

VACUUM GLORIETA EAST UNIT

TRACT PARTICIPATION SPREADSHEET

Attached are two copies of a spreadsheet that details the formula used to calculate Unit Participation for each Tract. This formula was unanimously approved by the Vacuum Glorieta Unit Working Interest Owners on May 4, 1993. Unit participation is divided into six phases. Each phase is a proportion of a Primary Factor and a Secondary Factor. The Primary and Secondary Factors represent the value of the remaining primary reserves and potential secondary reserves respectively. The proportion of the Secondary Factor to Primary Factor increases as the forecasted volume of secondary (EOR) oil production increases.

The spreadsheet is divided into five parts and is read left to right. The left column is the Unit tract number. The next section, titled "Unit Parameter", is a table of the seven parameters that were used to describe the Unit's reservoir, production and geologic characteristics. The third section, titled "Tract Percentage of Unit Parameter", is a table of the ratios of the Tract Parameters to the Unit Total Parameters. The fourth section is the tract percentages of the Primary Factor and the Secondary Factor. The formula used to calculate these Factors are as follows:

$$\text{Primary Factor} = 0.495 \times \text{Remaining Primary} + 0.495 \times \text{Current Production} + 0.01 \times \text{Ultimate Primary}$$

$$\text{Secondary Factor} = 0.2 \times \text{Acreage} + 0.2 \times \text{Cumulative Production} + 0.2 \times \text{Ultimate Primary} + 0.2 \times \text{Net Pay} + 0.2 \times \text{Volumetric Oil in Place}$$

The fifth section is a table of the Tract Participation in each phase. The proportion of the Primary Factor and Secondary Factor used to derive the Tract Participation is shown under the heading of each phase.

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
EXHIBIT NO. <u>9</u>
CASE NO. <u>10485 AND 10486</u>

VACUUM GLORIETA EAST UNIT
LEA COUNTY, NEW MEXICO

UNIT PARAMETERS										TRACT PERCENTAGE OF UNIT PARAMETER										PARTICIPATION FORMULA				TRACT WORKING INTEREST					
TRACT	ACREAGE	CUMULATIVE PRODUCTION 1/01/82 (STBO)	REMAINING PRIMARY 1/01/82 (STBO)	ULTIMATE PRIMARY 1/01/82 (STBO)	1991 PRODUCTION (BOPD)	NET PAY (FEET)	VOLUMETRIC OIL IN PLACE (STBO)	TRACT CUMULATIVE PRODUCTION 1/01/82		TRACT REMAINING PRIMARY 1/01/82		TRACT ULTIMATE PRIMARY 1/01/82		1991 PRODUCTION	TRACT NET PAY		TRACT VOLUMETRIC OIL IN PLACE		PRIMARY FACTOR FORMULA (0.485 x C) + (0.485 x E) + (0.01 x D) + 0.2 x G	SECONDARY FACTOR FORMULA (0.2 x A) + (0.2 x B) + (0.2 x D) + (0.2 x F) + (0.2 x G)	PHASE I (1.0 x V)	PHASE II (0.75 x V) + (0.25 x Z)	PHASE III (0.5 x V) + (0.5 x Z)	PHASE IV (0.25 x V) + (0.75 x Z)	PHASE V (0.15 x V) + (0.85 x Z)	PHASE VI (1.0 x V)			
								UNIT	CUMULATIVE PRODUCTION 1/01/82	UNIT	REMAINING PRIMARY 1/01/82	UNIT	ULTIMATE PRIMARY 1/01/82		UNIT	1991 PRODUCTION	UNIT	NET PAY									UNIT	VOLUMETRIC OIL IN PLACE	
01	320.00	6,124,120	1,127,284	7,251,414	532.84	750.11883	14,315,838	7.54740%	14.12131%	20.84388%	14.85075%	26.93560%	10.88080%	13.34242%	23.70035%	12.15056%	23.70035%	20.81290%	17.92545%	15.03600%	13.88302%	12.15056%							
02	320.00	3,318,362	673,780	3,993,142	199.81	458.94825	8,520,587	7.54740%	7.85385%	12.33878%	8.17787%	10.10080%	6.63436%	6.07720%	11.18927%	7.21816%	11.18927%	10.18648%	8.20371%	6.21093%	7.81382%	7.21816%							
03	40.00	187,225	0	187,225	0.00	86.88591	1,081,878	0.94343%	0.38580%	0.00000%	0.34247%	0.00000%	0.87111%	0.88887%	0.00342%	0.72846%	0.00342%	0.18418%	0.36484%	0.54570%	0.61800%	0.72846%							
04	80.00	1,839,802	450,000	2,289,802	178.85	211.55829	4,531,840	1.88885%	4.24185%	8.24075%	4.88806%	9.04105%	3.07159%	4.22351%	8.60138%	3.62257%	8.60138%	7.35688%	6.11188%	4.86727%	4.36939%	3.62257%							
05	180.00	3,317,331	850,000	4,167,331	202.54	353.51100	5,818,738	3.77370%	7.84927%	15.56586%	8.53481%	10.23860%	5.13259%	5.42309%	12.85855%	6.10285%	12.85855%	11.18958%	8.48080%	7.78183%	7.11604%	6.10285%							
06	80.00	328,916	18,821	347,537	6.05	77.52500	474,382	1.88885%	0.75843%	0.34100%	0.71175%	0.30583%	1.12558%	0.44211%	0.32730%	0.88484%	0.32730%	0.48171%	0.65812%	0.82053%	0.88630%	0.88484%							
07	80.00	329,922	0	329,922	0.00	125.47400	1,981,585	1.88885%	0.76075%	0.00000%	0.67567%	0.00000%	1.82174%	1.85815%	0.00676%	1.40023%	0.00676%	0.35513%	0.70349%	1.05186%	1.19121%	1.40023%							
08	40.00	380,985	82,651	453,636	14.99	80.35800	1,358,281	0.94343%	0.80155%	1.14731%	0.92804%	0.75776%	1.18888%	1.26590%	0.95230%	1.04132%	0.95230%	0.87456%	0.98881%	1.01907%	1.02787%	1.04132%							
09	80.00	1,382,866	78,058	1,440,924	28.75	114.21000	1,452,530	1.88885%	3.14257%	1.42948%	2.85088%	1.45334%	1.85820%	1.35376%	1.45850%	2.18847%	1.45850%	1.84189%	1.82748%	2.01286%	2.08718%	2.18847%							
10	120.00	1,632,827	183,000	1,815,827	51.94	208.82984	2,582,598	2.83028%	3.78528%	3.35124%	3.71888%	2.62582%	3.00001%	2.40889%	2.99573%	3.14431%	2.99573%	3.03288%	3.07002%	3.10717%	3.12202%	3.14431%							
11	160.00	2,114,110	75,288	2,189,408	30.70	289.82984	3,268,098	3.77370%	4.87482%	1.37892%	4.48388%	1.55192%	4.20801%	3.04402%	1.49580%	4.07888%	1.49580%	2.14082%	2.78824%	3.43156%	3.68869%	4.07888%							
12	80.00	1,036,771	117,867	1,154,638	43.22	202.81000	3,851,185	1.88885%	2.38084%	2.15847%	2.38488%	2.18481%	2.94603%	3.68250%	2.17357%	2.85414%	2.17357%	2.28371%	2.41386%	2.53400%	2.58205%	2.85414%							
13	120.00	843,847	2,491	846,138	3.06	85.95100	1,389,438	2.83028%	1.48415%	0.04582%	1.32328%	0.15489%	1.39310%	1.29496%	0.11238%	1.88515%	0.11238%	0.50058%	0.88877%	1.27886%	1.43224%	1.88515%							
14	40.00	178,565	0	178,565	0.00	52.24700	513,542	0.94343%	0.41174%	0.00000%	0.38570%	0.00000%	0.75857%	0.47882%	0.00368%	0.58181%	0.00368%	0.15085%	0.29783%	0.44482%	0.50342%	0.58181%							
15	80.00	1,054,000	48,341	1,100,341	18.20	108.81400	1,584,018	1.88885%	2.43037%	0.84883%	2.25348%	0.82003%	1.57886%	1.45787%	0.88802%	1.82184%	0.88802%	1.15393%	1.40883%	1.88574%	1.78810%	1.82184%							
16	120.00	418,630	0	418,630	0.00	78.37000	1,022,245	2.83028%	0.88088%	0.00000%	0.85325%	0.00000%	1.10881%	0.95274%	0.00853%	1.34115%	0.00853%	0.34189%	0.87484%	1.00800%	1.14126%	1.34115%							
17	120.00	318,300	0	318,300	4.20	180.48244	3,138,397	2.83028%	0.72834%	0.00000%	0.64778%	0.21231%	2.82041%	2.82314%	0.11157%	1.95018%	0.11157%	0.57123%	1.03088%	1.49053%	1.87439%	1.95018%							
18	40.00	42,802	0	42,802	0.00	21.02827	88,938	0.94343%	0.08823%	0.00000%	0.08725%	0.00000%	0.30531%	0.88221%	0.00087%	0.30529%	0.00087%	0.07898%	0.15308%	0.22818%	0.25882%	0.30529%							
19	180.00	785,583	83,374	868,957	22.31	204.21800	3,039,103	3.77370%	1.81144%	1.52881%	1.77981%	1.12778%	2.86502%	2.83248%	1.33182%	2.83244%	1.33182%	1.65888%	1.88213%	2.30729%	2.43735%	2.83244%							
20	38.97	418,534	48,285	465,799	10.74	43.38148	645,583	0.94272%	0.88047%	0.80218%	0.85395%	0.54282%	0.82858%	0.80170%	0.72486%	0.81788%	0.72486%	0.74807%	0.77127%	0.79447%	0.80378%	0.81788%							
21	40.00	98,321	0	98,321	0.00	48.87800	338,551	0.94343%	0.22802%	0.00000%	0.20341%	0.00000%	0.88059%	0.31848%	0.00203%	0.47458%	0.00203%	0.12017%	0.23831%	0.35844%	0.40370%	0.47458%							
22	80.00	1,588,043	227,857	1,793,700	100.48	181.83200	3,435,488	1.88885%	3.81106%	4.18803%	3.87346%	5.07987%	2.34872%	3.20187%	4.81484%	2.84389%	4.81484%	4.18720%	3.77847%	3.38173%	3.18483%	2.94389%							
23	80.00	187,148	0	187,148	0.14	158.84182	2,204,712	1.88885%	0.38542%	0.00000%	0.34232%	0.00708%	2.27427%	2.05480%	0.00893%	1.38873%	0.00893%	0.35238%	0.88783%	1.04328%	1.18148%	1.38873%							
24	120.00	2,201,807	683,560	2,885,367	238.88	188.15707	3,180,311	2.83028%	5.07704%	12.70101%	5.82885%	12.11505%	2.74835%	2.84542%	12.34325%	3.80575%	12.34325%	10.23387%	8.12450%	8.01512%	5.17137%	3.80575%							

VACUUM GLORIETA EAST UNIT
LEA COUNTY, NEW MEXICO

UNIT PARAMETERS										TRACT PERCENTAGE OF UNIT PARAMETER										PARTICIPATION FORMULA		TRACT WORKING INTEREST					
TRACT	ACERAGE	CUMULATIVE PRODUCTION 1/01/82 (8TB0)	REMAINING PRIMARY 1/01/82 (8TB0)	ULTIMATE PRIMARY 1/01/82 (8TB0)	1991 PRODUCTION (8OPD)	NET PAY (FEET)	VOLUMETRIC OIL IN PLACE (8TB0)	TRACT ACERAGE	TRACT CUMULATIVE PRODUCTION 1/01/82	TRACT REMAINING PRIMARY 1/01/82	TRACT ULTIMATE PRIMARY 1/01/82	TRACT 1991 PRODUCTION	TRACT NET PAY	TRACT VOLUMETRIC OIL IN PLACE	PRIMARY FACTOR FORMULA (0.48 x C) + (0.48 x E) + (0.01 x D) +	SECONDARY FACTOR FORMULA (0.2 x A) + (0.2 x B) + (0.2 x D) + (0.2 x F) +	PHASE I (1.0 x Y)	PHASE II (0.75 x Y) + (0.25 x Z)	PHASE III (0.5 x Y) + (0.5 x Z)	PHASE IV (0.25 x Y) + (0.75 x Z)	PHASE V (0.15 x Y) + (0.85 x Z)	PHASE VI (1.0 x Y)					
25	160.00	1,301,312	85,414	1,386,726	22.26	277.35000	4,611,946	3.77370%	3.00663%	1.56417%	2.63989%	1.12628%	4.02682%	4.29835%	1.36017%	3.58790%	1.36017%	1.91710%	2.47403%	3.03087%	3.25374%	3.58790%					
26	160.00	2,287,627	217,730	2,515,357	69.45	306.81700	4,400,835	3.77370%	5.29789%	3.98724%	5.15140%	3.51077%	4.45465%	4.10160%	3.76303%	4.55887%	3.76303%	3.98124%	4.15945%	4.35766%	4.43694%	4.55887%					
27	160.00	1,479,552	61,336	1,560,890	44.86	421.05100	6,310,165	3.77370%	3.41163%	1.48852%	3.19867%	2.26673%	6.11320%	5.68110%	1.89230%	4.47526%	1.89230%	2.53804%	3.18378%	3.82852%	4.08782%	4.47526%					
28	40.00	17,102	0	17,102	0.00	14.28200	163,124	0.94343%	0.03843%	0.00000%	0.03502%	0.00000%	0.20736%	0.15203%	0.00035%	0.27546%	0.00035%	0.08913%	0.13790%	0.20666%	0.23419%	0.27546%					
29	40.00	451,556	7,450	459,006	3.13	69.07900	1,472,710	0.94343%	1.04122%	0.13643%	0.94004%	0.15822%	1.29333%	1.37257%	0.15525%	1.11812%	0.15525%	0.39597%	0.63869%	0.87740%	0.97369%	1.11812%					
30	40.00	226,650	0	226,650	2.60	74.48800	1,347,614	0.94343%	0.52262%	0.00000%	0.46417%	0.13143%	1.06148%	1.25588%	0.06870%	0.85354%	0.06870%	0.26566%	0.46162%	0.65758%	0.73596%	0.85354%					
31	78.80	92,550	0	92,550	0.00	31.37000	625,477	1.86449%	0.21341%	0.00000%	0.18954%	0.00000%	0.45546%	0.56285%	0.00180%	0.66517%	0.00180%	0.16771%	0.33353%	0.49835%	0.56568%	0.66517%					
32	40.00	318,716	0	318,716	0.67	53.40400	457,024	0.94343%	0.73482%	0.00000%	0.65273%	0.04388%	0.77537%	0.42585%	0.02830%	0.70648%	0.02830%	0.19764%	0.36739%	0.53683%	0.60475%	0.70648%					
33	40.00	168,865	0	168,865	0.93	40.63500	520,251	0.94343%	0.39168%	0.00000%	0.34788%	0.04701%	0.58988%	0.46488%	0.02675%	0.55157%	0.02675%	0.15785%	0.28816%	0.42036%	0.47285%	0.55157%					
34	80.00	761,494	15,161	776,675	6.16	106.38733	1,706,672	1.86865%	1.75588%	0.27801%	1.59061%	0.41351%	1.57366%	1.58268%	0.35821%	1.67894%	0.35821%	0.66864%	1.01807%	1.34951%	1.48168%	1.67894%					
35	120.00	742,365	32,261	774,626	11.29	171.66452	2,666,625	2.63028%	1.71178%	0.59079%	1.56642%	0.57072%	2.49528%	2.46548%	0.59061%	2.22185%	0.59061%	0.99857%	1.40633%	1.81408%	1.87719%	2.22185%					
36	40.00	633,739	2,363	636,122	2.54	62.63800	782,647	0.94343%	1.46131%	0.04364%	1.30277%	0.12840%	0.80943%	0.72943%	0.09819%	1.06827%	0.09819%	0.34086%	0.58373%	0.82650%	0.82361%	1.06827%					
37	160.00	460,716	0	460,716	6.17	236.78000	3,360,502	3.77370%	1.10646%	0.00000%	0.98450%	0.31180%	3.46682%	3.13200%	0.16424%	2.48310%	0.16424%	0.74645%	1.32667%	1.91068%	2.14377%	2.48310%					
38	80.00	1,577,907	264,630	1,842,537	64.94	166.98200	3,849,654	1.86865%	3.63642%	4.64611%	3.77346%	4.29380%	2.42439%	3.56788%	4.56189%	3.06221%	4.56189%	4.16704%	3.81210%	3.43715%	3.28717%	3.06221%					
39	40.00	458,255	0	458,255	2.01	60.12800	666,749	0.94343%	1.05887%	0.00000%	0.94055%	0.10161%	0.87298%	0.62328%	0.05870%	0.66784%	0.05870%	0.26674%	0.47377%	0.66081%	0.76362%	0.66784%					
40	40.00	443,468	967	444,435	2.93	73.42000	831,760	0.94343%	1.02257%	0.01771%	0.91019%	0.14611%	1.06596%	0.66840%	0.09118%	0.96211%	0.09118%	0.30682%	0.52665%	0.74436%	0.83147%	0.96211%					
41	80.00	363,519	0	363,519	3.42	103.91200	1,032,475	1.86865%	0.83822%	0.00000%	0.74446%	0.17286%	1.50688%	0.96227%	0.09302%	1.16810%	0.09302%	0.36679%	0.64056%	0.81433%	1.02364%	1.16810%					
42	40.00	457,562	5,988	463,551	17.91	72.98800	1,416,848	0.94343%	1.05507%	0.10866%	0.94934%	0.80537%	1.05971%	1.32237%	0.51194%	1.06586%	0.51194%	0.65045%	0.78886%	0.92747%	0.98286%	1.06586%					
43	40.00	323,113	0	323,113	1.42	22.10400	172,632	0.94343%	0.74505%	0.00000%	0.66173%	0.07178%	0.32093%	0.16089%	0.04215%	0.56640%	0.04215%	0.17321%	0.30428%	0.43534%	0.46777%	0.56640%					
44	40.00	120,199	0	120,199	0.00	32.48891	376,081	0.94343%	0.27716%	0.00000%	0.24617%	0.00000%	0.47167%	0.35133%	0.00246%	0.45795%	0.00246%	0.11833%	0.23021%	0.34408%	0.38863%	0.45795%					
45	40.00	336,926	8,070	344,996	4.76	56.46200	877,511	0.94343%	0.77680%	0.14778%	0.70654%	0.24062%	0.62006%	0.81764%	0.18933%	0.81285%	0.18933%	0.35273%	0.50614%	0.65955%	0.72091%	0.81285%					
46	40.00	236,633	0	236,633	0.00	71.81266	900,686	0.94343%	0.55025%	0.00000%	0.46872%	0.00000%	1.04408%	0.83944%	0.00489%	0.77318%	0.00489%	0.18686%	0.38804%	0.56111%	0.65794%	0.77318%					
47	40.00	221,765	0	221,765	0.00	64.28073	763,844	0.94343%	0.51140%	0.00000%	0.45421%	0.00000%	0.83329%	0.71191%	0.00454%	0.71085%	0.00454%	0.18112%	0.35788%	0.53427%	0.60490%	0.71085%					
TOTAL	4238.87	43,387,933	5,460,670	48,828,603	1978.20	6887.57416	107,285,656	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%					