

BEFORE THE
OIL CONSERVATION DIVISION
Case No. 11113, 11114 Exhibit No. 12
Submitted By:
GREAT WESTERN DRILLING CO.
Hearing Date: October 13, 1994

Carter (San Andres)
Lea Co. N.M.
LOCATOR MAP

**SOUTH CARTER SAN ANDRES WF PROJECT
GREAT WESTERN DRILLING COMPANY**

FILLUP CALCULATIONS - MOST LIKELY CASE

Assumptions: Unitized Area = 624 acres
Primary Produced (as of 1/94) = 2,290,000 STBO
% Primary Recovery = 20% of OOIP (estimated from analogies)
Original Oil FVF (Bob) = 1.22 res bbl/STB (from Carter #1 Fluid Study of 1957)
Original Bubble Point Pressure (Pob) = 841 psig (from Carter #1 Fluid Study of 1957)
Connate Water Saturation = 35% (estimated from analogies)
Injection Efficiency (Net Injection) = 85%
Total Injection Rate (5 WIW's) = 3000 BWIPD

Primary (1/94) = 2.29 MMSTBO

OOIP (20% Primary Recov.) = 2.29 MMSTBO/.20 = 11.45 MMSTBO.

Pore Volume, Vp = OOIP*Bob/(1-Swc) = 11,450,000*1.22/(1-.35) = 21,500,000 res bbls.

Current Oil Saturation (1/94), So = (1-Npp/Nob)(Bo/Bob)(1-Swc)
So = (1-.2)(1.17/1.22)(1-.35) = .499 or 50%.

Current Gas Saturation (1/94), Sg = 1-Swc-So = 1-.35-.50 = .15 or 15%.

Fillup of Gas Vol. = (21,500,000 res bbls.)(.15) = 3,225,000 res bbls.

Net Injection = 3000 BWIPD * .85 = 2550 BWIPD.

Start Water Injection ~ 8/94.

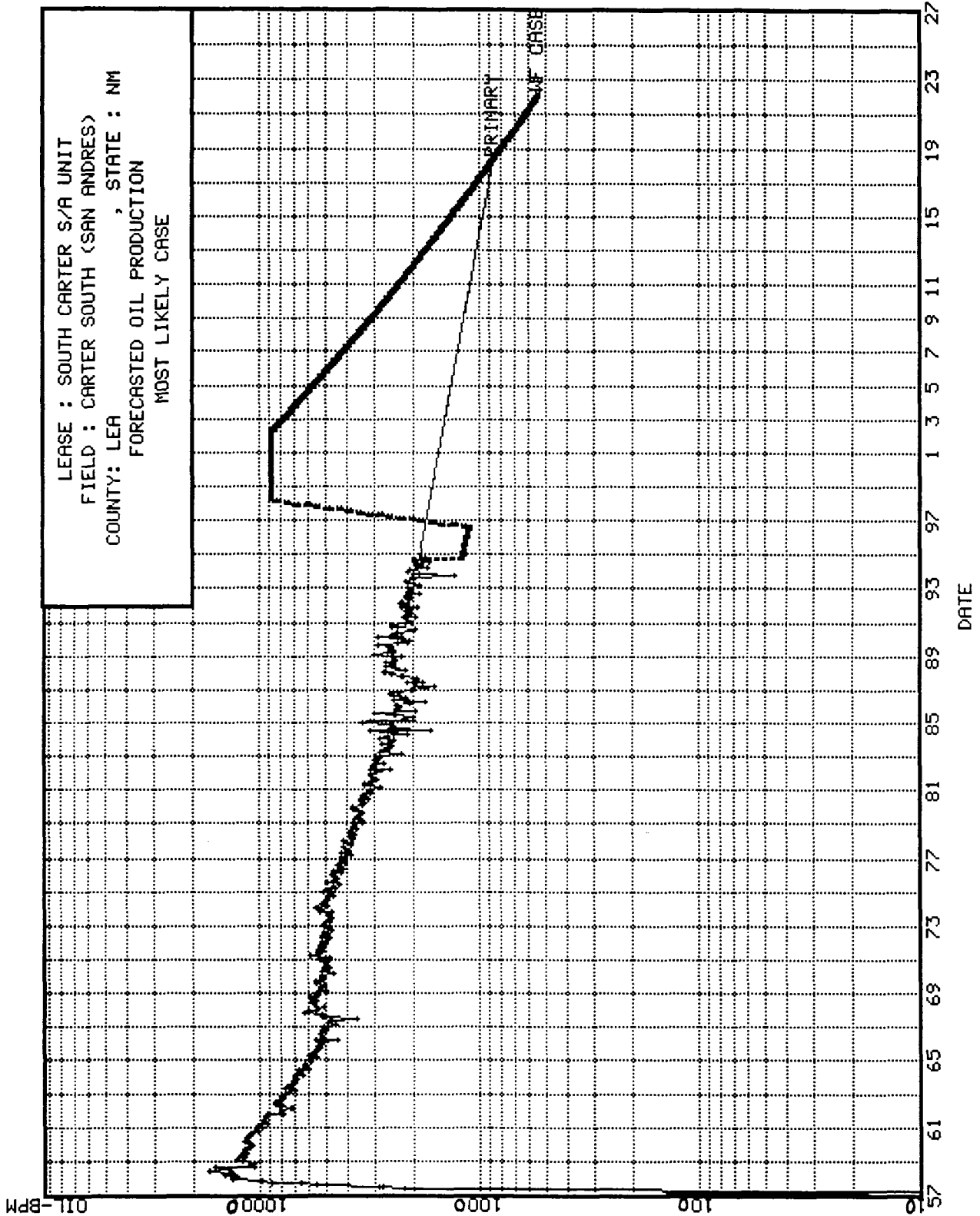
First Response @ 55% of fillup = 3,225,000 * .55 / 2550 = 696 days = 1.9 years.

Peak Response @ 100% of fillup = 3,225,000 / 2550 = 1265 days = 3.47 years.

Flat Decline during Peak Prod @ 200% of fillup = 3,225,000 * 2.0 / 2550 = 2529 days = 6.9 yrs.

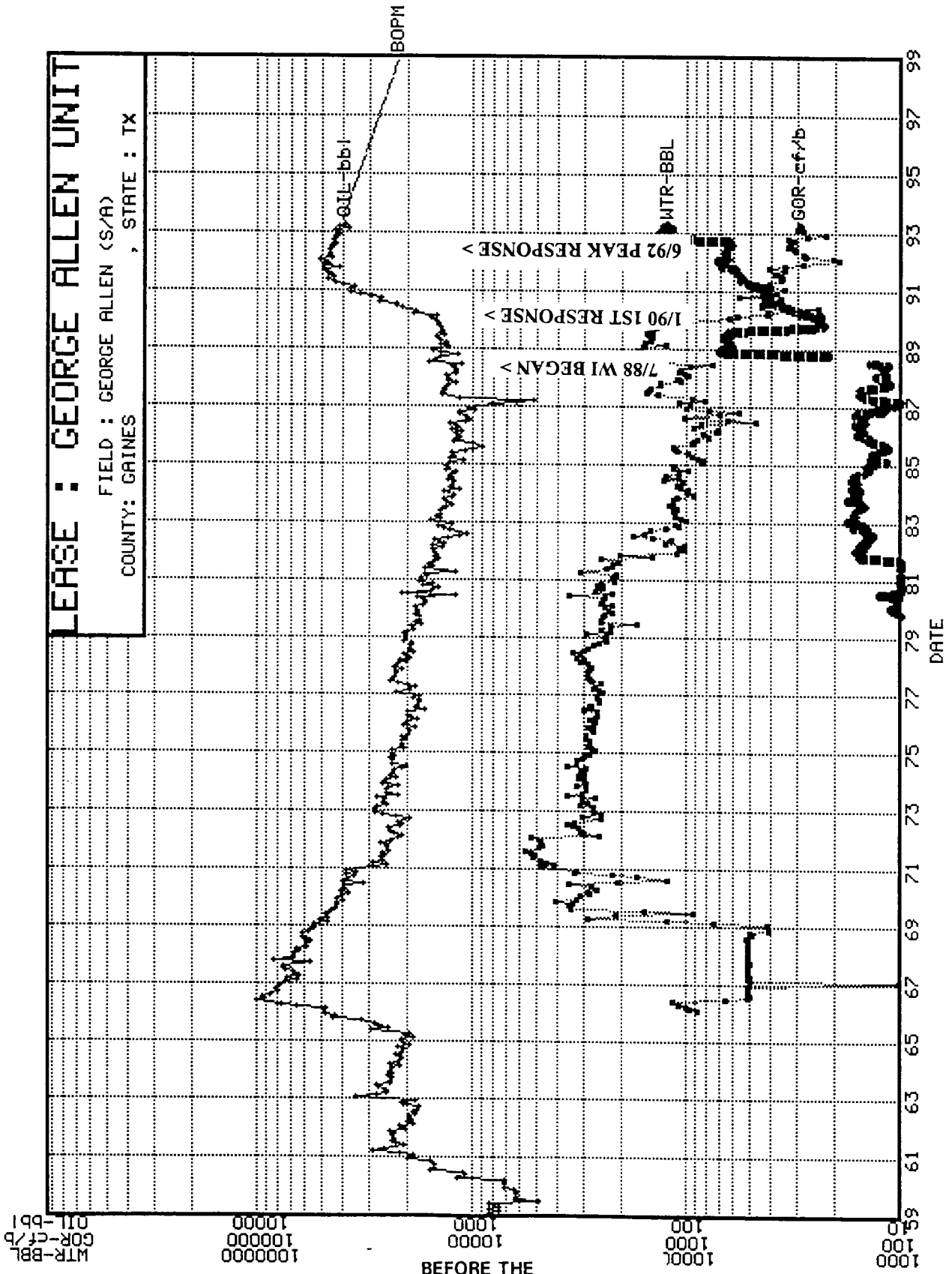
Decline after Peak = 15% per year (estimated from analogy).

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BEFORE THE
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FIGURE 8



GREAT WESTERN DRILLING COMPANY																
SOUTH CARTER (SAN ANDRES) UNIT																
LEA COUNTY, NEW MEXICO																
UNITIZATION PARTICIPATION FORMULAS A & B:																
FORMULA A:																
TRACT PARAMETERS = 50% CUM OIL/10% ACREAGE/40% REMAINING PRIMARY																
PROJ	REMAIN.	ACTIVE	SURF	CURRENT	TRACT	GWDC	Davoil	Hilsewicks	A.H. Ball	Yates Pet	B.H. Wong	Cummings	Danglade	Wagners	MR Young	
CUM OIL	EUR/BO	PRIMARY	ACRES	PROD.	FACTOR	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	
(C)	(E)	(R)	(A)	(P)	50C.10A.40R	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	
Lease																
Effie Carter	771,102	866,573	95,471	3	212	654	0.307820889	0.169864401	0.092226	0.012826	0.003206	0.0096194	0.00320648	0.016834	0	
McQueen	210,096	214,861	4,765	1	120	227	0.071405599	0.031231252	0.01605	0.002232	0.000558	0	0.00055794	0.0029292	0.0133885	0.004454
S. Johnson	786,561	1,047,337	260,776	3	106	1068	0.468871443	0.258736719	0.14054	0.019536	0.004884	0.0146522	0.00488409	0.0256414	0	
Burton Fed.	175,376	193,137	17,761	1	26	240	0.062275098	0.040152492	0.02212	0	0	0	0	0	0	
Carter A	58,768	58,768	0	1	40	50	0.019597026	0	0	0	0	0	0	0	0.019597	
Johnson A	27,056	27,056	0	0	40	0	0.012481269	0.008047423	0.00443	0	0	0	0	0	0	
SP Johnson	199,335	199,335	0	0	80	0	0.057548677	0.037105085	0.02044	0	0	0	0	0	0	
	2,228,294	2,607,067	378,773	9	624	2239	1	0.545137372	0.29586	0.034594	0.008649	0.0242716	0.00864852	0.0454046	0.0133885	0.004454
FORMULA B:																
TRACT PARAMETERS = 50% CUM OIL/5% ACREAGE/45% REMAINING PRIMARY																
PROJ	REMAIN.	ACTIVE	SURF	CURRENT	TRACT	GWDC	Davoil	Hilsewicks	A.H. Ball	Yates Pet	B.H. Wong	Cummings	Danglade	Wagners	MR Young	
CUM OIL	EUR/BO	PRIMARY	ACRES	PROD.	FACTOR	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	
(C)	(E)	(R)	(A)	(P)	50C.5A.45R	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	UNIT WI	
Lease																
Effie Carter	771,102	866,573	95,471	3	212	654	0.303436376	0.167444901	0.09095	0.012643	0.003161	0.0094824	0.00316081	0.0165942	0	
McQueen	210,096	214,861	4,765	1	120	227	0.062419219	0.027300806	0.01403	0.001951	0.000488	0	0.00048773	0.0025606	0.003894	
S. Johnson	786,561	1,047,337	260,776	3	106	1068	0.494801638	0.273045744	0.14831	0.020617	0.005154	0.0154626	0.0051542	0.0270595	0	
Burton Fed.	175,376	193,137	17,761	1	26	240	0.062536308	0.04032091	0.0222	0	0	0	0	0	0	
Carter A	58,768	58,768	0	1	40	50	0.016391898	0	0	0	0	0	0	0	0.0163919	
Johnson A	27,056	27,056	0	0	40	0	0.00927614	0.005980884	0.0033	0	0	0	0	0	0	
SP Johnson	199,335	199,335	0	0	80	0	0.051138421	0.032972008	0.01817	0	0	0	0	0	0	
	2,228,294	2,607,067	378,773	9	624	2239	1	0.547065254	0.29697	0.035211	0.008803	0.0249449	0.00880273	0.0462142	0.0117036	0.003894
FORMULA B:																
TRACT PARAMETERS = 50% CUM OIL/5% ACREAGE/45% REMAINING PRIMARY																

BEFORE THE
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LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE