 - Precambrian Schist

We propose that a fifth sample (Composite #6 - Open Pit Sulfide) be prepared for 18" autogenous grinding tests described later in this report.

DESCRIPTION OF TEST PROGRAM

In general we concur with the overall program previously proposed by others. The approach will be to test the Composite #1 - Porphyry Run-of-Mine Ore in the 6' x 2' SAG mill to provide as much baseline data as can be generated from the relatively small sample available. An 18" autogenous mill test will also be performed on each of the five composite samples (which includes the open pit sulfide sample) to determine ore variability from the base case Composite #1 ore. The purpose of testing the open pit sulfide ore in the 18" autogenous mill is to provide comparative data in the event that insufficient Composite #1 sample is available to fully define the SAG mill grinding characteristics in the 6'x2' mill test. Should this be the case then it is proposed that an open pit sulfide bulk sample be tested to provide supplemental information.

Rod and ball mill Bond work indeces will be determined to provide:

1. Data on the variability of the ore at different depths within the same ore type

2. Assist in maximizing the efficiency of the grinding circuit design.

COMPOSITE SAMPLES - SIZE AND QUANTITY

Sample Available: 18 tons of 6" drill core from sources to be described by Brohm Mining.

SAMPLE NEEDED

	Size	Comp.#1 TP-ROM	Comp #2 TP-HB	Comp #3-4 DF	Comp #5 PS	Comp #6 O'pit S
Bond Wi RM & BM	-6#	120 lbs	120 lbs	120 lbs	120 lbs	120 lbs
18" Autogenous Test	-1.25"	1000 lbs	1000 lbs	1000 lbs	1000 lbs	1000 lbs
6'x2' SAG Test	-6"(2)	(3)	-	-	-	(1)
Other Testing	(4)	(4)	(4)	(4)	(4)	(4)

(1) To be determined after initial work on Composite #1.

(2) Portion to be crushed to simulate -6" crusher product.

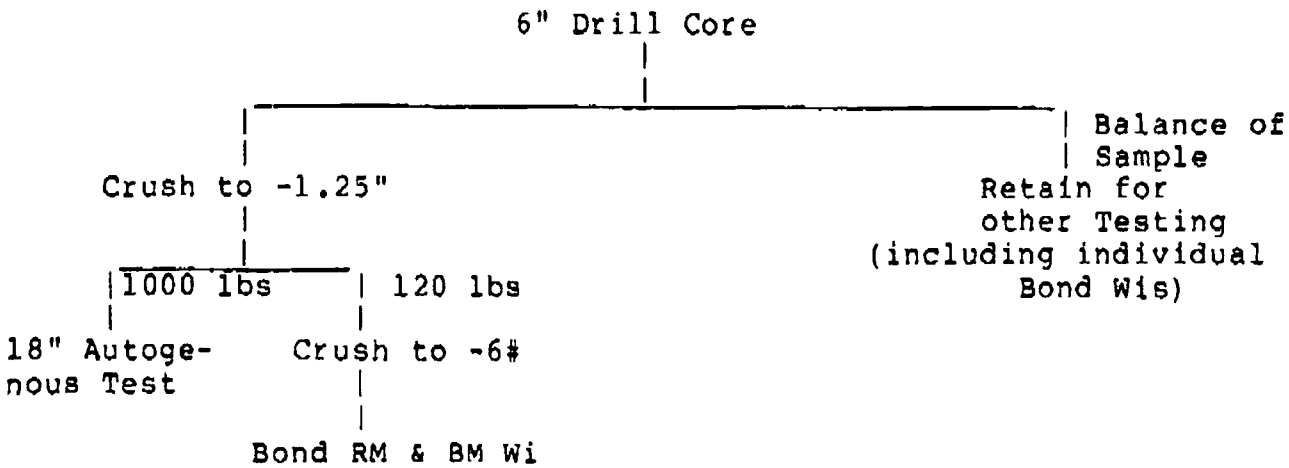
(3) Balance of material available.

(4) To be determined.

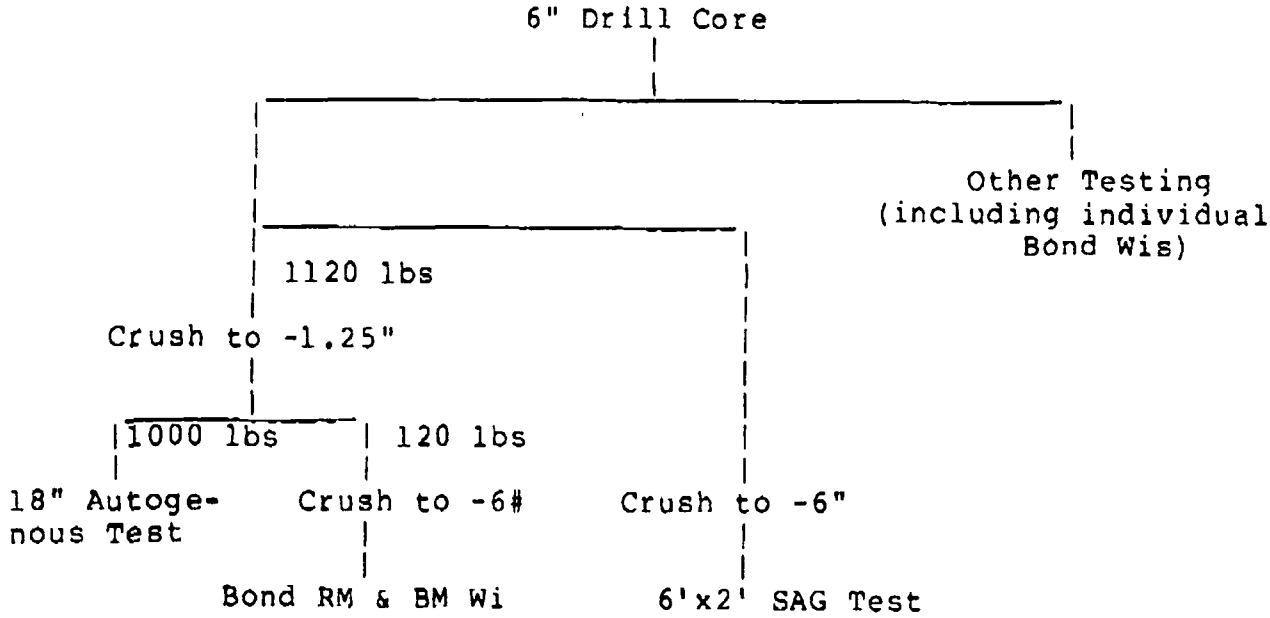
COMPOSITE SAMPLE PREPARATION

The 6" drill core shall be shipped to the laboratory selected for the 6'x2' SAG mill testing. This laboratory shall be responsible under Bechtel's direction, for compositing, crushing, sample preparation and shipment of samples to other laboratories. Bechtel shall determine the final sample preparation program after receipt of the drill logs, but it will generally be in accordance with the following:

For Each of Composites #2, 3 & 4, 5, 6:



For Composite #1:



ORE VARIABILITY WITH DEPTH (Characterization Tests)

In addition to testing composites #1 to 6 as described in the previous sections of this report, it is also proposed to check on ore variability with depth as a separate program. Bechtel's program for leach testing proposes to select two widely separated holes in the Trachyte Porphyry Run-of-Mine Ore and cut samples from the mid-point of each one third section of the total core by depth. On the remaining four 6" holes it is proposed to cut a sample at the mid-point of each hole. In addition to leaching tests it is intended to perform Bond rod mill and ball mill tests on each sample to determine if the ore varies with depth. Each of the ten tests will require 120 lbs of minus 6 mesh sample.

PRELIMINARY LABORATORY SELECTION

6'x2' SAG Mill Testing	:	Lakefield or Ortech International (Ontario Research)
18" Autogenous Testing	:	Hazen Research
Bond Work Indeces	:	Hazen Research
[Gravity Testwork	:	Hazen Research]

$$\frac{53\frac{1}{3}}{366}$$

7

BROHM MINING CORP.

DATE: JANUARY 6, 1989

TO: FRANK TOMERSON - BECHTEL, INC.

FROM: JAMES N. BARRON - BROHM MINING CORP.

SUBJECT: SIX-INCH CORE INVENTORY BY ROCK TYPE

Attached please find a listing of 6-inch core holes along with collar elevations and overall core intervals by elevation. Also attached is a core inventory showing rock type, depth and thickness of 6-inch core intervals presently packaged in boxes or in 55-gallon drums. The Rock Code corresponds to that used in our computer block model, i.e. 60 = Trachyte Porphyry, 10 = Precambrian Schist, 30 = Cambrian Deadwood Hornfels, 40 = Cambrian Deadwood Quartzite, 70 = Tbxa or breccia and FZ = fault zone or fracture zone which drilled as rubble with very little rehealing. Also shown on this inventory is the visual estimate of pyrite percentage.

If you have any questions relating to this material, please call me at (605) 578-2107. Thank you.

James N. Barron

JNB/dvl

enc:

cc: Doug Stewart

South Dakota Office: P.O. Box 485, Deadwood, South Dakota 57732
Telephone: (605) 578-2107 Telecopier: (605) 578-1709

Brohm Mining Corp. is a wholly owned affiliate of Minven Gold Corporation

DATE: FEBRUARY 10, 1989

TO: DAN BLAKEMAN

FROM: JIM BARRON

SUBJECT: VARIABILITY TEST SAMPLE

The following is a finalized listing of 6" core samples compiled during Ian Callow's visit. These samples will be prepared for shipment and should be ready to load by 2/15/89.

Ten TRACHYTE PORPHYRY VARIABILITY SAMPLES (Approximately 815 lbs).

Variability Sample No.	Box No.	Rock Code	Drill Hole No./Depth Interval (footage)
V1	171	60	D88-65 / 232 - 234.5 (2.5')
V2	114	60	D88-66 / 153.6 - 155.9 (2.3')
V3	88	60	D88-67 / 158.4 - 161.4 (3.0')
V4	79	60	D88-67 / 240 - 242.7 (2.7')
V5	3	60	D88-67 / 463.3 - 465.9 (2.6')
V6	205	60	D88-69 / 584.3 - 586.8 (2.5')
V7	265	60	D88-69 / 737.2 - 739.7 (2.5')
V8	292	60	D88-69 / 887.5 - 890 (2.5')
V9	225	60	D88-70 / 160.4 - 162.5 (2.1')
V10	356	60	D89-72 / 1032.3 - 1035.9 (3.6')

COMPOSITE SAMPLES

Composite No.	Box No.	Rock Type	Drill Hole No./Depth Interval (footage)
Trachyte Porphyry			
C-1	174	60	D88-65 / 211 - 214 (3.0')
C-1	108	60	D88-66 / 185.6 - 188.4 (2.8')
C-1	68	60	D88-67 / 305.8 - 309.2 (3.4')
C-1	34	60	D88-68 / 582.7 - 585.5 (2.8')
C-1	264	60	D88-69 / 733.4 - 736.3 (2.9')
C-1	224	60	D88-70 / 156.5 - 159.2 (2.7')
C-1	353	60	D89-72 / 1008.7 - 1012 (3.3')
			Approximately 648 lbs.
Deadwood Formation			
C-4	296	30	D88-71 / 42 - 44.8 (2.8')
C-4	299	30	D88-71 / 56.5 - 59 (2.5')
C-4	305	30	D88-71 / 90 - 92.3 (2.3')
C-4	302	30	D88-71 / 109.5 - 111.6 (2.1')
C-4	311	30	D88-71 / 161.2 - 163.9 (2.7')
C-4	314	40	D88-71 / 180 - 182.8 (2.8')
C-4	315	40	D88-71 / 183.5 - 186.3 (2.8')
C-4	307	50	D88-71 / 100.4 - 103.5 (3.1')
			Approximately 654 lbs.

COMPOSITE SAMPLES (continued)

Composite No.	Box No.	Rock Type	Drill Hole No./Depth Interval (footage)
Precambrian			
C-5	49	10	D88-68 / 668.2 - 670.8 (2.6')
C-5	50	10	D88-68 / 672.9 - 675.2 (2.3')
C-5	51	10	D88-68 / 680.7 - 683.3 (2.6')
C-5	52	10	D88-68 / 685 - 687 (2.0')
C-5	113	10	D88-66 / 157.4 - 160.2 (2.8')
			Approximately 381 lbs.
Trachyte Porphyry from Pit			
C-6	Barrel #C-6 (1 of 1)	60	Approximately 580 lbs.
Quartz Trachyte Porphyry			
C-7	92	80	D88-68 / 802.2 - 804.8 (2.6')
C-7	248	80	D88-69 / 644.5 - 647 (2.5')
C-7	249	80	D88-69 / 648 - 650.5 (2.5')
C-7	Barrel #C-7 (1 of 1)	80	D88-68 / 782 - 834 (13.5') (Broken)
			Approximately 654 lbs.
	TOTAL WEIGHT OF ALL COMPOSITES (1-7) = 2,917 LBS.		

In addition to the above listed variability samples and composites we will be shipping the following:

A) 26 Barrels containing Trachyte Porphyry and Breccia (composed mostly of Trachyte Porphyry) having a total weight of approximately 12,220 lbs.

B) 291 Core boxes containing Trachyte Porphyry and Breccia (composed mostly of Trachyte Porphyry) having a total weight of approximately 25,600 lbs.

Therefore, the total weight of this shipment will be approximately 41,552 lbs plus the weight of 27 barrels and 324 wooden core boxes which may amount to an additional 3000 lbs for a total of 44,552 lbs (22.3 tons). This of course does not include the shipment of the large bulk sample from the pit.

Jim

Jim Barron

JB/dvl

cc: Doug Stewart
Ian Callow - Bechtel

Jim

3/20/89

Expansion Project Met Testing

Trachyte Porphery Variability Samples

Sample	S.G.	Bulk Density	Ball Mill Work Index	Total Sulfur %	Au oz/ton
V_1	2.91	12.97 ft³/ton	13.3 KWH/ton	3.09	.011
V_2	2.81	12.56 ↓	11.9 ↓	6.80	.025
V_3	2.65	12.66	15.3	1.84	.033
V_4	2.74	12.66	13.3	4.77	.173
V_5	2.71	12.51	15.5	4.55	.017
V_6	2.61	12.46	16.1	1.30	.047
V_7	2.62	12.41	17.8	0.03	.016
V_8	2.66	12.76	15.3	2.09	.139
V_9	2.65	13.02	17.9	2.26	.013
V_{10}	2.63	12.51	17.9	1.11	.007
AVE	2.70	12.61	15.4	2.78	.048
C_1	2.71	12.13	16.7	3.88	.092
Deadwood					
C_4	2.91	11.12	18.1	4.21	.029
Precambrian					
C_5		10.78 Repeat 11.16	13.4	0.98	.029
Trach. Porph Pit					
C_{6A}	2.67	12.61	14.7	2.36	.006
C_{6B}		14.05		3.07	.068 (1 of 60 drums sampled)
Quartz Trach Porph					
C_7	2.64	11.44	18.5	1.84	.051
SAG Feed Comp					
DC1				5.16	.060 (Composite of C1, C4, C5, C7)

FAX to: Dan Blakeman (605) 578-1709
Broken Mining Corp.

Re: In Situ Densities

Sample	Densities t/m³		
V1 - 1	2.64		
2	2.33	2.47	
3	2.43		
V2 - 1	2.65		
2	2.54	2.55	
3	2.47		
V3 - 1	2.57		
2	2.65	2.53	
3	2.47		
V4 - 1	2.55		
2	2.54	2.53	
3	2.51		
V5 - 1	2.56		
2	2.55	2.56	
3	2.57		2.54 ± 0.12
V6 - 1	2.51		
2	2.56	2.57	
3	2.65		
V7 - 1	2.68		
2	2.38	2.58	
3	2.68		
V8 - 1	2.47		
2	2.44	2.51	
3	2.61		
V9 - 1	2.38		
2	2.61	2.46	
3	2.40		
V10 - 1	2.41		
2	2.40	2.56	
3	2.88		

Regards, Tom Ross

Project No. 3687 Company Brown Mining Date: Feb. 28/89

Sample No.		% S						
HD	V-1	3.09						
	V-2	6.80						
	V-3	1.84						
	V-4	1.77						
	V-5	4.55						
	V-6	1.30						
	V-7	0.03						
	V-8	2.09						
	V-9	2.26						
	V-10	1.11						

FORM LR 12

Project No. 3687 Company BROWN MINING Date: 7-March-1987

Sample No.	% S						
C-1	3.08						
C-4	4.21						
C-6	2.56						
C-7	1.84						

FORM LR 12

LAKEFIELD RESEARCH

Analytical Services

FIRE ASSAY REPORT

Project No: 3687 Client: Brohm Mining Date: Feb 28, 1989

Sample No.	Sample	Au g/t	Ag g/t	Pulp Weight (g)
1	HD Y-1	0.38 = .011		
2	Y-2	0.85 = .025		
3	Y-3	1.13 .033		
4	Y-4	5.92 .173		
5	Y-5	0.57 .017		
6	Y-6	1.67 .049		
7	Y-7	0.55 .016		
8	Y-8	4.78 .140		
9	Y-9	0.45 .013		
10	Y-10	0.25 .007		
		.048		

Load 5384

N.B.: Assays >9.99 g/t should be rounded up to 1 decimal place and assays >99.9 g/t should not have decimal places.

Assayer: D.P.

Assays reported as 0.00 or 0.0 g/t are trace.
Trace indicates Au < 0.02 g/t & Ag < 2.0 g/t.

LAKEFIELD RESEARCH

Analytical Services

FIRE ASSAY REPORT

Project No: 3687 Client: Brohm Mining Date: Mar 1, 1989

Sample No.	Sample	Au g/t	Ag g/t	Pulp Weight (g)
1	C-1	3.16 = .092		
2	C-4	0.99 .029		
3	C-6	0.22 .006		
4	C-7	1.76 .051		

Load 5390

N.B.: Assays >9.99 g/t should be rounded up to 1 decimal place and assays >99.9 g/t should not have decimal places.

Assayer: J.M

Assays reported as 0.00 or 0.0 g/t are trace.
Trace indicates Au < 0.02 g/t & Ag < 2.0 g/t.

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SAMPLE		SPECIFIC GRAVITY
H.D.	V 1	2.91
	V 2	2.81
	V 3	2.65
	V 4	2.74
	V 5	2.71
	V 6	2.61
	V 7	2.62
	V 8	2.66
	V 9	2.65
	V 10	2.63
	C-1	2.71
	C-4	2.91
	C-6	2.67
	C-7	2.64