NORTH SQUARE LAKE PROJECT
Enhanced Waterflood Feasibility Study

HISTORY

The Square Lake Field was discovered in 1941 by the Sanders Brothers Leonard #1 located in Section 34 T-16-S R-30-E. Development on 40 acre spacing continued through the 1940's. These early wells were completed openhole. The main pay zones are the Premier and Lovington sands. The Premier sand is 20 to 50 feet thick at a depth of 3,350 feet. The Lovington sand is 5 to 20 feet thick at a depth of 3,500 feet.

The initial completion practice was to set 5 1/2" casing above the Premier and drill through the Premier and Lovington. The zones were then shot with nitro. Not much stimulation was put on these wells until the mid 1960's. At that time, the openholes were fracture stimulated with an average of 40,000 gallons and 30,000 pounds of sand. These completion practices resulted in very inefficient recoveries. The primary recovery for these wells was only about 6% of the OOIP.

The initial waterflood was started in 1959 by Newmont and was located in Sections 28, 33 and 34 T-16-S, T-31-E. In 1964 Newmont expanded the flood to encompass sections 19, 20, 28, 29, 30, 32, 33 and 34. In 1965 Ryder Scott Management instituted a waterflood unit composed of sections Nos. 25 & 36, T-16-S, R-30-E and sections Nos. 30 & 31, T-16-S, R-31-E.

GP II Energy, Inc. now plans to infill this field on 20 acre spacing based on the success of the Devon flood directly south of this property.

CURRENT OPERATIONS

The proposed NSLU consists of nearly 6200 acres containing Original Oil in Place (OOIP) of 90,240 MBO. The current ultimate recovery of 12,867 MBO is 14.2% of the OOIP. This is poor

recovery for a waterflood. The ultimate primary reserves for this area is 5389 MBO with incremental secondary reserves of 7478 MBO for a secondary/primary ratio of 1.4.

The proposed NSLU currently has 65 active producers and 10 active injectors. The main producing zones in the field are the Premier sand at 3350' and the Lovington sand at 3500'. Some wells produce from the Metex sand at 3300'. These properties produce 150 BOPD, 33 MCFPD and 600 BWPD. The current remaining reserves are 367 MBO. The proposed infill drilling and waterflood program will recover an additional 11,722 MBO. This will increase the OOIP recovered by 13.0% bringing the total recovery to 27.2%. The remaining reserves are summarized below.

Remaining Reserve Summary as of January 1, 1999

	Oil (MBO)	% OOIP
Proved Developed Producing		
Current Operations	367	.4
Proved Undeveloped Reserves		
Infill Drilling &		
Incremental Waterflood	11,722	13.0
Total Remaining Oil Reserves	12,089	13.4
Cum. Oil Production to 1/01/99	12,500	13.8
Estimated EUR	24,586	27.2

Directly south of this Proposed unit, Devon has infill drilled the Grayburg Jackson Field to 20 acre spacing. The results of their project, illustrated on the attached production decline curve, has been very impressive .

GEOLOGY

These reservoirs are comprised of gray anhydritic, fine to medium grained semi-friable sand. The trapping mechanism is stratigraphic

and structural. The initial reservoir pressure was around 1300 psi and the drive mechanism is solution gas. Other shows have been observed in the Yates and Queen sand.

The dip for this portion of the reservoir is about 100' per mile to the west-southwest. The original drive mechanism for the reservoir was solution gas.

DEVON AND NSLU RESERVE COMPARISON

Within the last five years, Devon has downspaced the leases directly south of the proposed NSLU flood to 20 acre spacing. Their project has proven to be very successful and it is anticipated the NSLU will perform as well.

The following table illustrates the similarities in reserve size between the NSLU and Devon acreage:

PRIMARY

	NSLU @ 12/59	Devon @ 12/62
Date Flood Began	1/59	9/62
No. of Wells	112	74
EUR - Primary	5,389 MBO	2,937 MBO
Primary Per Well	41 MBO	40 MBO

SECONDARY (ON 40 ACRE SPACING)

	NSLU @ 1/99	Devon @ 3/93
Effective Date	1/99	3/93 (Prior 20 Acre Infill)
No. of Wells	57 - Active, 177 - Max.	62 - Active, 109 - Max.
Cumulative	12,500 MBO	7,477 MBO
Rate	4200 BOPM	16,101 BOPM

Remaining Reserves	367 MBO	568 MBO
EUR	12,837 MBO	8,045 MBO
S/P Ratio	1.4	1.74
Reserves/Max. Wells	71 MBO Per Well	74 MBO Per Well

PRIMARY & SECONDARY RESERVES

The primary and secondary reserves for the existing NSLU and Devon floods are difficult to precisely determine. This is because of the difference in timing for the development of these areas. For instance, on both the NSLU and Devon areas there were step-out wells drilled after the floods began. In this situation, the primary reserves plus the secondary reserves for the step-out wells get included in the secondary reserve figures.

The NSLU project area had ultimate primary reserves of 5389 MBO from 152 wells. The current EUR for this project is 12,867 MBO. The secondary/primary ratio is 1.4.

The Devon wells had ultimate primary reserves of 2,937 MBO from 74 wells. The EUR of the 40 acre wells is 8,045 MBO. The Devon EUR on 40 acre spacing is extrapolated from March, 1993 before the 20 acre wells were drilled. Devon's secondary/ primary ratio is 1.74.

The OOIP for the NSLU is 90,240 MBO. The current EUR after primary and secondary is 12,867 MBO. This yields a recovery of only 14.2% of the OOIP. This is very low, considering a typical recovery in an efficient flood should be 25% to 30% of the OOIP. In addition to the poor initial completion practices, a cross-section across the field shows the porosity varies within the gross sand section. The 20 acre infill program will increase the horizontal conformance of the discontinuous porosity stringers. This 20 acre infill and waterflood project is expected to recover an additional 11,722 MBO. This additional 13.3% recovery of the OOIP will bring the total field recovery to 27.5%.

40 ACRE WELL RESERVES

An attached map shows the current injection pattern for the NSLU wells. Most of this proposed unit was flooded with an 80 acre 5-spot pattern except for the western portion which was flooded with 160 acre patterns. The 160 acre pattern will not sweep the reservoir as effectively as a tighter spaced pattern. The proposed 20 acre spacing will recover even more reserves in the areas with the 160 acre 5-spots. The Devon flood had mostly 80 acre 5-spots.

NSLU 20 ACRE WELLS

The Zephyr ZQ No. 1 was drilled by Yates Petroleum in 1984 and is located in the NW/4 NE/4 of Section 32, T-16-S, R-31-East. This well is not a true 20 acre well but it was drilled close to where a 20 acre well would be located.

The Premier sand was completed from 3,351 feet to 3,357 feet in August, 1985. This zone was fractured with 20,000 gallons and 40,000 pounds of sand. During the first month of production it averaged 32 BOPD. The projected ultimate for the Premier sand in this well is 60 MBO. The Lovington sand was completed from 3,496 feet to 3,504 feet in March, 1992. It was fractured with 15,000 gallons and 22,500 pounds of sand. It averaged 9 BOPD during the first month on production. The incremental reserves of the Lovington sand is estimated at 12 MBO. The total reserves for these two zones is 72 MBO. The Metex at 3,306 feet to 3,312 feet was not completed and is still behind pipe. Even though this well is slightly off pattern for a 20 acre well, it is representative of the reserves expected from a 20 acre infill well.

DEVON'S 20 ACRE INFILL WELLS

The NSLU 20 acre infill potential was analyzed based on the Devon infill drilling success in conjunction with the Zephyr ZQ No. 1

results. An analysis of Devon's 20 acre infill wells found the average first month's production was approximately 1,500 BOPM. The wells with enough production history were analyzed to develop a generic decline curve. These wells produce with a hyperbolic decline. The average curve shape has a hyperbolic factor of 2.4 starting with a decline of 90%. This decline scenario yields average reserves per infill well of 75 MBO per well without collapsing the waterflood pattern.

Devon began their infill program in 1986 by drilling undrilled 40 acre locations in the Grayburg-Jackson Field directly south of the NSLU acreage. These new 40 acre wells were step outs and infills. A second round of drilling occurred in 1988 and 1989. Once again drilling undrilled 40 acre locations. From 1993 through 1996, a 20 acre infill drilling program took place. During the infill drilling process no conversions were made to collapse the flood patterns. This has resulted in fairly steep declines of the new wells due to a lack of pressure support.

Devon expects the 20 acre infill wells to recover an additional 75 MBO per well from the waterflood once the patterns are collapsed to a 40 acre 5-spot. The existing average 40 acre Devon well will currently recover 77 MBO/wells after the flood. The higher recoveries for the infill wells is due to the poor recoveries from the initial completions and improved modern completion techniques.

The new Devon wells are completed in the Metex sand, Premier sand, Lovington sand and the Jackson carbonate. Devon has been completing and commingling a carbonate zone below the Lovington sand called the Jackson zone. This is a thick carbonate zone producing from thin dolomite stringers. Some of the stringers are only 1 to 2 feet thick. The Jackson zone gets tighter on the north side of Devon's property. It is not an objective in the NSLU acreage. The Zephyr ZQ No. 1, located in the NW/4 NE/4 of Section 32 tested the Jackson zone and found it to be tight. It is difficult to determine how much reserves come from the Jackson zone since it is co-mingled with the other zones.

The Devon and NSLU reserves per well are comparable even though NSLU has no Jackson production. The reserves are similar because the Premier sand on the NSLU acreage is 20 to 50 feet thick and only 10 to 15 feet thick on the Devon acreage. Even though the Jackson

interval is not present on the NSLU acreage, it does not diminish the infill drilling potential. The completion techniques on the NSLU acreage have led to poor recoveries on 40 acre spacing. It is important to note that even without the Jackson zone the NSLU operated Zephyr ZQ No. 1 will recovery nearly as much oil as the 20 acre Devon wells.

It would seem unlikely that a 20 acre infill well will recover more than a 40 acre well on primary and nearly as much as a 40 acre well with flood support. However, if the completion method for most of the wells is considered, it becomes reasonable to expect the new wells to out-perform their predecessors. Many of the original 40 acre wells were drilled in the 1940's and completed openhole. The openhole interval was 200 to 300 feet. The wells were then shot with nitro. Later, usually in the mid 1960's, these wells were fraced with about 40,000 gallons and 30,000 pounds of sand. Sometimes the sand concentration was only 3/4 to 1 ppg. This creates a small, narrow and inefficient fracture considering the amount of openhole and lack of control of where the fracture goes. Any imbedment into the formation will further reduce the conductivity of the fracture. This leads to depletion of the reservoir pressure, but poor recoveries.

Based on the similar primary and secondary reserves per well for NSLU and Devon, the NSLU 20 acre infill wells are anticipated to perform similar to the Devon 20 acre wells. Based on the Zephyr ZQ No. 1, which will recover 72 MBO from the Premier and Lovington sands, it is estimated that the NSLU infill wells will recover at least 64 MBO per well as the pattern is now with an additional 38 MBO per well once the pattern is collapsed.

NSLU DEVELOPMENT PLAN AND ECONOMICS

The NSLU Square Lake infill development program will involve drilling 115 infill producers, drilling 6 infill injectors and converting 147 existing wellbores to injection. This project will cost 34,430 M$ and recover 11,722 MBO. It will generate over 136,095 M$ in income and yield a ROR of 32.85 %.

The economics of the proposed NSLU project are summarized below.

Economic Evaluation Summary

	Existing Operations	20-Acre Waterflood	Total
Reserves Oil (MSTB)			
Gross	367	11,234	11,601
Net	294	8,987	9,281
Reserves Gas (MMcf)			
Gross	73	2,247	2,320
Net	58	1,797	1,855
Capital Expenditures (M$)			
Gross	0	34,430	34,430
Economic Indicators			
PVP @ 10% (M$)	1,527	45,691	47,218
PVP @ 15% (M$)	1,333	26,722	28,055
ROR (%)	100+	32.9	32.9
Payout (Years)	NA	5.2	5.2
Undiscounted ROI ($/$)	NA	4.95	4.89
Cost to Develop ($/NBOE)	NA	3.7	3.6
Remaining Life (Years)	10.4	26.0	26.0

ECONOMIC ASSUMPTIONS

- Working Interest 100%
- Revenue Interest 80%
- Severance Tax(Oil) 8.1%
  Severance Tax(Gas) 9.1%
- Ad Valorem Tax 0%
- Barrel Oil Equivalent 6 MCF/BBL

PROJECT UPSIDES

There are several upsides to this project relating to reserves and costs. The reserves used in the economics is 64 MBO per well. The current EUR per well for NSLU is 83 MBO/well. The Devon infill wells are expected to recover 75 MBO per well after currently recovering 74 MBO/well. If the new wells on the NSLU project match the current reserves per well, they will produce 83 MBO instead of 64 MBO. This will result in an additional 19 MBO per well for 115 new wells or 2,185 MBO. The waterflood would then recover an additional

1,311 MBO. The total incremental recovery would be 3.8% of the OOIP, bringing the total reservoir recovery to 31.0%.

This study was to determine the overall feasibility of infill drilling the Square Lake Field. A detailed well by well analysis was not performed, although in the course of this study most wells were examined. It was found some of the minor sands such as the Metex have porosity but are not completed, such as the Zephyr well. The cross-section also shows some sands with porosity that have not been perforated. These are just some of the examples of the behind pipe potential of this project.

North Square Lake Unit Boundary

The criteria for inclusion of acreage into the proposed North Square Lake Unit were:

1. Areas not already unitized or under infill development

2. Areas where the Premier isopach, greater than 10% porosity, exceeds 10 feet in thickness and the Lovington isopach, greater than 10% porosity, exceeds 0 feet in thickness.

3. Areas that may be thin but receiving benefit from the proposed development.

The reservoir for the proposed North Square Lake Unit is bounded on the south side by the Devon operated Grayburg Jackson Field in Sections 3 thru 6, T-16-S, R-31-E. The West Square Lake Unit operated by J. Cleo Thompson forms the western boundary in Section 35 and 36, T-16-S, R-30-E. The reservoirs pinch out along the western edge in Section 25 and 24, T-16-S, R-30-E. The northern edge of the unit is delineated by a pinch out in the reservoir in Sections 19 & 20 and Sections 27 & 28, T-16-S, R-31-E. The eastern side of the unit is defined by a thinning of the reservoir below the proposed cut-offs.

A tract such as the Glen Plemons operated Chase Featherstone #1 in the SW/4 SW/4 of Section 27 was included in the proposed unit boundaries even though the reservoir s are thin in this area. This is because this tract will benefit from the proposed capital expenditures. An injection well is proposed to be drilled on the SW corner of this tract.