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).

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