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Southern

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Business

Unit

May 12, 1995

Mr. Frank Chavez, Supervisor
NMOCD District III
1000 Rio Brazos Rd.
Aztec NM 87410

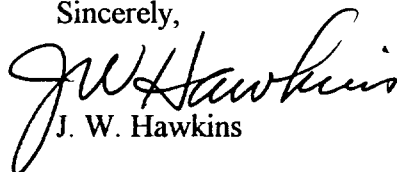
Coal
11/55

NMOCD Order No. R- 10319
Approval for Downhole Commingling
Ruth No. 1 Well
N/2 Section 8-T31N-R10W; Basin Fruitland Coal Pool
NE/4 Section 8 - T31N-R10W; Blanco Pictured Cliffs Pool
San Juan County, New Mexico

Regarding the above referenced NMOCD order, this letter will inform you of Amoco's recommendation to allocate production between the two downhole commingled pools in the Ruth No. 1 well. Attached is an evaluation for this well showing test data from the well, analysis of surrounding Pictured Cliffs (PC) well decline rates, and a predicted production forecast for the PC completion in this well. Amoco conducted production tests on each zone and on the commingled production stream in March 1995 to establish the initial percentage contribution for each pool and the calculated initial rate for the PC Pool. This was determined to be 393 mcfd starting in April 1995. In addition, the offset PC well analysis indicate that 9.7% is the representative decline rate to use for the predicted production forecast.

We plan to use this predicted production forecast to determine monthly production volumes to be allocated to the PC and any production in excess of that volume will be allocated to the Basin Fruitland Coal Pool. We plan to evaluate an alternate method using a fixed percentage allocation and compare the two methods over the next six months. At that time we will review the allocation methods with the NMOCD to determine which method is most appropriate for this well.

Sincerely,


J. W. Hawkins

cc: Greg Grotke

Mr. William J. LeMay, Director
New Mexico Oil Conservation Division
2040 S. Pacheco Street
P.O. Box 6429
Santa Fe, NM 87505

RUTH #1 Pictured Cliffs / Fruitland Coal Completion Production Tests

Pictured Cliffs Test				
DATE	TIME	hrs of flow	VOLUME	Ave. MCFD
3/2/95	integ. vol.	17.5	318	436.11
3/3/95	integ. vol.	24.5	457	447.67
3/4/95	integ. vol.	24	512	512.00
3/5/95	integ. vol.	23.25	503	519.23
Initial Calc.ed Rate*		393.41	AVE. Rate =	478.7534
Based on PC% =		68.08%		

* Calculated test rate is the % PC gas from the total commingled gas test divided by the sum of the PC & FT individual tests.

Fruitland Coal Test				
DATE	TIME	hrs of flow	VOLUME	Ave. MCFD
3/16/95	integ. vol.	14.5	138	228.41
3/17/95	integ. vol.	24.83	224	216.51
3/18/95	integ. vol.	24.17	227	225.40
3/19/95	integ. vol.	22.67	215	227.61
Ave Test Rate MCFD =				224.49

Median Decline Pictured Cliffs Rate-Time Relationship

d= 9.70%
EUR = 1456.527 MMCF

Fruitland Coal / Pictured Cliffs Commingled Test

DATE	TIME	hrs of flow	VOLUME	Ave. MCFD
3/21/95	integ. vol.	20	470	564.00
3/22/95	integ. vol.	24	559	559.00
3/23/95	integ. vol.	24	577	577.00
3/24/95	integ. vol.	24.75	603	584.73
3/25/95	integ. vol.	24	590	590.00
3/26/95	integ. vol.	23.25	574	592.52
Ave Test Rate MCFD =				577.87

Date	Rate
May-95	390.2434996
Jun-95	387.1056014
Jul-95	383.9929348
Aug-95	380.9052966
Sep-95	377.8424858
Oct-95	374.8043027
Nov-95	371.7905491
Dec-95	368.8010288
Jan-96	365.8355469
Feb-96	362.89391
Mar-96	359.9759264
Apr-96	357.081406
May-96	354.21016
Jun-96	351.3620014
Jul-96	348.5367444
Aug-96	345.734205
Sep-96	342.9542004
Oct-96	340.1965495
Nov-96	337.4610725
Dec-96	334.7475911
Jan-97	332.0559285
Feb-97	329.3859092
Mar-97	326.7373592
Apr-97	324.1101059
May-97	321.5039779
Jun-97	318.9188055
Jul-97	316.3544201
Aug-97	313.8106546
Sep-97	311.2873433
Oct-97	308.7843215
Nov-97	306.3014262
Dec-97	303.8384956
Jan-98	301.3953691
Feb-98	298.9718874
Mar-98	296.5678927
Apr-98	294.1832281
May-98	291.8177384
Jun-98	289.4712692
Jul-98	287.1436677
Aug-98	284.8347822
Sep-98	282.5444621
Oct-98	280.2725582
Nov-98	278.0189223
Dec-98	275.7834077
Jan-99	273.5658685
Feb-99	271.3661604
Mar-99	269.1841397
Apr-99	267.0196644
May-99	264.8725934
Jun-99	262.7427868
Jul-99	260.6301056
Aug-99	258.5344122
Sep-99	256.45557
Oct-99	254.3934435
Nov-99	252.3478984
Dec-99	250.3188012
Jan-00	248.3060197
Feb-00	246.3094227
Mar-00	244.3288801
Apr-00	242.3642628

OFFSET PC EXPONENTIAL DECLINES

API #	% Decline	% Decline Statistics	
3004522726	8.00		
3004522727	14.00	Mean	10.23476
3004522725	10.30	Standard Error	0.727728
3004522504	12.70	Median	9.7
3004521828	9.20	Mode	8
3004522070	7.50	Standard Deviation	3.33487
3004521820	13.50	Sample Variance	11.12136
3004521820	6.66	Kurtosis	0.170359
3004521818	11.10	Skewness	-0.112216
3004521818	2.67	Range	14.23
3004522200	9.10	Minimum	2.67
3004522137	16.90	Maximum	16.9
3004521823	14.20	Sum	214.93
3004521821	12.20	Count	21
3004522201	9.10	Confidence Level(95.000)	1.426319
3004522176	8.00		
3004522544	5.90		
3004523096	9.70		
3004523020	14.20		
3004523573	9.40		
3004522221	10.60		

Ruth #1 Production

Date	Rate	Date	Rate	Date	Rate	Date	Rate
May-00	240.4154	May-05	148.1116	May-10	91.2464	May-15	56.21373
Jun-00	238.4823	Jun-05	146.9206	Jun-10	90.5127	Jun-15	55.76172
Jul-00	236.5647	Jul-05	145.7393	Jul-10	89.7849	Jul-15	55.31335
Aug-00	234.6625	Aug-05	144.5674	Aug-10	89.06295	Aug-15	54.86858
Sep-00	232.7756	Sep-05	143.405	Sep-10	88.3468	Sep-15	54.42739
Oct-00	230.9039	Oct-05	142.2519	Oct-10	87.63642	Oct-15	53.98975
Nov-00	229.0472	Nov-05	141.108	Nov-10	86.93174	Nov-15	53.55562
Dec-00	227.2055	Dec-05	139.9734	Dec-10	86.23274	Dec-15	53.12499
Jan-01	225.3786	Jan-06	138.8479	Jan-11	85.53935	Jan-16	52.69782
Feb-01	223.5663	Feb-06	137.7314	Feb-11	84.85154	Feb-16	52.27408
Mar-01	221.7686	Mar-06	136.6239	Mar-11	84.16926	Mar-16	51.85375
Apr-01	219.9854	Apr-06	135.5254	Apr-11	83.49247	Apr-16	51.4368
May-01	218.2166	May-06	134.4356	May-11	82.82111	May-16	51.02321
Jun-01	216.4619	Jun-06	133.3546	Jun-11	82.15516	Jun-16	50.61294
Jul-01	214.7214	Jul-06	132.2824	Jul-11	81.49456	Jul-16	50.20596
Aug-01	212.9948	Aug-06	131.2187	Aug-11	80.83927	Aug-16	49.80226
Sep-01	211.2822	Sep-06	130.1636	Sep-11	80.18925	Sep-16	49.40181
Oct-01	209.5833	Oct-06	129.117	Oct-11	79.54446	Oct-16	49.00458
Nov-01	207.898	Nov-06	128.0787	Nov-11	78.90486	Nov-16	48.61054
Dec-01	206.2263	Dec-06	127.0489	Dec-11	78.27039	Dec-16	48.21967
Jan-02	204.5681	Jan-07	126.0273	Jan-12	77.64103	Jan-17	47.83194
Feb-02	202.9232	Feb-07	125.0139	Feb-12	77.01673	Feb-17	47.44733
Mar-02	201.2915	Mar-07	124.0087	Mar-12	76.39745	Mar-17	47.06581
Apr-02	199.673	Apr-07	123.0116	Apr-12	75.78314	Apr-17	46.68736
May-02	198.0674	May-07	122.0224	May-12	75.17378	May-17	46.31195
Jun-02	196.4748	Jun-07	121.0413	Jun-12	74.56932	Jun-17	45.93956
Jul-02	194.895	Jul-07	120.068	Jul-12	73.96972	Jul-17	45.57017
Aug-02	193.3278	Aug-07	119.1025	Aug-12	73.37494	Aug-17	45.20374
Sep-02	191.7733	Sep-07	118.1449	Sep-12	72.78494	Sep-17	44.84027
Oct-02	190.2313	Oct-07	117.1949	Oct-12	72.19968	Oct-17	44.47971
Nov-02	188.7017	Nov-07	116.2525	Nov-12	71.61913	Nov-17	44.12206
Dec-02	187.1843	Dec-07	115.3178	Dec-12	71.04325	Dec-17	43.76728
Jan-03	185.6792	Jan-08	114.3905	Jan-13	70.472	Jan-18	43.41535
Feb-03	184.1862	Feb-08	113.4707	Feb-13	69.90535	Feb-18	43.06625
Mar-03	182.7052	Mar-08	112.5583	Mar-13	69.34325	Mar-18	42.71996
Apr-03	181.2361	Apr-08	111.6532	Apr-13	68.78567	Apr-18	42.37646
May-03	179.7788	May-08	110.7554	May-13	68.23257	May-18	42.03571
Jun-03	178.3332	Jun-08	109.8649	Jun-13	67.68392	Jun-18	41.69771
Jul-03	176.8992	Jul-08	108.9815	Jul-13	67.13968	Jul-18	41.36242
Aug-03	175.4768	Aug-08	108.1052	Aug-13	66.59982	Aug-18	41.02983
Sep-03	174.0658	Sep-08	107.2359	Sep-13	66.0643	Sep-18	40.69992
Oct-03	172.6662	Oct-08	106.3736	Oct-13	65.53309	Oct-18	40.37265
Nov-03	171.2778	Nov-08	105.5183	Nov-13	65.00614	Nov-18	40.04802
Dec-03	169.9006	Dec-08	104.6698	Dec-13	64.48344	Dec-18	39.726
Jan-04	168.5344	Jan-09	103.8282	Jan-14	63.96493	Jan-19	39.40657
Feb-04	167.1792	Feb-09	102.9933	Feb-14	63.4506	Feb-19	39.08971
Mar-04	165.835	Mar-09	102.1652	Mar-14	62.9404	Mar-19	38.77539
Apr-04	164.5015	Apr-09	101.3437	Apr-14	62.43431	Apr-19	38.4636
May-04	163.1788	May-09	100.5288	May-14	61.93228	May-19	38.15432
Jun-04	161.8667	Jun-09	99.72044	Jun-14	61.43429	Jun-19	37.84753
Jul-04	160.5651	Jul-09	98.9186	Jul-14	60.94031	Jul-19	37.5432
Aug-04	159.2741	Aug-09	98.1232	Aug-14	60.45029	Aug-19	37.24132
Sep-04	157.9934	Sep-09	97.33421	Sep-14	59.96422	Sep-19	36.94187
Oct-04	156.7229	Oct-09	96.55156	Oct-14	59.48205	Oct-19	36.64482
Nov-04	155.4628	Nov-09	95.7752	Nov-14	59.00377	Nov-19	36.35017
Dec-04	154.2127	Dec-09	95.00508	Dec-14	58.52933	Dec-19	36.05788
Jan-05	152.9727	Jan-10	94.24116	Jan-15	58.0587	Jan-20	35.76794
Feb-05	151.7427	Feb-10	93.48338	Feb-15	57.59186	Feb-20	35.48034
Mar-05	150.5225	Mar-10	92.73169	Mar-15	57.12877	Mar-20	35.19505
Apr-05	149.3122	Apr-10	91.98605	Apr-15	56.6694	Apr-20	34.91205

Ruth #1 Production

Date	Rate	Date	Rate	Date	Rate	Date	Rate
May-20	34.63132	May-25	21.33515	May-30	13.14385	May-35	8.097466
Jun-20	34.35286	Jun-25	21.1636	Jun-30	13.03816	Jun-35	8.032355
Jul-20	34.07663	Jul-25	20.99343	Jul-30	12.93332	Jul-35	7.967768
Aug-20	33.80262	Aug-25	20.82462	Aug-30	12.82932	Aug-35	7.9037
Sep-20	33.53082	Sep-25	20.65717	Sep-30	12.72617	Sep-35	7.840148
Oct-20	33.26121	Oct-25	20.49107	Oct-30	12.62384	Oct-35	7.777106
Nov-20	32.99376	Nov-25	20.32631	Nov-30	12.52233	Nov-35	7.714572
Dec-20	32.72846	Dec-25	20.16286	Dec-30	12.42164	Dec-35	7.65254
Jan-21	32.46529	Jan-26	20.00074	Jan-31	12.32176	Jan-36	7.591007
Feb-21	32.20424	Feb-26	19.83991	Feb-31	12.22268	Feb-36	7.529968
Mar-21	31.94529	Mar-26	19.68038	Mar-31	12.1244	Mar-36	7.469421
Apr-21	31.68842	Apr-26	19.52214	Apr-31	12.02691	Apr-36	7.40936
May-21	31.43362	May-26	19.36516	May-31	11.9302	May-36	7.349782
Jun-21	31.18087	Jun-26	19.20945	Jun-31	11.83427	Jun-36	7.290684
Jul-21	30.93015	Jul-26	19.05499	Jul-31	11.73911	Jul-36	7.23206
Aug-21	30.68144	Aug-26	18.90177	Aug-31	11.64472	Aug-36	7.173908
Sep-21	30.43474	Sep-26	18.74978	Sep-31	11.55109	Sep-36	7.116224
Oct-21	30.19001	Oct-26	18.59902	Oct-31	11.45821	Oct-36	7.059003
Nov-21	29.94726	Nov-26	18.44947	Nov-31	11.36607	Nov-36	7.002242
Dec-21	29.70646	Dec-26	18.30112	Dec-31	11.27468	Dec-36	6.945938
Jan-22	29.46759	Jan-27	18.15396	Jan-32	11.18402	Jan-37	6.890087
Feb-22	29.23085	Feb-27	18.00798	Feb-32	11.09409	Feb-37	6.834685
Mar-22	28.99561	Mar-27	17.86318	Mar-32	11.00489	Mar-37	6.779728
Apr-22	28.76246	Apr-27	17.71955	Apr-32	10.9164	Apr-37	6.725213
May-22	28.53118	May-27	17.57707	May-32	10.82862	May-37	6.671136
Jun-22	28.30177	Jun-27	17.43573	Jun-32	10.74155	Jun-37	6.617495
Jul-22	28.0742	Jul-27	17.29554	Jul-32	10.65518	Jul-37	6.564284
Aug-22	27.84845	Aug-27	17.15646	Aug-32	10.5695	Aug-37	6.511502
Sep-22	27.62453	Sep-27	17.01851	Sep-32	10.48451	Sep-37	6.459143
Oct-22	27.4024	Oct-27	16.88167	Oct-32	10.40021	Oct-37	6.407206
Nov-22	27.18206	Nov-27	16.74592	Nov-32	10.31658	Nov-37	6.355687
Dec-22	26.9635	Dec-27	16.61127	Dec-32	10.23363	Dec-37	6.304581
Jan-23	26.74669	Jan-28	16.4777	Jan-33	10.15134	Jan-38	6.253887
Feb-23	26.53162	Feb-28	16.34521	Feb-33	10.06971	Feb-38	6.2036
Mar-23	26.31828	Mar-28	16.21378	Mar-33	9.988745	Mar-38	6.153718
Apr-23	26.10666	Apr-28	16.08341	Apr-33	9.908426	Apr-38	6.104237
May-23	25.89674	May-28	15.95408	May-33	9.828754	May-38	6.055153
Jun-23	25.68851	Jun-28	15.8258	Jun-33	9.749722	Jun-38	6.006465
Jul-23	25.48195	Jul-28	15.69854	Jul-33	9.671326	Jul-38	5.958167
Aug-23	25.27705	Aug-28	15.57231	Aug-33	9.59356	Aug-38	5.910259
Sep-23	25.0738	Sep-28	15.4471	Sep-33	9.51642	Sep-38	5.862735
Oct-23	24.87219	Oct-28	15.32289	Oct-33	9.439899	Oct-38	5.815593
Nov-23	24.67219	Nov-28	15.19968	Nov-33	9.363994	Nov-38	5.768831
Dec-23	24.47381	Dec-28	15.07746	Dec-33	9.2887	Dec-38	5.722445
Jan-24	24.27702	Jan-29	14.95623	Jan-34	9.21401	Jan-39	5.676431
Feb-24	24.08181	Feb-29	14.83596	Feb-34	9.139922	Feb-39	5.630788
Mar-24	23.88817	Mar-29	14.71667	Mar-34	9.066429	Mar-39	5.585511
Apr-24	23.69609	Apr-29	14.59834	Apr-34	8.993527	Apr-39	5.540599
May-24	23.50555	May-29	14.48095	May-34	8.921211	May-39	5.496048
Jun-24	23.31655	Jun-29	14.36451	Jun-34	8.849477	Jun-39	5.451855
Jul-24	23.12906	Jul-29	14.24901	Jul-34	8.778319	Jul-39	5.408017
Aug-24	22.94308	Aug-29	14.13444	Aug-34	8.707734	Aug-39	5.364532
Sep-24	22.7586	Sep-29	14.02078	Sep-34	8.637716	Sep-39	5.321396
Oct-24	22.5756	Oct-29	13.90804	Oct-34	8.568261	Oct-39	5.278608
Nov-24	22.39407	Nov-29	13.79621	Nov-34	8.499365	Nov-39	5.236163
Dec-24	22.21401	Dec-29	13.68528	Dec-34	8.431023	Dec-39	5.19406
Jan-25	22.03539	Jan-30	13.57523	Jan-35	8.36323	Jan-40	5.152295
Feb-25	21.8582	Feb-30	13.46608	Feb-35	8.295982	Feb-40	5.110866
Mar-25	21.68244	Mar-30	13.3578	Mar-35	8.229275	Mar-40	5.06977
Apr-25	21.5081	Apr-30	13.25039	Apr-35	8.163105	Apr-40	5.029005