BBL 1	OX	GW 679	NET 641
2	OX	663	625
		1342	1266
3	SULF.	574	536
4	SULF.	564	526
5	SULF.	372	334
		1510	1396

Assay Records from 8/6/90

	.039
OX	.039
BW8-	.055
	.033
	.040
	.030
	.060
	.042

7 samples of OX

Total footage of core (Ttp, TbKA) ≥ .020 OPT:
~ 147.5'

$147.5' \times \frac{20 lbs}{1 Ft} = 2950$ lbs @ 0.0486 W.A.G.

* Indicates logged as breccia. Total footage: 20.9'
or ~ 14.1% of Total footage.

Footage of 6" core, Tip ≥ .020 remaining.

Hole #	Interval	length	grade	Box #	
D88-65	(72.8 - 73.7)	.9'	.043	52	
	(79.9 - 80.5)	.6	.075	51	
	(83.5 - 84)	.5	.051	51	
	(87 - 88)	1.0	.078	50	
	(91.4 - 92.1)	.7	.023	50	
	(95.3 - 95.9)	.6	.041	49	
	(98.5 - 99)	.5	.045	49	
	(123.7 - 124)	.3	.061	45	
	(128 - 128.6)	.6	.023	45	
	(131.4 - 132)	.6	.120	44	
	(135.2 - 135.6)	.4	.048	44	
	(139.1 - 139.8)	.7	.044	43	
	(142.8 - 143.4)	.6	.116	43	
	(177.1 - 177.8)	.7	.057	38	
	(181.5 - 182)	.5	.037	38	
	(152.6 - 153.1)	.5	.025	41	
	(161.3 - 161.9)	.3	.053	40	
	(164.9 - 165.6)	.7	.021	40	
	(168.4 - 168.7)	.3	.023	39	
	(102.2 - 102.9)	.7	.051	48	
	(215.2 - 215.6)	.4	.034	33	
	(223.4 - 223.8)	.4	.026	32	
	(227.2 - 228)	.8	.024	32	
	(253.2 - 253.7)	.5	.053	28	
	(258.9 - 259.5)	.6	.056	28	
	(249.9 - 250.3)	.4	.141	29	
	(262.5 - 263.1)	.6	.046	27	
	(265.7 - 266.3)	.6	.044	27	
	(269.6 - 270.2)	.6	.050	26	
	(273.4 - 274)	.6	.094	26	
	(322.8 - 323.2)	.4	.039	19	
	(326.4 - 327.1)	.7	.024	19	*
		18.7' @	.051 W.A.G.		.9507
D88-66	(99 - 99.6)	.6	.020	22	*
	(95.8 - 96.3)	.5	.041	23	
	(91.5 - 92.5)	.9	.044	23	
	(80.9 - 81.6)	.7	.054	25	
	(87.7 - 88.3)	.6	.034	24	
	(192.9 - 193.6)	.7	.021	10	
	(189.4 - 189.8)	.4	.027	10	
	(185.1 - 185.6)	.4	.062	11	
	(237.1 - 238.5)	1.4	.020	4	
	(140.8 - 141.4)	.6	.090	17	*
	(137.7 - 138.5)	.8	.042	17	*
	(214.2 - 215)	.8	.020	7	
	(199.9 - 200.7)	.8	.069	9	

Hole #	Interval	Length	Grade	Box #	
D88-66	(203.7 - 204.4)	.7	.021	8	
	(266.5 - 267.6)	1.1	.023	1	
	(261.9 - 262.4)	.5	.027	1	
	(128.3 - 128.6)	.6	.028	18	*
	(133.7 - 134.4)	.7	.050	18	*
	(121.1 - 121.6)	.5	.042	19	
	(153.3 - 153.6)	.3	.032	15	
	(144.2 - 145)	.8	.025	16	*
	(148.4 - 148.8)	.4	.025	16	*
	(95.8 - 96.3)	.5	.041	23	*
	(91.5 - 92.5)	1.0	.044	23	*
	(114.2 - 115)	.8	.045	20	*
	(80.9 - 81.6)	.7	.054	25	*
	(87.7 - 88.3)	.6	.037	24	*
	(106.4 - 107)	.6	.024	21	*
		18.6' @	.035 W.A.G.		(.6562)
D88-67	(218.9 - 219.5)	.6	.035	32	
	(226.7 - 227.6)	.9	.038	31	
	(230.6 - 231.3)	.7	.108	31	
	(239.3 - 240.1)	.8	.193	29	
	(243.4 - 244)	.6	.152	29	
	(296.1 - 296.8)	.7	.104	22	
	(299.8 - 301.5)	.7	.237	22	
	(305.1 - 305.8)	.7	.188	21	
	(310.5 - 311.5)	1.0	.032	21	
	(277.4 - 277.8)	.4	.032	25	
	(273.9 - 274.5)	.6	.051	25	
	(234.8 - 236)	1.2	.081	30	
	(247.4 - 248)	.6	.036	30	
	(263.2 - 264)	.8	.041	27	
	(284 - 284.7)	.7	.157	24	
	(254.7 - 255.3)	.6	.094	28	
	(249.7 - 251.4)	.7	.110	28	
	(162.2 - 163)	.8	.036	36	
	(214.8 - 215.3)	.5	.073	33	
	(210.6 - 211.4)	.8	.058	33	
	(270.2 - 271)	.8	.053	26	
	(266.7 - 267.3)	.5	.020	26	
	(169.5 - 170)	.5	.122	35	
	(165.6 - 166.2)	.6	.038	35	
	(205.9 - 207)	1.1	.029	34	
	(346.9 - 347.5)	.6	.020	17	
	(343.4 - 344)	.6	.020	17	
	(329.5 - 330.8)	1.3	.146	19	
	(325.4 - 326)	.6	.025	19	
	(338.7 - 339.9)	1.2	.022	18	
	(359.6 - 360.4)	.8	.042	15	

Hole #	Interval	Length	Grade	Box #	
D88-67	287.4 - 288	.6	.085	23	
	291.7 - 293.4	.7	.020	23	
	315.4 - 316.5	.9	.068	20	
	407 - 407.6	.6	.030	10	
	398.5 - 399.6	.9	.020	10	
	392 - 393.4	1.4	.043	11	
	389.9 - 390.6	.7	.026	11	
	384.8 - 385.3	.5	.025	12	
	380.7 - 381.6	.9	.038	13	
	376.7 - 377	.3	.030	13	
	448.5 - 449	.5	.020	4	
	455 - 455.8	.8	.024	4	
	458.8 - 459.3	.5	.053	3	
	433.8 - 434.8	.4	.049	6	
	475.1 - 475.9	.8	.020	1	
	426.1 - 426.4	.3	.027	7	
	429.8 - 430.5	.7	.037	7	
	411.7 - 412.7	1.0	.020	9	
		35.5' @	.063 W.A.G.		2.227
D88-68	462.2 - 463	.8	.055	2	
	465.5 - 466	.5	.061	2	
	470.1 - 471	.9	.024	3	
	473.7 - 473.7	.2	.031	3	
	513.8 - 514.6	.8	.035	8	
	517.8 - 518.6	.8	.062	8	
	522.2 - 523	.8	.049	9	
	527.9 - 529.7	.8	.086	9	
	561.9 - 562.6	.7	.110	15	
	565.8 - 566.4	.6	.584	15	
	558.4 - 659.3	.9	.060	14	
	501.1 - 501.7	.6	.043	7	
	505 - 507.7	2.7	.055	7	
	455.1 - 455.9	.8	.045	1	
	458.5 - 459	.5	.044	1	
	578.3 - 579	.7	.087	17	
	582.1 - 582.7	.6	.080	17	
	547.6 - 548.7	1.1	.081	13	
	589.9 - 590.8	.9	.021	18	*
	535.8 - 536.2	.4	.035	11	
	538.9 - 539.2	.3	.059	11	
	652.7 - 653.4	.7	.024	26	*
	593.6 - 594.2	.6	.038	19	*
	597.6 - 598.2	.6	.035	19	*
	477.5 - 478.2	.7	.051	4	
	481.7 - 482.6	.9	.052	4	
	656.5 - 657	.5	.043	27	*
	609.2 - 610	.8	.043	21	

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

Hole #	Interval	Length	Grade	Box #	
D88-68	(605.4 - 606)	.6	.027	20	*
	(570.3 - 571.6)	1.3	.088	16	
	(573.9 - 575.4)	.5	.086	16	
	(543.1 - 544)	.9	.038	12	
	(496.2 - 497)	.8	.064	6	
	(486.9 - 487.7)	.8	.043	5	
	(492 - 493)	1.0	.054	5	
		27.1' @ .066 W.A.G.			1.7966
D88-69	(902.2 - 903)	.8	.051	30	
	(781.9 - 782.4)	.5	.095	19	
	(790.4 - 790.8)	.4	.071	20	
	(794.1 - 794.6)	.5	.073	20	
	(786.4 - 787.6)	1.2	.215	20	
	(887.3 - 887.5)	.2	.034	29	
	(890.7 - 890.9)	.2	.026	29	
	(894.5 - 895)	.5	.020	29	
	(871.7 - 872)	.3	.039	27	
	(726.9 - 727.2)	.3	.034	15	
	(857.1 - 857.5)	.4	.120	26	
	(861 - 861.8)	.8	.072	26	
	(640.1 - 640.6)	.5	.057	7	*
	(643.4 - 644.5)	.9	.047	7	*
	(577.2 - 577.7)	.5	.105	1	
	(583.9 - 584.3)	.4	.020	1	
	(598.3 - 598.7)	.5	.026	3	
	(603.1 - 603.7)	.6	.046	3	
	(607.8 - 608.8)	1.0	.042	4	
	(620 - 620.6)	.6	.038	5	
	(623.1 - 623.8)	.7	.020	5	
	(630 - 630.4)	.4	.069	6	
	(635.6 - 637.1)	.5	.290	6	
	(587.3 - 587.9)	.6	.033	2	
	(590.9 - 591.3)	.4	.025	2	
	(661.7 - 662)	.3	.025	9	
	(669.1 - 669.6)	.5	.040	9	
	(656.3 - 657)	.7	.032	8	*
	(675.6 - 676.2)	.6	.034	10	
	(760.7 - 761.3)	.6	.071	18	A ?
	(733 - 733.4)	.4	.022	16	
	(737 - 737.2)	.2	.025	16	
	(813.6 - 814)	.4	.059	22	
	(817.2 - 817.8)	.6	.023	22	
	(798.8 - 799.4)	.6	.020	21	
	(820.8 - 821.2)	.4	.023	23	
	(828.5 - 829)	.5	.031	23	
	(769 - 769.5)	.5	.063	18	
		20.0' @ .062 W.A.G.			1.2461

42-381 50 SHEETS 5 SQUARE
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42-389 200 SHEETS 5 SQUARE
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Hole #	Interval	Length	Grade	Box #	
D88-70	(235.5-236)	.5	.049	24	
	(238.4-238.9)	.5	.032	24	
	(178.9-179.8)	.9	.022	16	*
	(62.3-62.8)	.5	.144	1	*
	(123.8-124.3)	.5	.025	9	*
	(83-83.8)	.8	.054	4	
	(87.2-87.9)	.7	.063	4	
	(105-105.7)	.7	.043	7	*
	(109.5-110)	.5	.027	7	*
	(65-65.1)	.1	.144	2	
	(70-72.3)	2.3	.053	2	
	(75.8-76.6)	.8	.070	3	
	(79.3-79.9)	.6	.080	3	
	(94.8-95.2)	.4	.064	5	
	(113.6-114.4)	.8	.027	8	*
	(119.3-121)	.7	.027	8	*
	(230.4-231)	.6	.048	23	
	(232.1-232.7)	.6	.035	23	
	(222.5-223.2)	.7	.105	22	
	(226.4-227)	.6	.097	22	
	(215-215.7)	.7	.045	21	
	(218.9-219.4)	.5	.042	21	
	(137.9-138.8)	.9	.021	11	*
		15.9' @	.053 W.A.G.		.835
D88-72	(993.9-994)	.1	.029	16	
	(1002.4-1002.9)	.5	.022	16	
	(613.5-614.1)	.6	.021	5	
	(617.2-618)	.8	.027	5	
	(783-783.8)	.8	.024	5	
	(506.4-507)	.6	.021	4	
	(603-603.3)	.3	.025	4	
	(606.1-606.6)	.5	.046	4	
	(610-610.3)	.3	.059	4	
	(787.3-787.7)	.4	.048	6	
	(808.7-809)	.3	.063	7	
	(811.8-812.1)	.3	.067	7	
	(501.3-501.7)	.4	.025	3	
	(821.6-822)	.4	.020	8	
	(303.4-303.9)	.5	.054	1	
	(307.2-307.7)	.5	.044	1	
	(310.8-311.2)	.4	.060	1	
	(837.8-838)	.2	.027	9	
	(841.5-842)	.5	.042	10	
	(845.1-845.2)	.1	.020	10	
	(848.9-849.5)	.6	.021	10	
	(989-989.5)	.5	.032	15	
	(969.1-969.8)	.7	.025	14	
	(972.6-973.7)	1.1	.039	14	
	(976.7-977)	.3	.029	14	
		11.2' @	.035 W.A.G.		.4145

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...BERLIN & ASSOCIATES
7463 West Otero Place
Littleton, Colorado 80123
(303) 979-6753

Paul D. Chamberlin
Mineral Processing

July 19, 1990

NEED BY 8/10/90

Mr. Micheal P. Attaway
Brohm Mining Corporation
P. O. Box 485
Deadwood, SD 57732

Re: Testing and Evaluating High Pressure Grinding Roll (HPGR)

Dear Mr. Attaway:

The following needs to be done to test and evaluate the use of a HPGR on the sulfide ore (milling) and the oxide ore (heap leaching).

Obtain >1320 pounds of sulfide sample and >1020 pounds of oxide sample. Blend and split out 820 lbs of sulfide ore and 820 lbs of the oxide ore for shipment to West Germany. Retain the remaining portion for comparative testing. The costs for testing are fairly expensive and so I'd suggest one composite sample representing the "average" of each ore. If these results look enticing, then a range of samples can be tested later. Attempt to replicate the makeup of the composite sulfide sample that Hazen Research used for most of their process development so that there is a basis for comparing the metallurgy of HPGR crushed ore with ore crushed the way Hazen did it. The crush size of the sample should be 100% minus 2".

Brohm will need to specify the average % moisture to be expected in both sulfide and oxide ores and the range of moisture to be encountered. Moisture has a significant effect on the HPGR's capacity and the consumption of wear steel.

NO NEED TO DO NOW (8/8/90 JNB CONV. W/ P.C.)

Drum the samples and include a copy of the sample's description and source and the name of the Brohm contact. Request the return of the samples by air freight. Ship the drums to:

KRUPP POLYSIUS A.G.
RESEARCH CENTER
D-4722 ENNIGERLOH
KALKOFEN,
WEST GERMANY
ATTN: DEPT. 300, DR. D. KUPPER & DEPT 132, DR. O. OTTE

LETTER TO OTTE