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COMPUTER MODELLING GROUP

WASKADA MODEL STUDY
LOWER AMARANTH POOL

for

OMEGA HYDROCARBONS LTD.

by

J. Flores and W. Laurila

May, 1983

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83-05-27

Mr. G.E. Patey
Vice-President Production
Omega Hydrocarbons Ltd.
630, 330 - 5 Avenue S.W.
Calgary, Alberta T2P 0L4

Dear Sir:

We are enclosing two copies of the Waskada model study which shows the model performance predictions for the Lower Amaranth Pool. The cases investigated the feasibility of gas injection and water flooding in a representative area of the field defined by four nine-spot patterns.

The three-dimensional, three phase Waskada mathematical model predicts good incremental recoveries if a secondary recovery scheme is implemented by October 1983. Specifically, based on a ten-year forecast gas injection results in an incremental recovery of 66.2 km^3 over the primary depletion case, whereas water flooding provides an incremental recovery of 59.4 km^3. The recovery factors are 12.2, 20.1 and 19.3% model OOIP for the primary, gas injection and water flooding cases respectively. Extrapolated recoveries to an economic limit of 10 m^3/d show expected ultimate recoveries of 12.2, 22.3 and 28.4% model OOIP indicating that ultimate recovery under water flooding is higher than recovery under gas injection.

It has been a pleasure to perform this reservoir model study for Omega. If you have any questions I shall be most happy to discuss it with you.

Yours truly,

J. Flores

J. Flores, Ph.D., P.Eng.
Manager - Applications

JF/cs

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SUMMARY

SUMMARY

This model study examines the feasibility of a secondary recovery scheme for the Waskada Field, Lower Amaranth Pool being developed by Omega Hydrocarbons Ltd.

Three cases were studied:

- primary depletion;
- gas injection;
- water injection.

Results for the three cases are summarized below.

	Primary	Gas Injection	Water Injection
Recovery at ten years, %OOIP	12.2	20.1	19.3
Extrapolated Ultimate Recovery, % OOIP	12.2	22.3	28.4
Recovery at ten years, km^3	102.1	168.3	161.5
Extrapolated Ultimate Recovery, km^3	102.1	186.0	237.0
Peak Oil Rate, m^3/d	64.1	74.0	68.0
Reservoir Life to Economic Limit, yrs.	10.0	11.8	15.0

All simulations were run using CMG's three phase, fully implicit, three dimensional black oil simulator BLAKO [1].

CONCLUSIONS

CONCLUSIONS

1. Due to the lack of supplied reservoir energy the reservoir pressure is declining at a dramatic rate of 1 250 kPa per year. At this rate of decline the reservoir pressure will reach the bubble point pressure of 4 220 kPa by June 1983.

2. Model predictions for a ten-year period show that gas injection will recover an additional 6.8 km^3 of oil, giving an incremental recovery from 19.3 to 20.1% model OOIP over a water injection scheme. However, extrapolation to an economic limit of 10 m^3/d indicates that the water flood ultimate recovery will be about 51 km^3 higher than the gas injection giving an incremental recovery from 22.3 to 28.4% model OOIP.

3. Gas injection gives an incremental recovery of 66.2 km^3 over the primary depletion case. This represents an increase in recovery factor from 12.2 to 20.1% model OOIP based on a ten-year forecast.

4. To carry out a gas injection scheme, a total of 7 350 km^3 of make-up gas will be required for each portion of the field equal to the study area (four nine-spot patterns). The average rate of make-up gas requirement is 5.76 km^3/d over three and a half years.

5. Water injection gives an incremental recovery of 59.4 km^3 over the primary depletion case. This represents an increase in recovery factor from 12.2 to 19.3% model OOIP based on a ten-year forecast.

RECOMMENDATIONS

RECOMMENDATIONS

1. A secondary recovery project should be implemented as soon as possible in the Waskada Lower Amaranth Pool to eliminate the critical reservoir pressure decline observed in the field and predicted by the reservoir model.

2. Although model predictions show the highest ultimate recovery under water flooding, the final scheme to be implemented has to be defined based on the relative economics of water injection vs gas injection. A gas injection scheme has a good potential for recovering additional hydrocarbon liquids through mass transfer between the injection gas and the reservoir oil.

3. To increase the reliability of model predictions with regard to the level of absolute recoveries, an update model study is recommended when more reservoir rock data and production history from additional development wells become available. At that time a three dimensional compositional model study may be required to predict total hydrocarbon liquids recovery including those recovered from the separator gas.

4. Gas availability in the area should be investigated to examine the feasibility of a fieldwide gas injection project. If not enough gas is available, some patterns could be converted to water flood after a period of gas injection. A model study may be necessary to examine the performance of gas injection for a certain period followed by water flooding.

5. The set of fluid distribution curves developed as part of this study (Appendix B) should be used to determine more accurately the water saturation profile in the Waskada Lower Amaranth Pool.

DISCUSSION

DISCUSSION

MODEL DEVELOPMENT

The location of the Waskada Field, shown in Figure 1, is approximately one hundred and ten kilometers southwest of Brandon, Manitoba in Township 1, Ranges 25 and 26 and Township 2, Ranges 25 and 26. The model study area is restricted to Township 1, Range 25, Sections 30 and 31 and Township 1, Range 26, Sections 25 and 36. This study area includes four nine-spot patterns with each pattern having one injector. Details on the development of the Waskada three-dimensional, three phase mathematical model is presented in Appendix A.

Reservoir Description and Fluid Properties

Data from the Waskada Field indicated that the reservoir to be modelled was very heterogeneous with wide variations in net pay, porosity and permeability. The reservoir fluid is an undersaturated low viscosity oil. The reservoir pressure is about 4 400 kPa higher than the bubble point pressure.

Field Geology

The Waskada Lower Amaranth sand is at a depth of about 900 m KB. The traps are controlled by pinchouts of porosity and permeability in all directions. The sand is usually poorly developed with porosities and permeabilities uniformly low. The sand contains abundant thinly interbedded tight stringers. There is no gas-oil contact and the oil-water contact is currently estimated at 465 m subsea. The sand dips very gently in a southerly direction and the hydrocarbon traps occur independently of the structure. A typical log from the 13-30-1-25 W1M well is shown in Figure 2.

Reservoir Rock Data

Net pay values in the Lower Amaranth Pool (study area) vary from 3 to 12 m and depths to the top of the sand from 425 to 438 m subsea. Porosity values range from 2 to 20%, with an average of 13% and permeability values from .02 to 100 mD with most common values in the range of 0.5 to 10 mD. Computer generated contour maps for depth, net pay and porosity corresponding to the four pseudo layers in the model are presented in Figures A-2 through A-10.

Permeability values for each grid block in the model were calculated using a functional relationship between permeability and porosity as indicated in Figure A-11. Tables A-1 through A-6 show the reservoir rock input data for the three-dimensional model.

An average capillary pressure curve corresponding to a permeability of 3.7 mD and a porosity of 13% was used in the model. This resulted in an irreducible water saturation of 44%. Figure A-12 shows the average oil-water capillary pressure curve. The gas-oil capillary pressure was input as zero.

Data from five core samples were used to determine the average capillary pressure curve that would give a water saturation profile consistent with water saturations seen in a special core obtained with an oil base drilling fluid [2]. The average water saturation was about 63%.

Due to the high degree of heterogeneity observed in the Waskada Lower Amaranth Pool, a set of fluid distribution curves was developed to provide an accurate estimate of the expected water saturation levels for new wells. The development of the fluid distribution curves and a procedure to calculate the water saturation profile is presented in Appendix B.

Average sets of oil-water and gas-oil relative permeabilities were obtained using the available relative permeability data [2]. Figures A-13 and A-14 in Appendix A show the representative curves after slight adjustments performed for consistency with capillary pressure data and for improvement of history match. A three phase oil relative permeability was calculated using Stone's equation which combines data from the two-phase systems, i.e. oil-water and gas-oil.

The model can be rapidly updated as new field data becomes available. This is done through a set of FORTRAN routines written in conjunction with a surface graphics package [3].

Fluid Properties

The Waskada Lower Amaranth Pool is an undersaturated hydrocarbon system having a bubble point pressure of 4 220 kPa at a reservoir temperature of 45.0°C. This bubble point pressure is about 4 400 kPa lower than the initial reservoir pressure of 8 672 kPa.

Reservoir oil viscosities vary from a minimum of about 1.3 mPa·s at the bubble point pressure to a maximum of 2.9 mPa·s at atmospheric pressure. Initial solution gas-oil ratio is 51.1 m^3/m^3. Water, oil and rock compressibilities used in the model are 4.4×10^{-7} kPa^{-1}, 1.2×10^{-6} kPa^{-1}, and 6.7×10^{-7} kPa^{-1}, respectively.

Table A-10, "PVT Functions", outlines the reservoir fluid properties obtained from a PVT study [4].

Grid System and Well Locations

The grid system consists of four slices (A,B,C,D) corresponding to the four pseudo layers to model the Lower Amaranth Pool. A 15 by 15 areal configuration (Figure A-1) gives a total of 900 grid blocks.

A set of twenty five-well locations (Figure A-1) in Township 1, Range 25, Sections 30 and 31 and Township 1, Range 26, Section 25 and 36 were selected to model the behaviour of a symmetric pattern in the field. One of the quarter wells (9-36-1-26 W1M) did not find the Lower Amaranth Pool and therefore was removed from the model. The symmetric pattern incorporates fifteen and three quarters effective wells.

Initial Conditions

The following are the initial conditions for the study area:

Reservoir Pore Volume	:	3 370 km^3
Original Oil-In-Place	:	836.1 km^3
Original Gas-In-Place (solution gas)	:	42 900 km^3
Original Water-In-Place	:	2 310 km^3

Initial conditions are calculated automatically using the gravity-capillary equilibrium feature of the simulator. Reservoir pressure, oil saturation and water saturation distributions are shown in Tables A-7, A-8 and A-9 respectively. The initial reservoir pressure of 8 620 kPa at a datum of 420 m subsea was obtained from a build-up test 5 .

History Matching

A satisfactory match was obtained for the overall twenty four-well locations in the model. Due to somewhat erratic field production data available at this early stage in the field development, no additional runs were done to refine the match of production history and flowing bottomhole pressures on a well by well basis. Details to carry out the history match are presented in Appendix B.

After obtaining a satisfactory history match the model was used to predict reservoir performance under primary depletion, gas injection and water injection. Analysis of these predictions are discussed next.

ANALYSIS OF MODEL PREDICTIONS

Model predictions show that implementation of a secondary recovery scheme by injecting gas or water will approximately double the predicted oil recovery under primary depletion. The highest ultimate recovery under water injection (extrapolated value) amounts to 28.4 % OOIP. This compares with an ultimate recovery of 22.3% under gas injection. Recoveries for the ten-year forecasts, however, show gas injection giving a recovery of 20.1% OOIP which compares with the lower recovery of 19.3% under water injection.

Figure 3 and Table 1 show the recoveries obtained at the end of a ten-year forecast and the expected ultimate recoveries at an economic limit of 10 m^3/d. Predicted oil production rate forecasts for primary depletion, gas injection and water injection are presented in Table 2. In all three cases the limiting flowing bottom hole pressure was 500 kPa.

Model predictions also show a very high rate of reservoir pressure decline during primary depletion due to lack of supplied reservoir energy. Under the current expected production rates the bubble point pressure of 4 220 kPa will be reached by June 1983.

At the end of the production history matching in November 1982, some sequential development was simulated during 1983 and 1984. The number of effective wells in the symmetric pattern increased from 9 to a total of 15 3/4 wells. Table A-11 in Appendix A shows the wells on production during the history match and the expected sequential development until October 1984. Gas or water injection commenced in October 1983 with injectors defined by the 5-31, 7-31, 13-30 and 15-30 wells corresponding to the four nine-spot patterns in the study area.

Recoveries

Figure 3, "Percentage Recovery Original Oil-in-Place vs Percentage Expected Ultimate Recovery", shows the long term highest recovery of the water injection case over both the gas injection and the primary depletion cases. Using an economic limit of 10 m^3/d the extrapolated expected ultimate recoveries for primary depletion, gas injection and water injection are 12.2, 22.3 and 28.4% OOIP, respectively. Remaining oil saturations for the three cases are shown in Tables A-15, A-18, and A-19.

Figure 3 shows that at the end of ten years the oil recovery under water injection is only about 70% of its expected ultimate recovery, whereas under gas injection the recovery is about 90% of its expected ultimate recovery. The reservoir life to produce the ultimate reserves under gas injection is estimated at 11.8 years and for water injection is estimated at 15 years. The corresponding predicted recoveries at the end of a ten-year forecast are: 12.2, 20.1 and 19.3% OOIP. Reservoir performance predictions are summarized in Tables 3 to 5 and recoveries for the individual wells are summarized in Table A-12.

Oil Rate

Figures 4, 5 and 6 graph oil rate vs time, vs cumulative oil production and vs percentage expected ten year recovery, respectively. Gas injection gives the maximum oil rate of 74 m^3/d after six and a half years when cumulative production is about 94 km^3, representing 52% of the ten year expected recovery. During the first six and a half years of gas or water injection, it is seen that the water injection case predicts lower oil rates than the gas injection case due to high water saturation levels. However after this period, due to high gas-oil ratio, the oil rate decline under gas injection is much faster than the decline observed under water injection. This results in a higher ultimate recovery for water flooding when extrapolated to an economic limit of 10 m^3/d.

Gas-Oil Ratio Performance

As observed in Figure 7, "Instantaneous Producing Gas-Oil Ratio vs Time", gas injection causes the producing GOR to continuously increase with time to 2 000 m^3/m^3 at the end of ten years. Water injection, effectively controlled the producing GOR bringing it down to levels corresponding to the initial solution GOR.

Also, gas injection causes substantial increase in gas production to a maximum of about 102 km^3/d after nine years of production (Fig. 8). Under water injection the maximum gas production rate is only about 5 000 m^3/d which is lower than the maximum gas rate of approximately 10 000 m^3/d predicted under primary depletion.

Water-Cut Performance

Figure 9, "Instantaneous Water Cut vs Time", shows water cut levels ranging from 40% to 72%, peaking at 72% for the water injection case at the end of the tenth year.

In Figure 10, "Instantaneous Water Production Rate vs Time", it is seen that water production increases substantially in the water injection case and peaks at 120 m^3/d at the end of ten years. Under gas injection, the water production rate is approximately constant at an average of about 55 m^3/d. Under primary depletion due to loss in well productivity and due to solution gas expansion the water production peaks only at 50 m^3/d in June 1984 and continuously decreases to a minimum of about 15 m^3/d at the end of ten years.

Gas Injection Case - Gas Production and Injection Rates

Figure 11, "Gas Production and Injection Rates vs Time", shows that make-up gas in the amount of 7 350 km^3 is required to increase the reservoir pressure to an average of 6 000 kPa. The average make-up gas rate was 5.76 km^3/d for a period of three and a half years. Thereafter, only the separator gas production is put back into the reservoir to maintain the reservoir pressure at an average of about 5 000 kPa. The peak gas injection rate was 102 km^3 after nine years of production. The gas injection rates in this study were developed without considering the reduction in gas volumes that will occur due to fuel requirements and liquid shrinkage. The remaining gas-in-place (free plus solution gas) at the end of the ten-year forecast is about 49 Mm^3.

The reservoir pressure response to fluid injection is discussed under the Reservoir Pressure section.

Water Injection Case - Water Production and Injection Rates

A maximum water injection rate of 240 m^3/d for a period of three months brought the average reservoir pressure to a level of about 6 000 kPa. This increase in reservoir pressure is achieved in approximately three months. After this period, the water injection rate was reduced to an average of 150 m^3/d to maintain the reservoir pressure at about 5 000 kPa.

The reservoir pressure response under fluid injection is discussed below.

Reservoir Pressure

Figures 13, 14 and 15 show reservoir pressure vs time, vs cumulative oil production, and vs percentage expected ten-year recovery, respectively.

Due to lack of external reservoir energy; the rate of reservoir pressure decline under primary depletion is extremely high and amounts to 1 250 kPa/yr (Figure 13). Under primary depletion, the average reservoir pressure will reach the bubble point pressure of 4 220 kPa by June 1983. At this time the cumulative oil production is about 9 km^3 (Figure 14) equivalent to approximately 8% of the primary reserves in the model (Figure 15).

The figures show that water injection more effectively replaces fluid withdrawals from the reservoir. With water injection the maximum pressure level of 6 000 kPa is obtained after three months of injection when 20% of the reserves has been produced. With gas injection, however, the same pressure level is obtained after three and a half years of injection when 50% of the reserves under gas injection is produced (Figure 15).

REFERENCES

1. Computer Modelling Group, "Three-Phase, Fully Implicit, Black Oil Simulator with Polymer Option", BLAKO User's Manual, Version 2.0, (January, 1983).

2. Core Laboratories Canada Ltd., "Special Core Analysis Study", Report 7009-312-82-040, (Dec. 1, 1982).

3. Sampson, R.J., "Surface II Graphics System", Revision 1, Kansas Geological Survey, Lawrence, Kansas (1978).

4. Core Laboratories Canada Ltd., "Reservoir Fluid Study", Report 7013-82-20, (April 19, 1982).

5. Oil Well Pressure Surveys Ltd., "Flow and Build-up Test, (January 29 - February 2, 1982).

FIGURES

Figure 1

LOCATION OF THE WASKADA FIELD

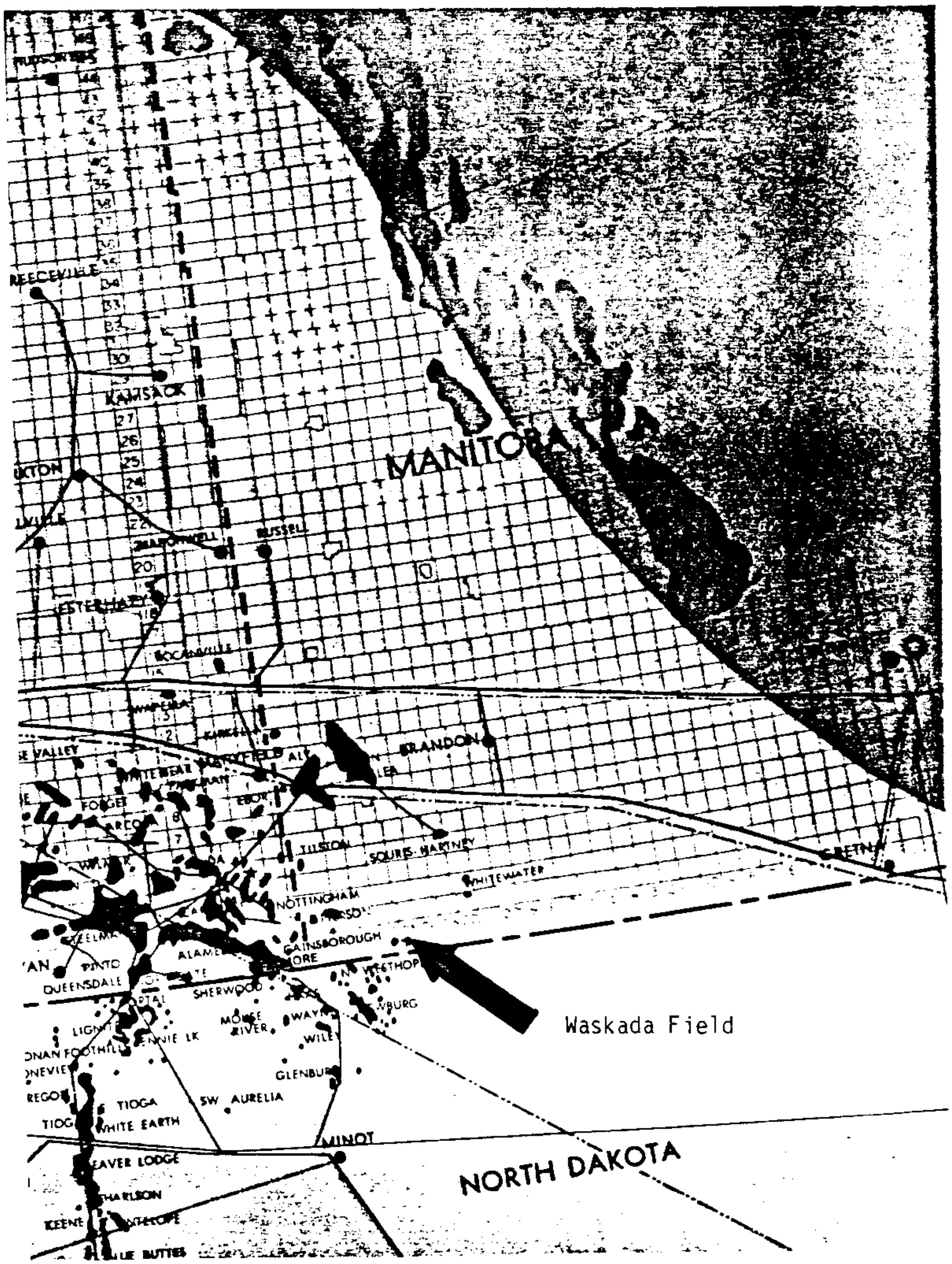


Figure 2

TYPICAL WELL LOG

13-30-1-25 W1M

Waskada Lower Amaranth Pool

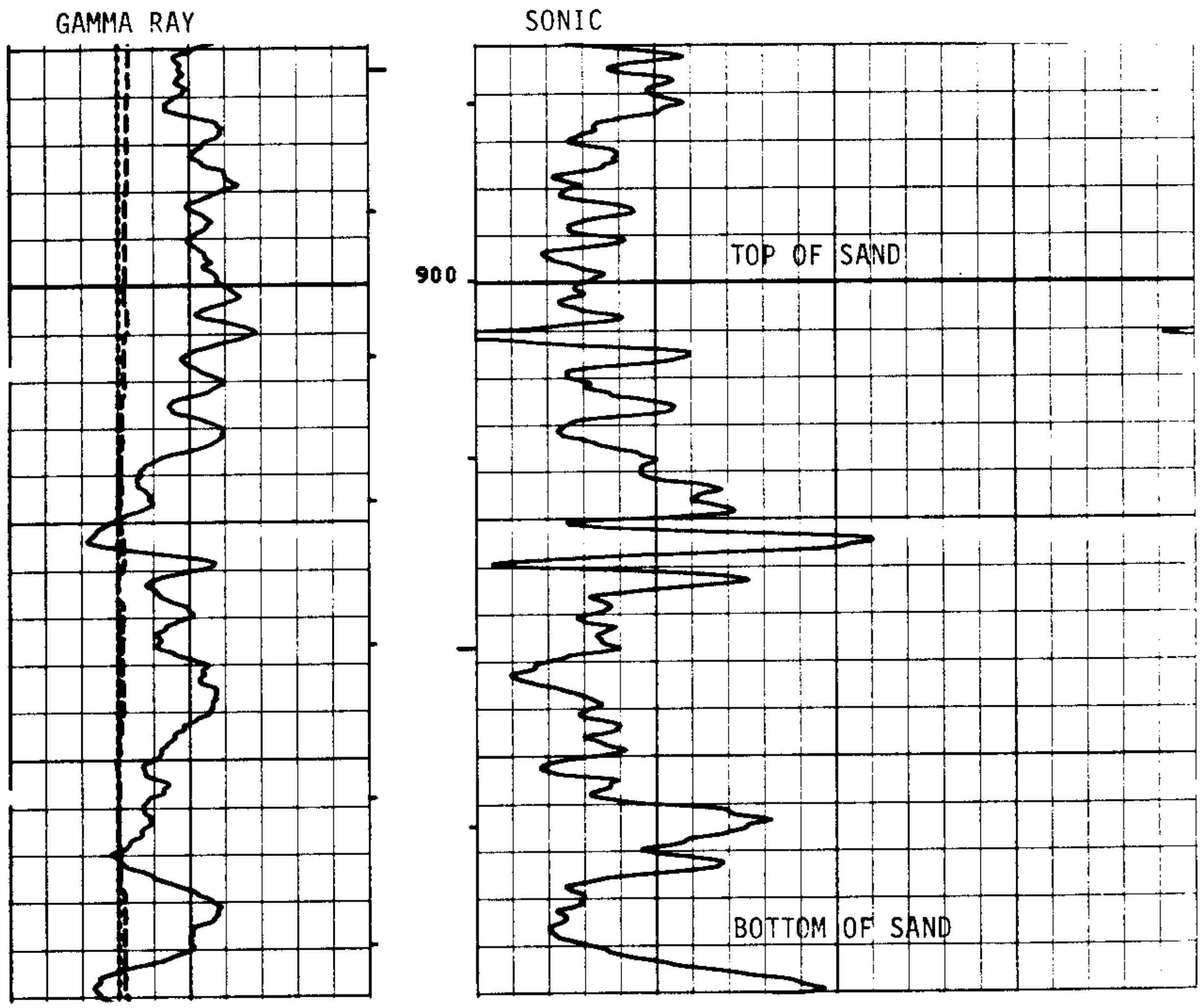


Figure 3
% RECOVERY OOIP VS % EXPECTED ULTIMATE RECOVERY
WASKADA LOWER AMARANTH POOL

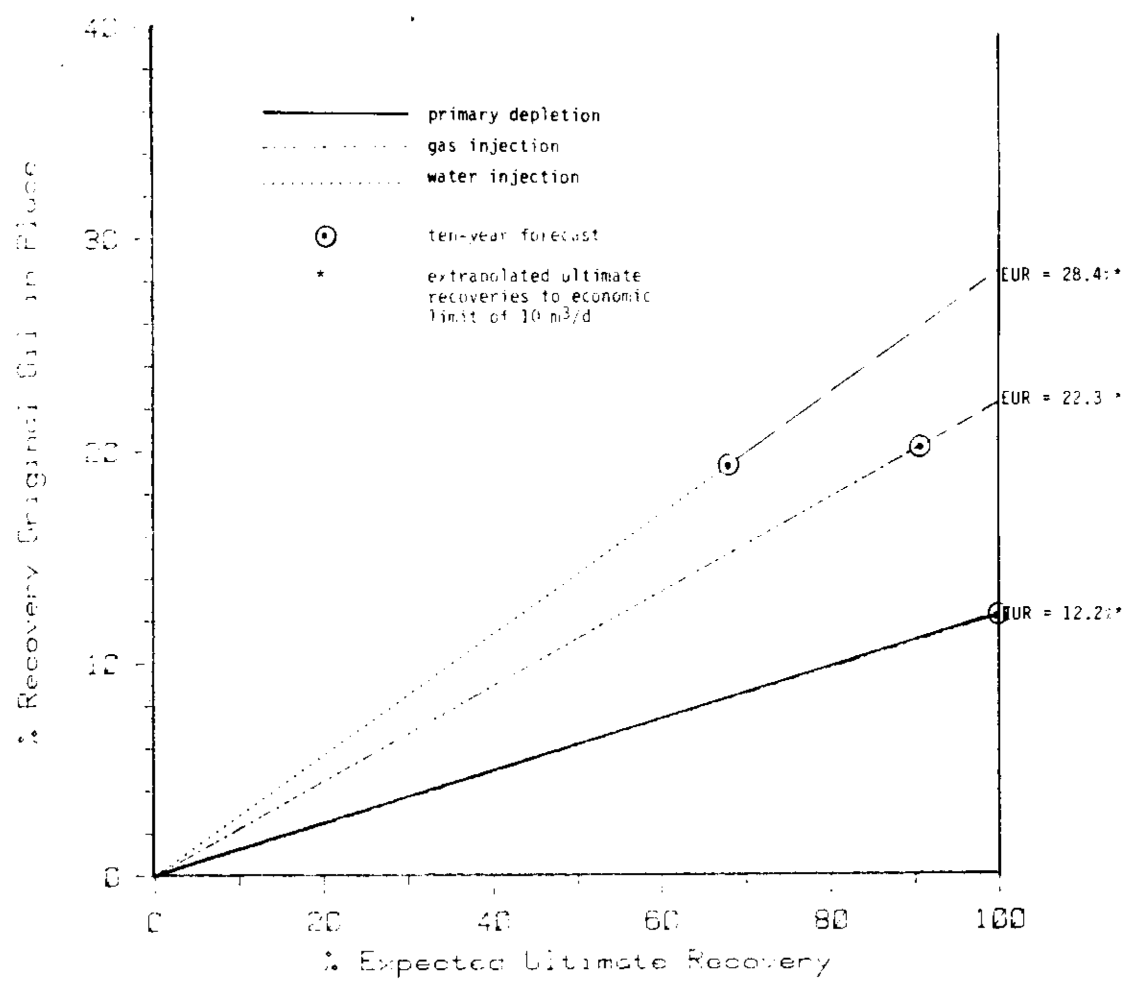


Figure 4

INSTANTANEOUS OIL PRODUCTION RATE VS TIME

Waskada Lower Amaranth Pool

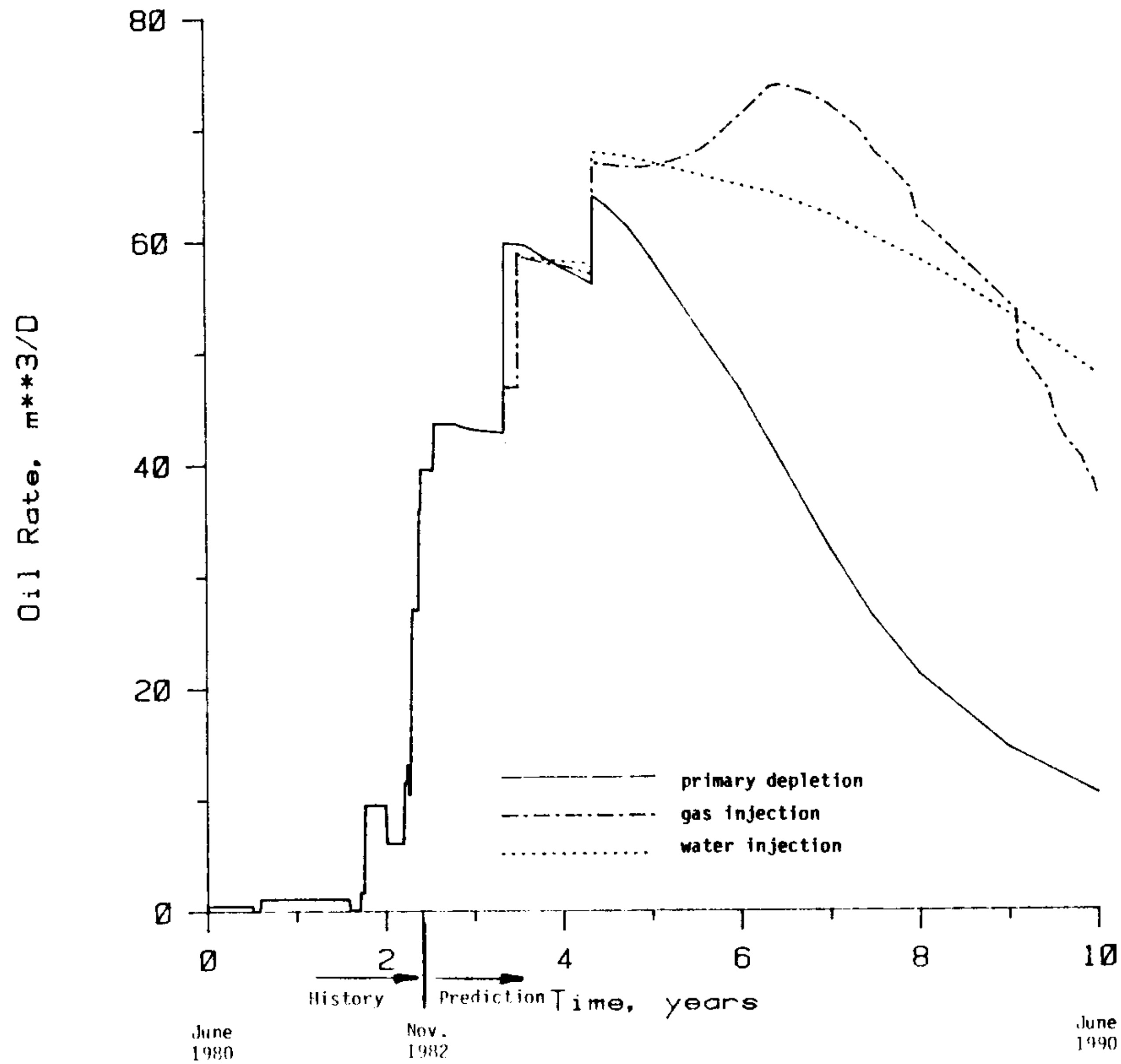


Figure 5

INSTANTANEOUS OIL RATE VS CUMULATIVE OIL PRODUCTION

Waskada Lower Amaranth Pool

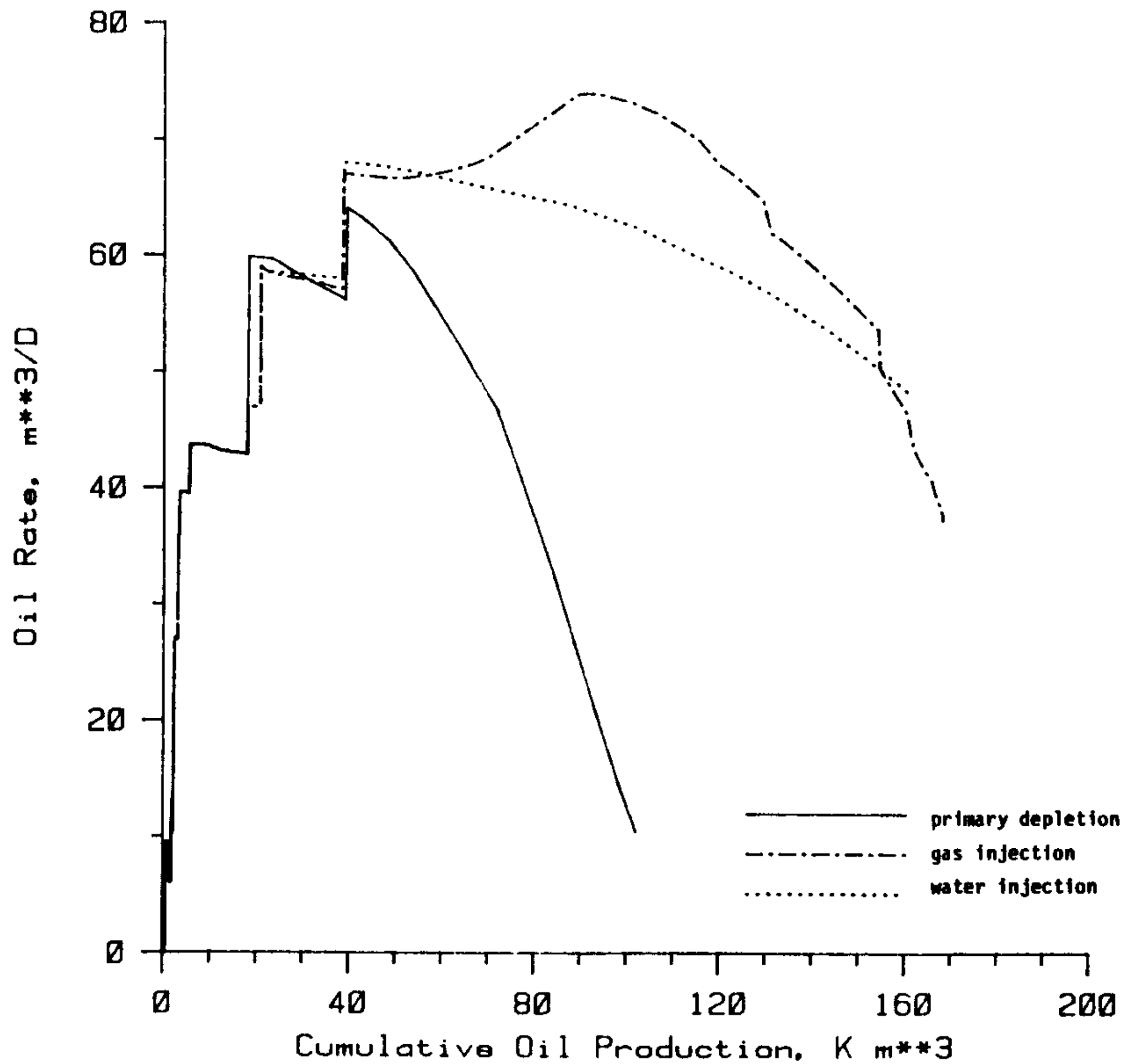


Figure 6

OIL RATE VS % EXPECTED TEN-YEAR RECOVERY

Waskada Lower Amaranth Pool

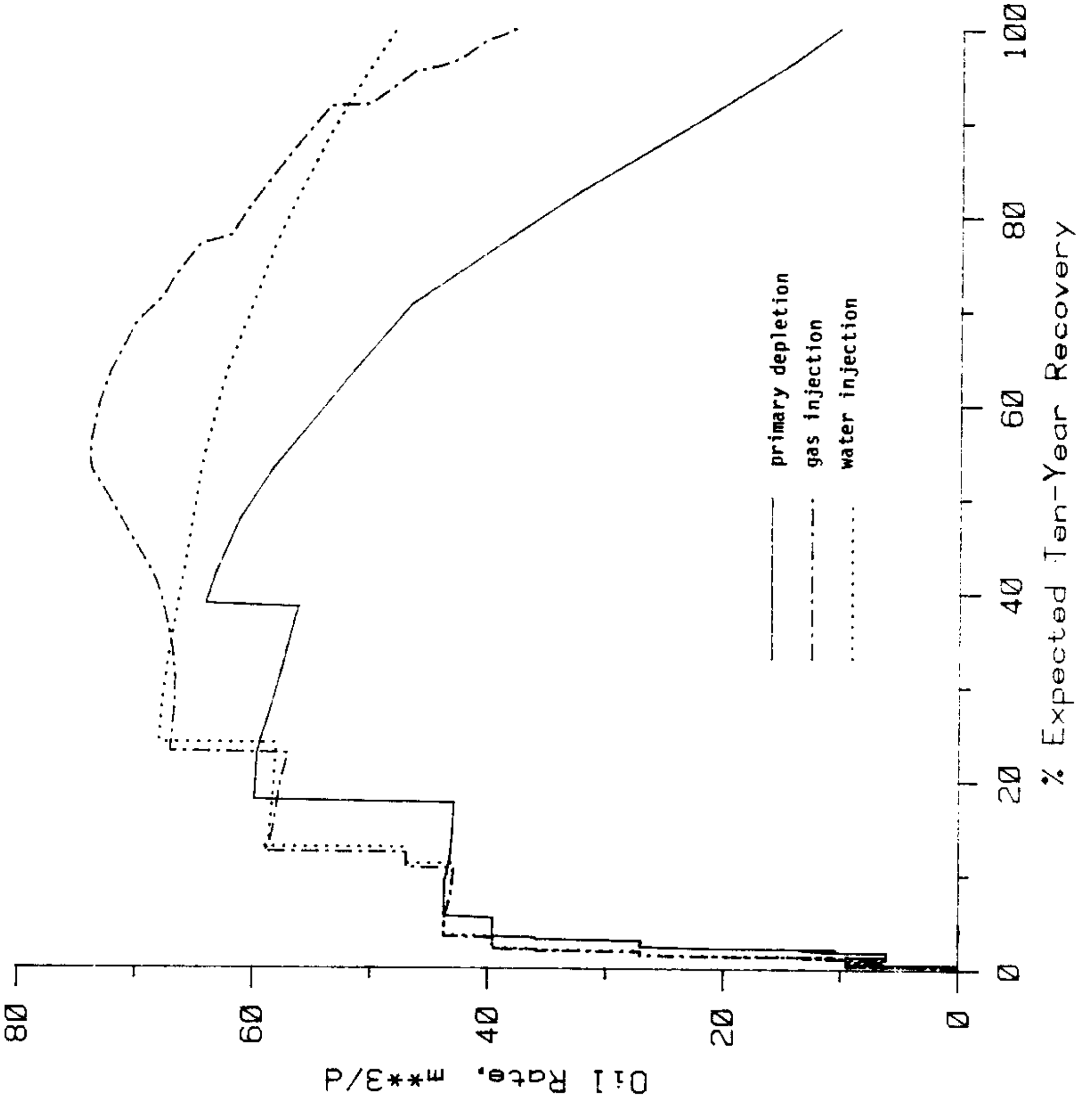


Figure 7

INSTANTANEOUS PRODUCING GAS OIL RATIO VS TIME

Waskada Lower Amaranth Pool

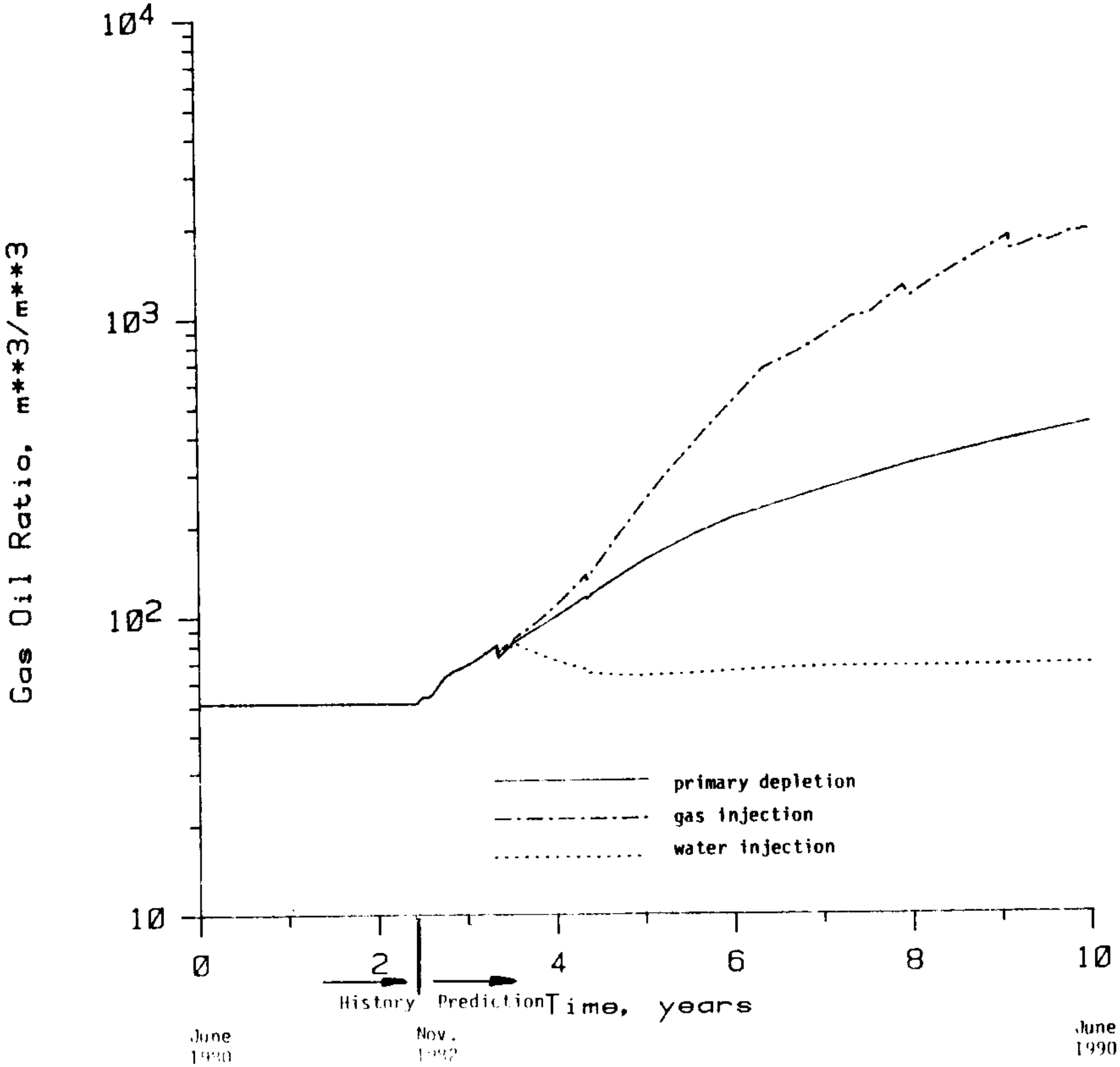


Figure 8

INSTANTANEOUS GAS PRODUCTION RATE VS TIME

Waskada Lower Amaranth Pool

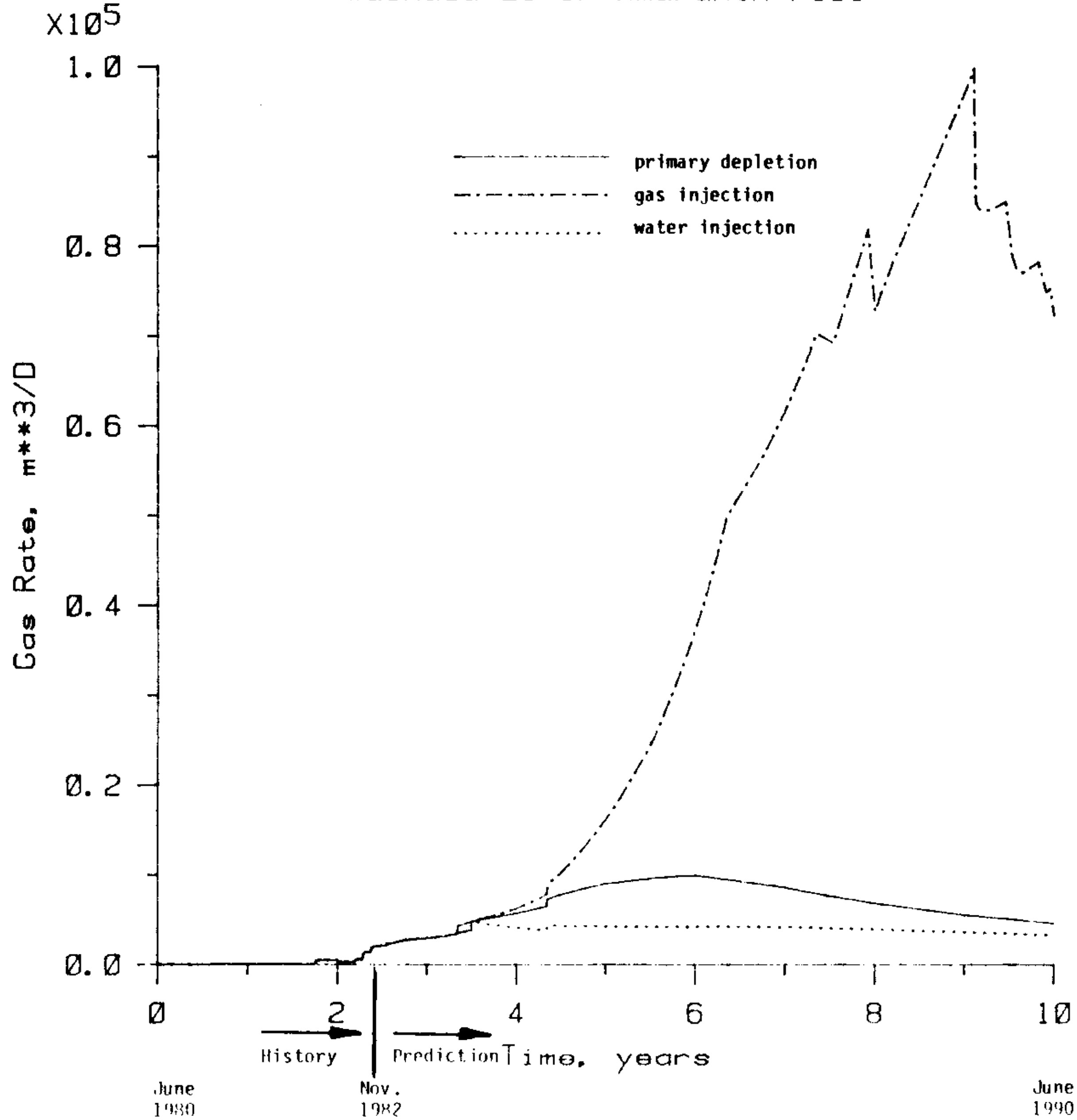


Figure 9

INSTANTANEOUS WATER CUT VS TIME

Waskada Lower Amaranth Pool

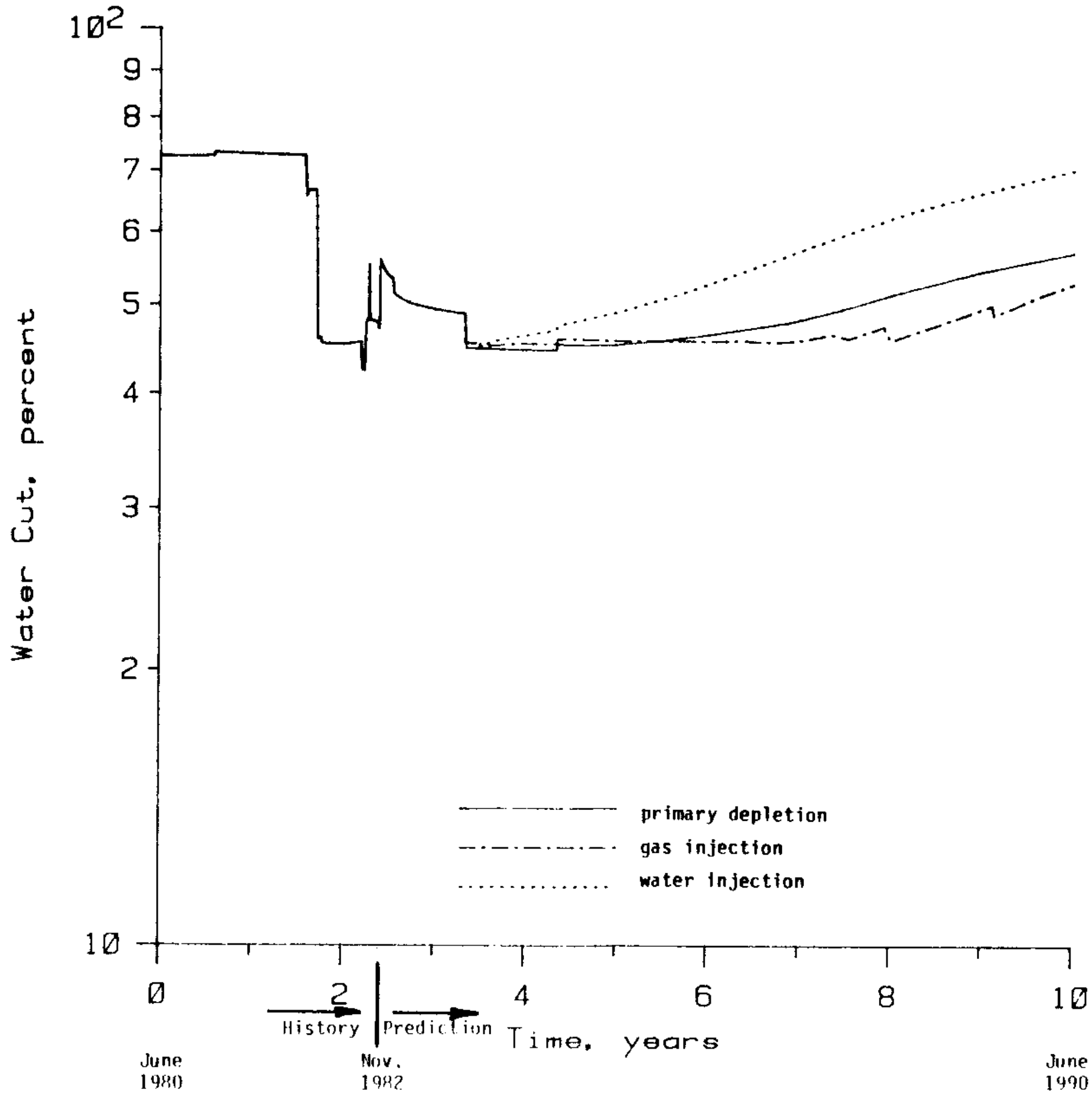


Figure 10

INSTANTANEOUS WATER PRODUCTION RATE VS TIME

Waskada Lower Amaranth Pool

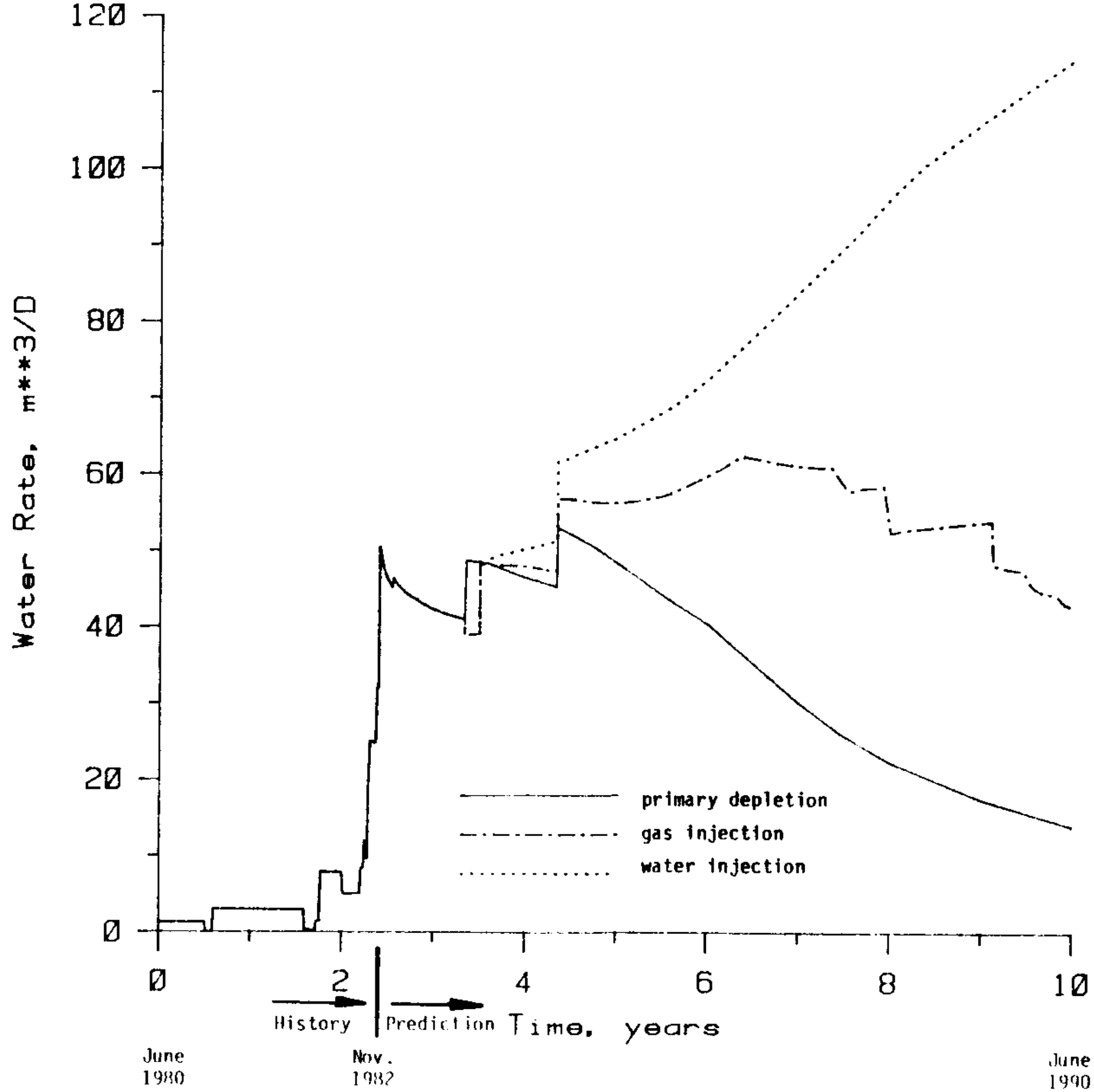


Figure 11

GAS PRODUCTION AND INJECTION RATES VS TIME

Waskada Lower Amaranth Pool

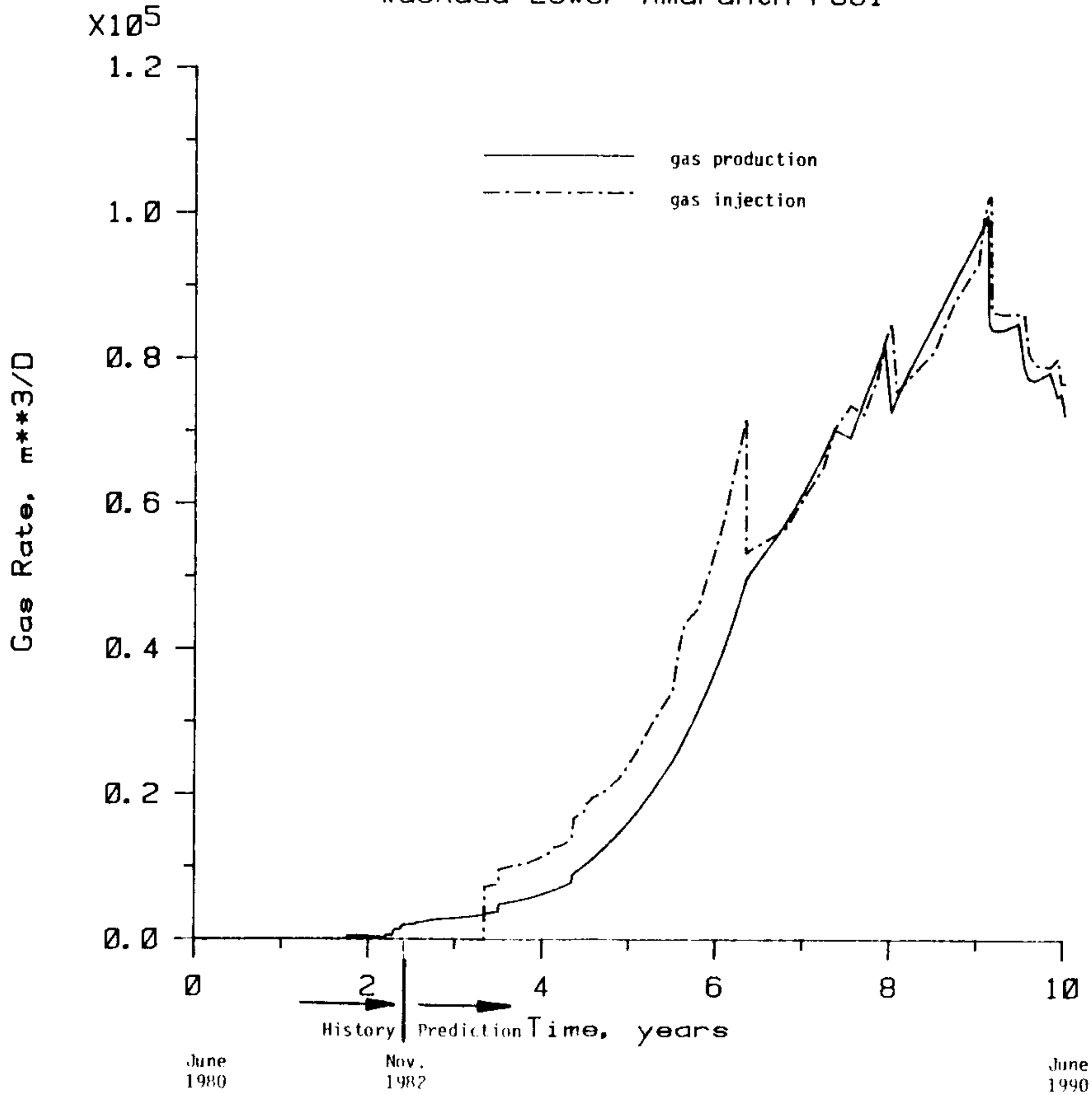


Figure 12

WATER PRODUCTION AND INJECTION RATES VS TIME

Waskada Lower Amaranth Pool

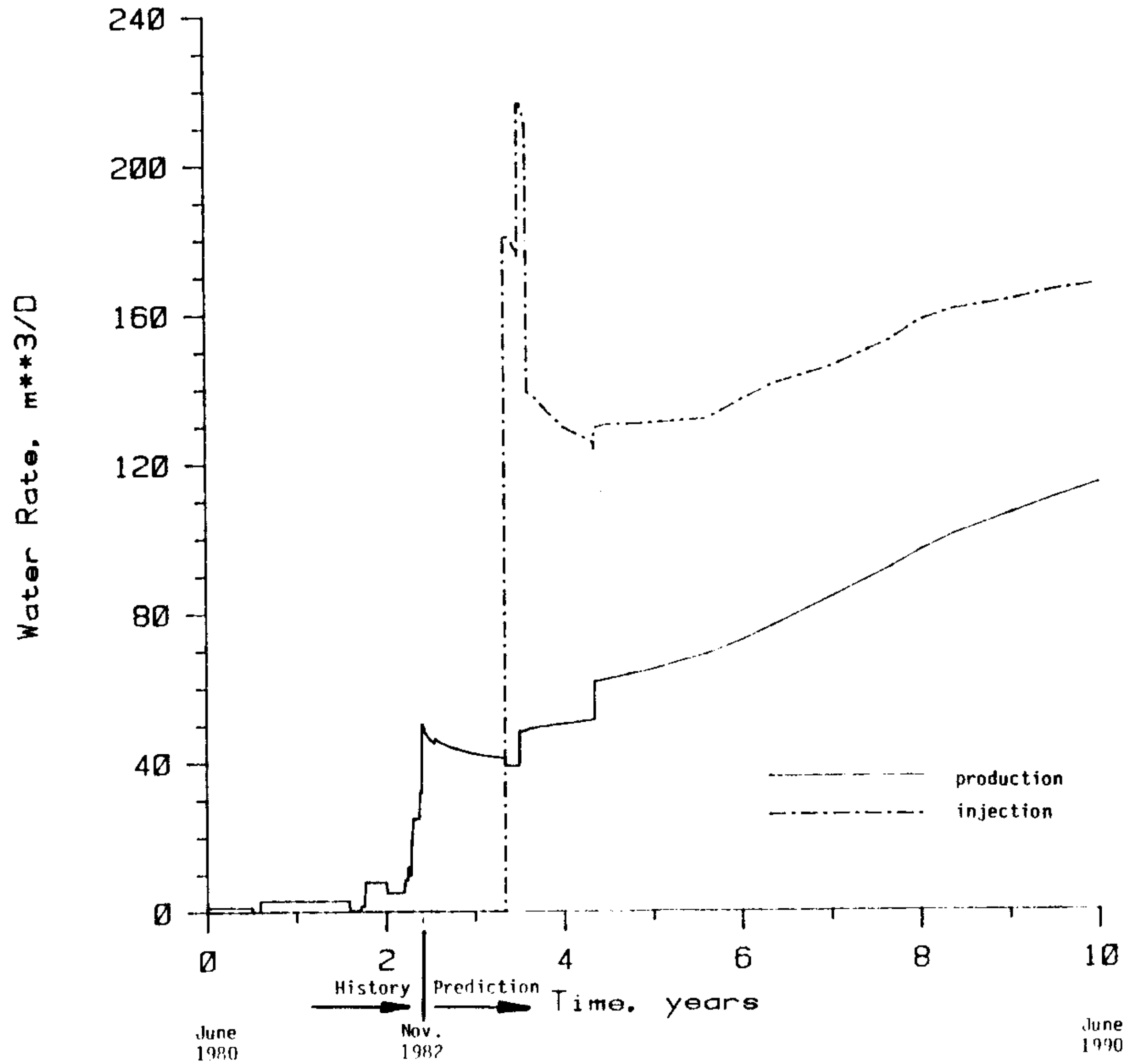


Figure 13

RESERVOIR PRESSURE DECLINE

Waskada Lower Amaranth Pool

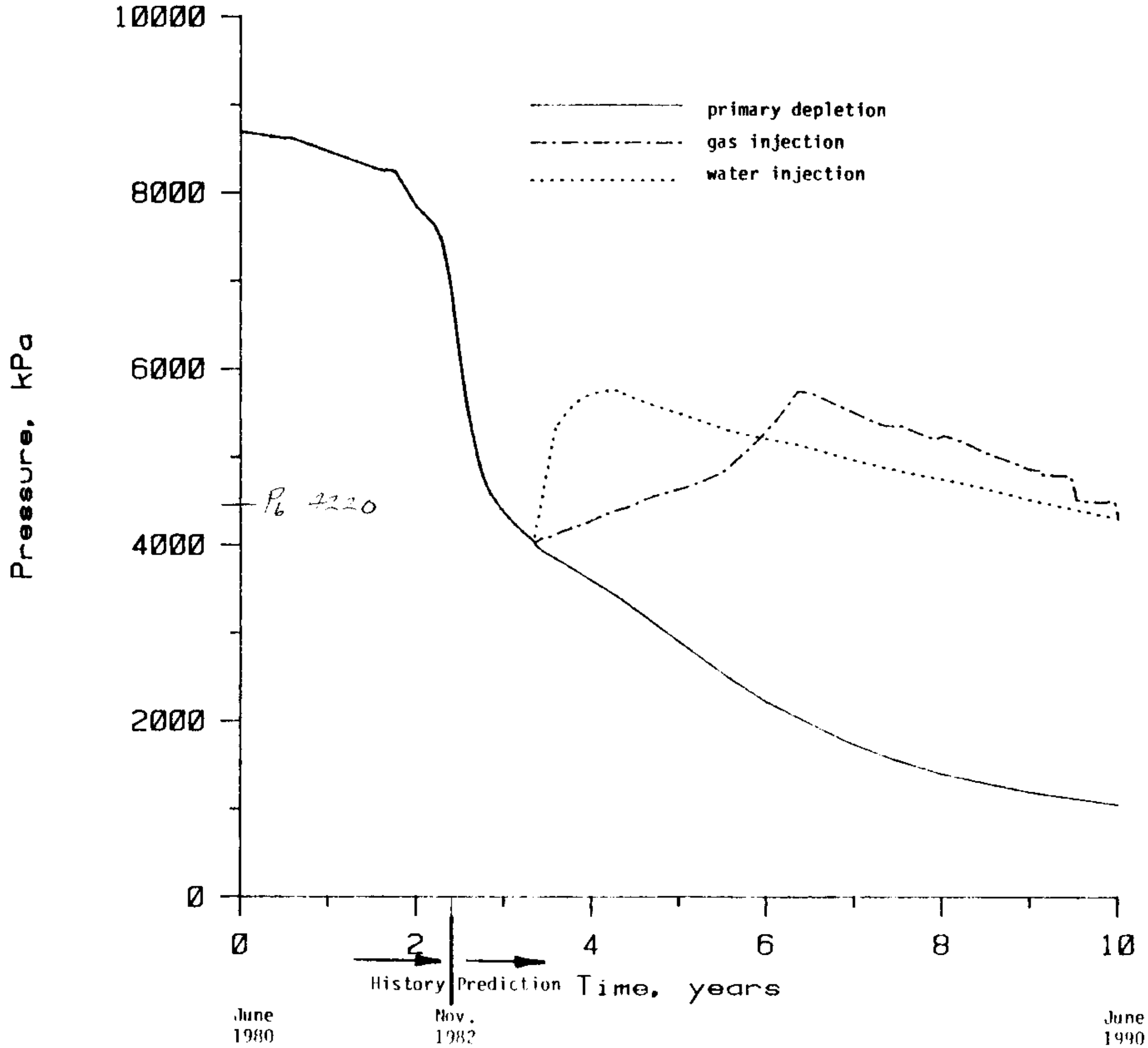


Figure 14

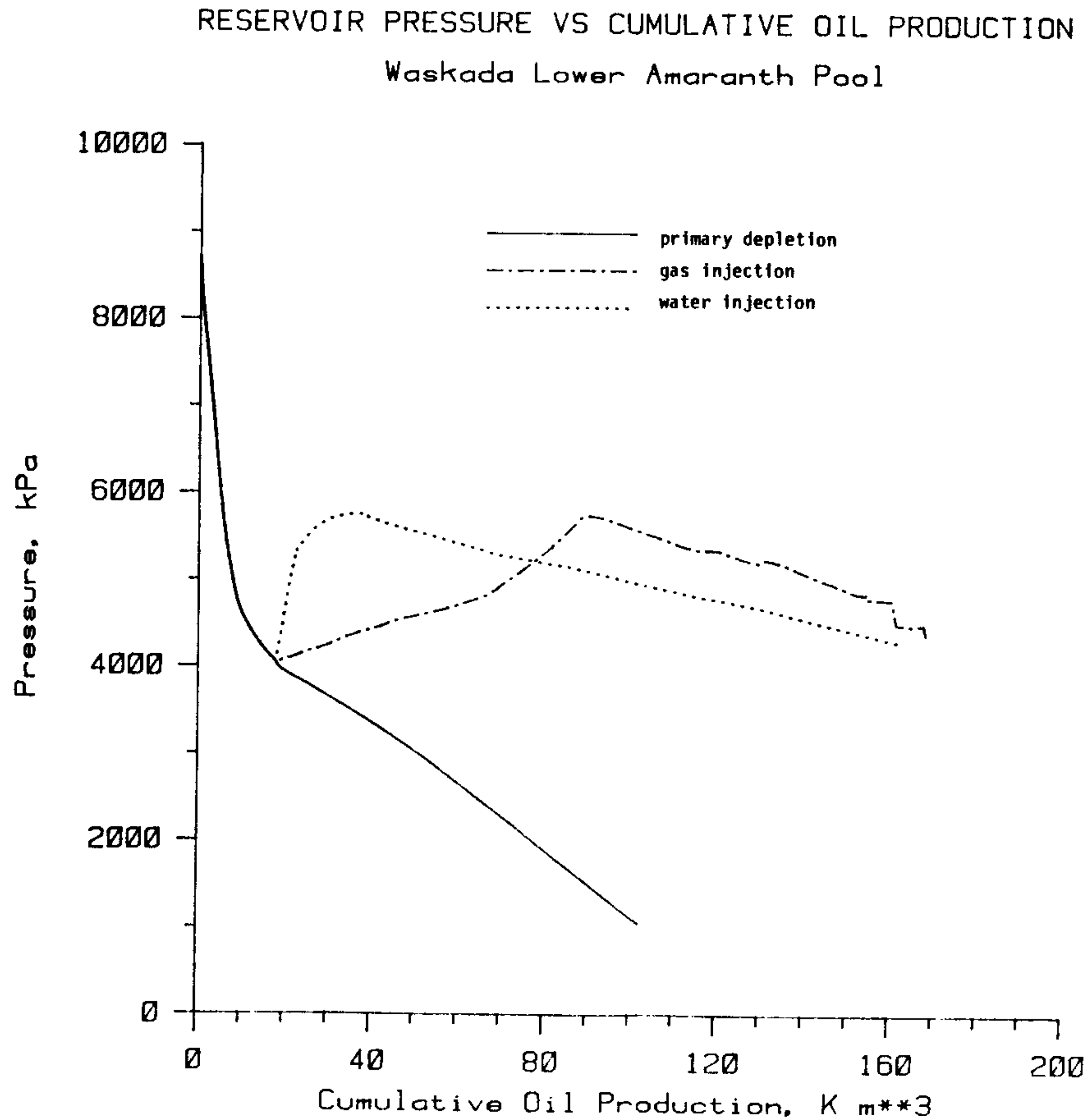

RESERVOIR PRESSURE VS CUMULATIVE OIL PRODUCTION
Waskada Lower Amaranth Pool
primary depletion
gas injection
water injection
10000
8000
6000
4000
2000
0
Pressure, kPa
0
40
80
120
160
200
Cumulative Oil Production, K m**3

Figure 15

RESERVOIR PRESSURE VS % EXPECTED TEN-YEAR RECOVERY

Waskada Lower Amaranth Pool

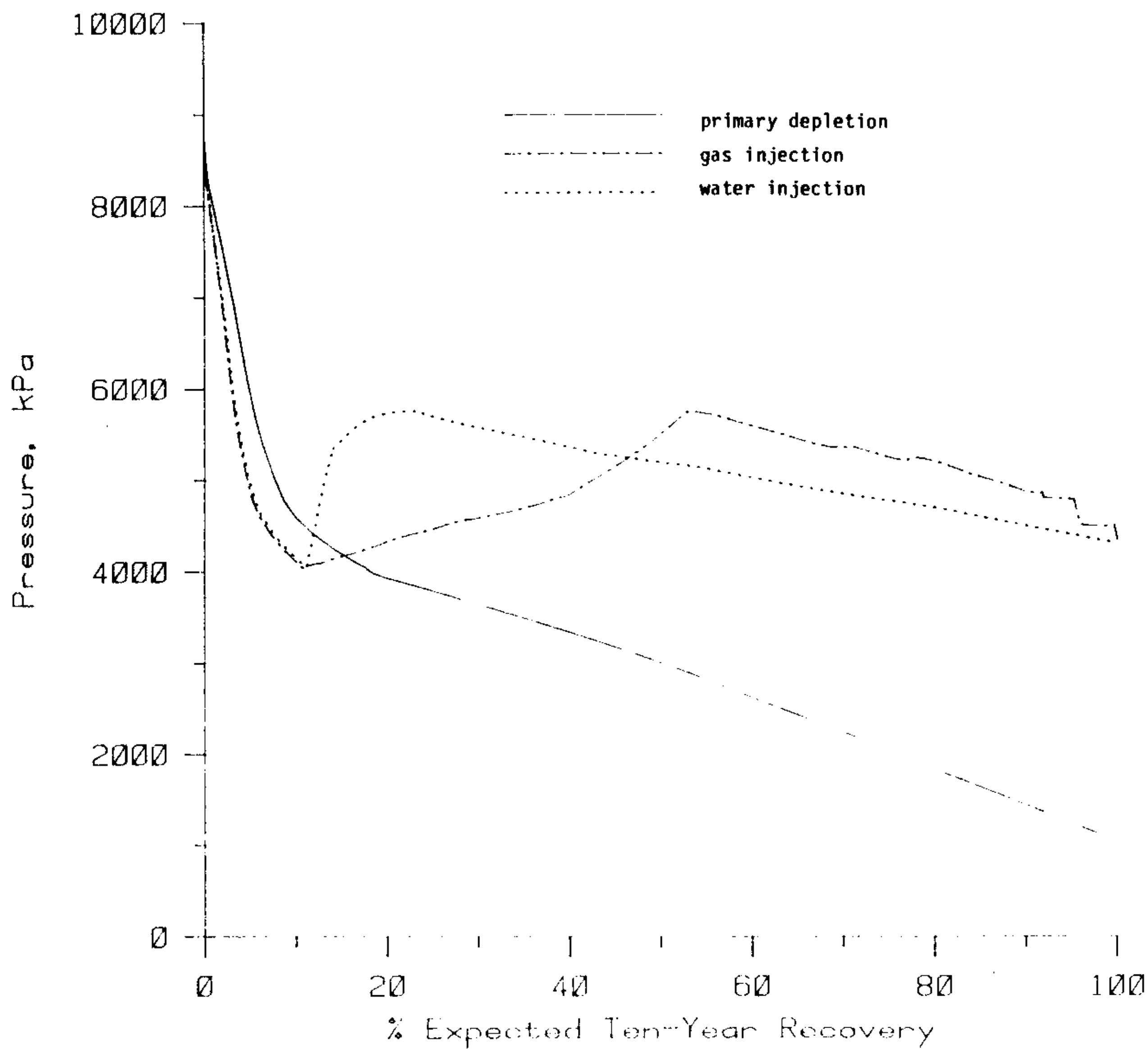


Table 1

SUMMARY OF RECOVERIES

Waskada Lower Amaranth Pool

Case	10 Year Forecast		Economic Limit of 10 m^3/d	
	km^3	% Model OOIP	km^3	% Model OOIP
Primary Depletion	102.1	12.2	102.1	12.2
Gas Injection	168.3	20.1	186.0	22.3
Water Injection	161.5	19.3	237.0	28.4

Table 2

SUMMARY OF OIL PRODUCTION RATE FORECASTS

Waskada Lower Amaranth Pool

Year	Primary Depletion		Gas Injection		Water Injection	
	Rate, m^3/d	Cum. Oil km^3	Rate, m^3/d	Cum. Oil km^3	Rate, m^3/d	Cum. Oil km^3
1980	0.41	.088	0.41	.088	0.41	.088
1981	1.10	.489	1.10	.489	1.10	.489
1982	16.7	6.6	16.7	6.6	16.7	6.6
1983	46.9	23.7	44.1	22.7	44.9	23.0
1984	51.3	42.4	59.5	44.4	60.2	45.0
1985	59.2	64.0	68.0	69.2	67.1	69.5
1986	39.7	78.5	71.0	95.1	63.8	92.8
1987	30.1	89.5	73.0	121.9	59.0	114.3
1988	17.8	96.0	60.8	143.9	54.2	134.1
1989	11.5	100.2	46.6	160.9	50.1	152.4
1990	10.2	102.1	40.4	168.3	49.9	161.5
Extrapolated Ultimate Rec.		102.1		186.0		237.0

Table 3

FORECAST, PRIMARY DEPLETION

Waskada Lower Amaranth Pool

RATE INJECTION/PRODUCTION SUMMARY:

TIME days	PRESSURE kPa	INJECTION GAS m 3/day	INJECTION WATER m 3/day	INJECTION OIL m 3/day	INJECTION POLYMER kg/day	INJECTION AQUIFER m 3/day	PRODUCTION GAS m 3/day	PRODUCTION WATER m 3/day	PRODUCTION OIL m 3/day	PRODUCTION POLYMER kg/day
91.250	8675.019	0.00000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
182.500	8636.877	0.00000D+00	0.00	0.00	0.00	0.00	-2.4622D+01	-1.27	-0.48	0.00
273.750	8587.982	0.00000D+00	0.00	0.00	0.00	0.00	-3.7080D+01	-1.98	-0.72	0.00
365.000	8512.547	0.00000D+00	0.00	0.00	0.00	0.00	-5.6420D+01	-2.98	-1.10	0.00
456.250	8422.256	0.00000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.96	-1.10	0.00
547.500	8332.669	0.00000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.94	-1.10	0.00
638.750	8265.362	0.00000D+00	0.00	0.00	0.00	0.00	-3.6676D+01	-1.37	-0.72	0.00
730.000	8043.008	0.00000D+00	0.00	0.00	0.00	0.00	-4.7844D+02	-7.75	-9.34	0.00
821.250	7692.993	0.00000D+00	0.00	0.00	0.00	0.00	-3.7175D+02	-5.93	-7.25	0.00
912.500	6819.543	0.00000D+00	0.00	0.00	0.00	0.00	-1.5859D+03	-32.70	-30.58	0.00
1003.750	5451.168	0.00000D+00	0.00	0.00	0.00	0.00	-2.4642D+03	-44.90	-42.95	0.00
1095.000	4587.646	0.00000D+00	0.00	0.00	0.00	0.00	-2.8921D+03	-42.86	-43.35	0.00
1186.250	4242.674	0.00000D+00	0.00	0.00	0.00	0.00	-3.2046D+03	-41.55	-43.01	0.00
1277.500	4006.838	0.00000D+00	0.00	0.00	0.00	0.00	-4.2239D+03	-46.00	-53.91	0.00
1368.750	3823.749	0.00000D+00	0.00	0.00	0.00	0.00	-5.1525D+03	-48.00	-59.25	0.00
1460.000	3673.262	0.00000D+00	0.00	0.00	0.00	0.00	-5.7181D+03	-46.61	-57.74	0.00
1551.250	3519.189	0.00000D+00	0.00	0.00	0.00	0.00	-6.1893D+03	-45.85	-56.83	0.00
1642.500	3355.429	0.00000D+00	0.00	0.00	0.00	0.00	-7.2725D+03	-50.02	-60.97	0.00
1733.750	3177.284	0.00000D+00	0.00	0.00	0.00	0.00	-8.3535D+03	-50.90	-61.63	0.00
1825.000	2993.422	0.00000D+00	0.00	0.00	0.00	0.00	-9.0061D+03	-48.50	-58.50	0.00
2190.000	2560.629	0.00000D+00	0.00	0.00	0.00	0.00	-9.8304D+03	-42.40	-49.49	0.00
2555.000	1976.125	0.00000D+00	0.00	0.00	0.00	0.00	-8.7656D+03	-31.29	-33.92	0.00
2920.000	1566.318	0.00000D+00	0.00	0.00	0.00	0.00	-7.2362D+03	-24.11	-23.64	0.00
3285.000	1296.291	0.00000D+00	0.00	0.00	0.00	0.00	-5.5487D+03	-17.53	-14.55	0.00
3650.000	1122.528	0.00000D+00	0.00	0.00	0.00	0.00	-4.6082D+03	-14.00	-10.45	0.00

CUMULATIVE INJECTION/PRODUCTION SUMMARY:

TIME days	PRESSURE kPa	INJECTION GAS m 3	INJECTION WATER m 3	INJECTION OIL m 3	INJECTION POLYMER kg	INJECTION AQUIFER m 3	PRODUCTION GAS m 3	PRODUCTION WATER m 3	PRODUCTION OIL m 3	PRODUCTION POLYMER kg
91.250	8675.019	0.00000D+00	0.00	0.00	0.00	0.00	-2.2468D+03	-115.62	-43.80	0.00
182.500	8636.877	0.00000D+00	0.00	0.00	0.00	0.00	-4.4936D+03	-231.61	-87.59	0.00
273.750	8587.982	0.00000D+00	0.00	0.00	0.00	0.00	-7.8771D+03	-412.22	-153.55	0.00
365.000	8512.547	0.00000D+00	0.00	0.00	0.00	0.00	-1.3025D+04	-684.40	-253.92	0.00
456.250	8422.256	0.00000D+00	0.00	0.00	0.00	0.00	-1.8174D+04	-954.24	-354.28	0.00
547.500	8332.669	0.00000D+00	0.00	0.00	0.00	0.00	-2.3322D+04	-1222.38	-454.64	0.00
638.750	8265.362	0.00000D+00	0.00	0.00	0.00	0.00	-2.6668D+04	-1346.98	-519.91	0.00
730.000	8043.008	0.00000D+00	0.00	0.00	0.00	0.00	-7.0326D+04	-2053.84	-1371.87	0.00
821.250	7692.993	0.00000D+00	0.00	0.00	0.00	0.00	-1.0425D+05	-2594.52	-2033.87	0.00
912.500	6819.543	0.00000D+00	0.00	0.00	0.00	0.00	-2.4896D+05	-5578.51	-4824.69	0.00
1003.750	5451.168	0.00000D+00	0.00	0.00	0.00	0.00	-4.7382D+05	-9675.62	-8743.52	0.00
1095.000	4587.646	0.00000D+00	0.00	0.00	0.00	0.00	-7.3773D+05	-13586.73	-12699.62	0.00
1186.250	4242.674	0.00000D+00	0.00	0.00	0.00	0.00	-1.0301D+06	-17378.10	-16623.93	0.00
1277.500	4006.838	0.00000D+00	0.00	0.00	0.00	0.00	-1.4156D+06	-21575.56	-21543.62	0.00
1368.750	3823.749	0.00000D+00	0.00	0.00	0.00	0.00	-1.8857D+06	-25955.91	-26949.79	0.00
1460.000	3673.262	0.00000D+00	0.00	0.00	0.00	0.00	-2.4075D+06	-30208.63	-32218.83	0.00
1551.250	3519.189	0.00000D+00	0.00	0.00	0.00	0.00	-2.9723D+06	-34392.09	-37404.53	0.00
1642.500	3355.429	0.00000D+00	0.00	0.00	0.00	0.00	-3.6359D+06	-38956.48	-42967.84	0.00
1733.750	3177.284	0.00000D+00	0.00	0.00	0.00	0.00	-4.3982D+06	-43601.18	-48591.20	0.00
1825.000	2993.422	0.00000D+00	0.00	0.00	0.00	0.00	-5.2200D+06	-48026.57	-53929.59	0.00
2190.000	2560.629	0.00000D+00	0.00	0.00	0.00	0.00	-8.8081D+06	-63500.82	-71993.42	0.00
2555.000	1976.125	0.00000D+00	0.00	0.00	0.00	0.00	-1.2008D+07	-74921.20	-84373.06	0.00
2920.000	1566.318	0.00000D+00	0.00	0.00	0.00	0.00	-1.4649D+07	-83723.15	-93003.08	0.00
3285.000	1296.291	0.00000D+00	0.00	0.00	0.00	0.00	-1.6674D+07	-90121.34	-98313.03	0.00
3650.000	1122.528	0.00000D+00	0.00	0.00	0.00	0.00	-1.8356D+07	-95230.68	-102125.67	0.00

Table 4

FORECAST, GAS INJECTION

Waskada Lower Amaranth Pool

RATE INJECTION/PRODUCTION SUMMARY:

		INJECTION					PRODUCTION			
TIME days	PRESSURE kPa	GAS m 3/day	WATER m 3/day	OIL m 3/day	POLYMER kg/day	AQUIFER m 3/day	GAS m 3/day	WATER m 3/day	OIL m 3/day	POLYMER kg/day
91.250	8675.019	0.0000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
182.500	8636.877	0.0000D+00	0.00	0.00	0.00	0.00	-2.4622D+01	-1.27	-0.48	0.00
273.750	8587.982	0.0000D+00	0.00	0.00	0.00	0.00	-3.7080D+01	-1.98	-0.72	0.00
365.000	8512.547	0.0000D+00	0.00	0.00	0.00	0.00	-5.6420D+01	-2.98	-1.10	0.00
456.250	8422.256	0.0000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.96	-1.10	0.00
547.500	8332.669	0.0000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.94	-1.10	0.00
638.750	8265.362	0.0000D+00	0.00	0.00	0.00	0.00	-3.6676D+01	-1.37	-0.72	0.00
730.000	8043.008	0.0000D+00	0.00	0.00	0.00	0.00	-4.7844D+02	-7.75	-9.34	0.00
821.250	7692.993	0.0000D+00	0.00	0.00	0.00	0.00	-3.7175D+02	-5.93	-7.25	0.00
912.500	6819.543	0.0000D+00	0.00	0.00	0.00	0.00	-1.5859D+03	-32.70	-30.58	0.00
1003.750	5451.168	0.0000D+00	0.00	0.00	0.00	0.00	-2.4642D+03	-44.90	-42.95	0.00
1095.000	4587.646	0.0000D+00	0.00	0.00	0.00	0.00	-2.8921D+03	-42.86	-43.35	0.00
1186.250	4242.674	0.0000D+00	0.00	0.00	0.00	0.00	-3.2046D+03	-41.55	-43.01	0.00
1277.500	4104.000	4.8952D+03	0.00	0.00	0.00	0.00	-3.6424D+03	-39.86	-45.63	0.00
1642.500	4282.921	1.2489D+04	0.00	0.00	0.00	0.00	-6.8793D+03	-49.35	-59.30	0.00
2007.500	4655.454	2.6626D+04	0.00	0.00	0.00	0.00	-1.7954D+04	-56.70	-67.12	0.00
2555.000	5169.158	5.6108D+04	0.00	0.00	0.00	0.00	-4.6263D+04	-60.72	-71.98	0.00
2920.000	5373.246	7.3376D+04	0.00	0.00	0.00	0.00	-7.2499D+04	-58.77	-67.53	0.00
3285.000	5054.171	8.5197D+04	0.00	0.00	0.00	0.00	-8.8100D+04	-53.44	-57.48	0.00
3650.000	4603.689	7.4320D+04	0.00	0.00	0.00	0.00	-8.1998D+04	-46.50	-44.73	0.00

CUMULATIVE INJECTION/PRODUCTION SUMMARY:

		INJECTION					PRODUCTION			
TIME days	PRESSURE kPa	GAS m 3	WATER m 3	OIL m 3	POLYMER kg	AQUIFER m 3	GAS m 3	WATER m 3	OIL m 3	POLYMER kg
91.250	8675.019	0.0000D+00	0.00	0.00	0.00	0.00	-2.2468D+03	-115.62	-43.80	0.00
182.500	8636.877	0.0000D+00	0.00	0.00	0.00	0.00	-4.4936D+03	-231.61	-87.59	0.00
273.750	8587.982	0.0000D+00	0.00	0.00	0.00	0.00	-7.8771D+03	-412.22	-153.55	0.00
365.000	8512.547	0.0000D+00	0.00	0.00	0.00	0.00	-1.3025D+04	-684.40	-253.92	0.00
456.250	8422.256	0.0000D+00	0.00	0.00	0.00	0.00	-1.8174D+04	-956.24	-354.28	0.00
547.500	8332.669	0.0000D+00	0.00	0.00	0.00	0.00	-2.3322D+04	-1222.38	-454.64	0.00
638.750	8265.362	0.0000D+00	0.00	0.00	0.00	0.00	-2.6668D+04	-1346.98	-519.91	0.00
730.000	8043.008	0.0000D+00	0.00	0.00	0.00	0.00	-7.0326D+04	-2053.84	-1371.87	0.00
821.250	7692.993	0.0000D+00	0.00	0.00	0.00	0.00	-1.0425D+05	-2594.52	-2033.87	0.00
912.500	6819.543	0.0000D+00	0.00	0.00	0.00	0.00	-2.4896D+05	-5578.51	-4824.69	0.00
1003.750	5451.168	0.0000D+00	0.00	0.00	0.00	0.00	-4.7382D+05	-9675.62	-8743.52	0.00
1095.000	4587.646	0.0000D+00	0.00	0.00	0.00	0.00	-7.3773D+05	-13586.73	-12699.62	0.00
1186.250	4242.674	0.0000D+00	0.00	0.00	0.00	0.00	-1.0301D+06	-17378.10	-16623.93	0.00
1277.500	4104.000	4.4669D+05	0.00	0.00	0.00	0.00	-1.3625D+06	-21014.99	-20787.31	0.00
1642.500	4282.921	5.0051D+06	0.00	0.00	0.00	0.00	-3.8735D+06	-39028.71	-42432.08	0.00
2007.500	4655.454	1.4724D+07	0.00	0.00	0.00	0.00	-1.0427D+07	-59725.21	-66929.74	0.00
2555.000	5169.158	4.5443D+07	0.00	0.00	0.00	0.00	-3.5756D+07	-92967.89	-106341.35	0.00
2920.000	5373.246	7.2225D+07	0.00	0.00	0.00	0.00	-6.2218D+07	-114417.72	-130990.10	0.00
3285.000	5054.171	1.0332D+08	0.00	0.00	0.00	0.00	-9.4374D+07	-133921.75	-151968.86	0.00
3650.000	4603.689	1.3045D+08	0.00	0.00	0.00	0.00	-1.2430D+08	-150892.59	-168295.03	0.00

Table 5

FORECAST, WATER INJECTION

Waskada Lower Amaranth Pool

RATE INJECTION/PRODUCTION SUMMARY:

TIME days	PRESSURE kPa	INJECTION GAS m 3/day	INJECTION WATER m 3/day	INJECTION OIL m 3/day	INJECTION POLYMER kg/day	INJECTION AQUIFER m 3/day	PRODUCTION GAS m 3/day	PRODUCTION WATER m 3/day	PRODUCTION OIL m 3/day	PRODUCTION POLYMER kg/day
91.250	8675.019	0.00000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
182.500	8636.877	0.00000D+00	0.00	0.00	0.00	0.00	-2.4622D+01	-1.27	-0.48	0.00
273.750	8587.982	0.00000D+00	0.00	0.00	0.00	0.00	-3.7080D+01	-1.98	-0.72	0.00
365.000	8512.547	0.00000D+00	0.00	0.00	0.00	0.00	-5.6420D+01	-2.98	-1.10	0.00
456.250	8422.256	0.00000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.96	-1.10	0.00
547.500	8332.669	0.00000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.94	-1.10	0.00
638.750	8265.362	0.00000D+00	0.00	0.00	0.00	0.00	-3.6676D+01	-1.37	-0.72	0.00
730.000	8043.008	0.00000D+00	0.00	0.00	0.00	0.00	-4.7844D+02	-7.75	-9.34	0.00
821.250	7692.993	0.00000D+00	0.00	0.00	0.00	0.00	-3.7175D+02	-5.93	-7.25	0.00
912.500	6819.543	0.00000D+00	0.00	0.00	0.00	0.00	-1.5859D+03	-32.70	-30.58	0.00
1003.750	5451.168	0.00000D+00	0.00	0.00	0.00	0.00	-2.4642D+03	-44.90	-42.95	0.00
1095.000	4587.646	0.00000D+00	0.00	0.00	0.00	0.00	-2.8921D+03	-42.86	-43.35	0.00
1186.250	4242.674	0.00000D+00	0.00	0.00	0.00	0.00	-3.2046D+03	-41.55	-43.01	0.00
1277.500	4497.242	0.00000D+00	116.41	0.00	0.00	0.00	-3.6061D+03	-39.83	-45.61	0.00
1460.000	5301.373	0.00000D+00	148.39	0.00	0.00	0.00	-4.4117D+03	-49.52	-58.43	0.00
1825.000	5608.916	0.00000D+00	128.98	0.00	0.00	0.00	-4.1572D+03	-59.45	-64.26	0.00
2190.000	5350.678	0.00000D+00	133.99	0.00	0.00	0.00	-4.2382D+03	-70.43	-65.49	0.00
2555.000	5085.880	0.00000D+00	144.23	0.00	0.00	0.00	-4.2313D+03	-81.43	-63.12	0.00
2920.000	4858.653	0.00000D+00	154.76	0.00	0.00	0.00	-4.0079D+03	-93.57	-59.26	0.00
3285.000	4636.028	0.00000D+00	162.71	0.00	0.00	0.00	-3.7128D+03	-104.30	-54.72	0.00
3650.000	4411.624	0.00000D+00	167.20	0.00	0.00	0.00	-3.3872D+03	-112.61	-49.43	0.00

CUMULATIVE INJECTION/PRODUCTION SUMMARY:

TIME days	PRESSURE kPa	INJECTION GAS m 3	INJECTION WATER m 3	INJECTION OIL m 3	INJECTION POLYMER kg	INJECTION AQUIFER m 3	PRODUCTION GAS m 3	PRODUCTION WATER m 3	PRODUCTION OIL m 3	PRODUCTION POLYMER kg
91.250	8675.019	0.00000D+00	0.00	0.00	0.00	0.00	-2.2468D+03	-115.62	-43.80	0.00
182.500	8636.877	0.00000D+00	0.00	0.00	0.00	0.00	-4.4936D+03	-231.61	-87.59	0.00
273.750	8587.982	0.00000D+00	0.00	0.00	0.00	0.00	-7.8771D+03	-412.22	-153.55	0.00
365.000	8512.547	0.00000D+00	0.00	0.00	0.00	0.00	-1.3025D+04	-684.40	-253.92	0.00
456.250	8422.256	0.00000D+00	0.00	0.00	0.00	0.00	-1.8174D+04	-954.24	-354.28	0.00
547.500	8132.669	0.00000D+00	0.00	0.00	0.00	0.00	-2.3322D+04	-1222.38	-454.64	0.00
638.750	8265.362	0.00000D+00	0.00	0.00	0.00	0.00	-2.6668D+04	-1346.98	-519.91	0.00
730.000	8043.008	0.00000D+00	0.00	0.00	0.00	0.00	-7.0326D+04	-2053.84	-1371.87	0.00
821.250	7692.993	0.00000D+00	0.00	0.00	0.00	0.00	-1.0425D+05	-2594.52	-2033.87	0.00
912.500	6819.543	0.00000D+00	0.00	0.00	0.00	0.00	-2.4896D+05	-5578.51	-4824.69	0.00
1003.750	5451.168	0.00000D+00	0.00	0.00	0.00	0.00	-4.7382D+05	-9675.62	-8743.52	0.00
1095.000	4587.646	0.00000D+00	0.00	0.00	0.00	0.00	-7.3773D+05	-13586.73	-12699.62	0.00
1186.250	4242.674	0.00000D+00	0.00	0.00	0.00	0.00	-1.0301D+06	-17378.10	-16623.93	0.00
1277.500	4497.242	0.00000D+00	10622.44	0.00	0.00	0.00	-1.3592D+06	-21012.94	-20785.39	0.00
1460.000	5301.373	0.00000D+00	37703.04	0.00	0.00	0.00	-2.1643D+06	-30050.68	-31449.41	0.00
1825.000	5608.916	0.00000D+00	84782.30	0.00	0.00	0.00	-3.6517D+06	-51749.09	-54905.61	0.00
2190.000	5350.678	0.00000D+00	133687.41	0.00	0.00	0.00	-5.2287D+06	-77455.97	-78810.75	0.00
2555.000	5085.880	0.00000D+00	186331.45	0.00	0.00	0.00	-6.7731D+06	-107178.58	-101850.36	0.00
2920.000	4858.653	0.00000D+00	242819.63	0.00	0.00	0.00	-8.2360D+06	-141333.41	-123478.85	0.00
3285.000	4636.028	0.00000D+00	302209.09	0.00	0.00	0.00	-9.5912D+06	-179401.61	-143452.38	0.00
3650.000	4411.624	0.00000D+00	363236.44	0.00	0.00	0.00	-1.0827D+07	-220502.67	-161494.31	0.00

APPENDIX A

APPENDIX A

MODEL DEVELOPMENT AND DETAILED MODEL PREDICTIONS

List of Figures

List of Tables

Figure A-1

WELL LOCATIONS AND GRID BLOCK STRUCTURE FOR THE MODEL STUDY

Waskada Lower Amaranth Pool

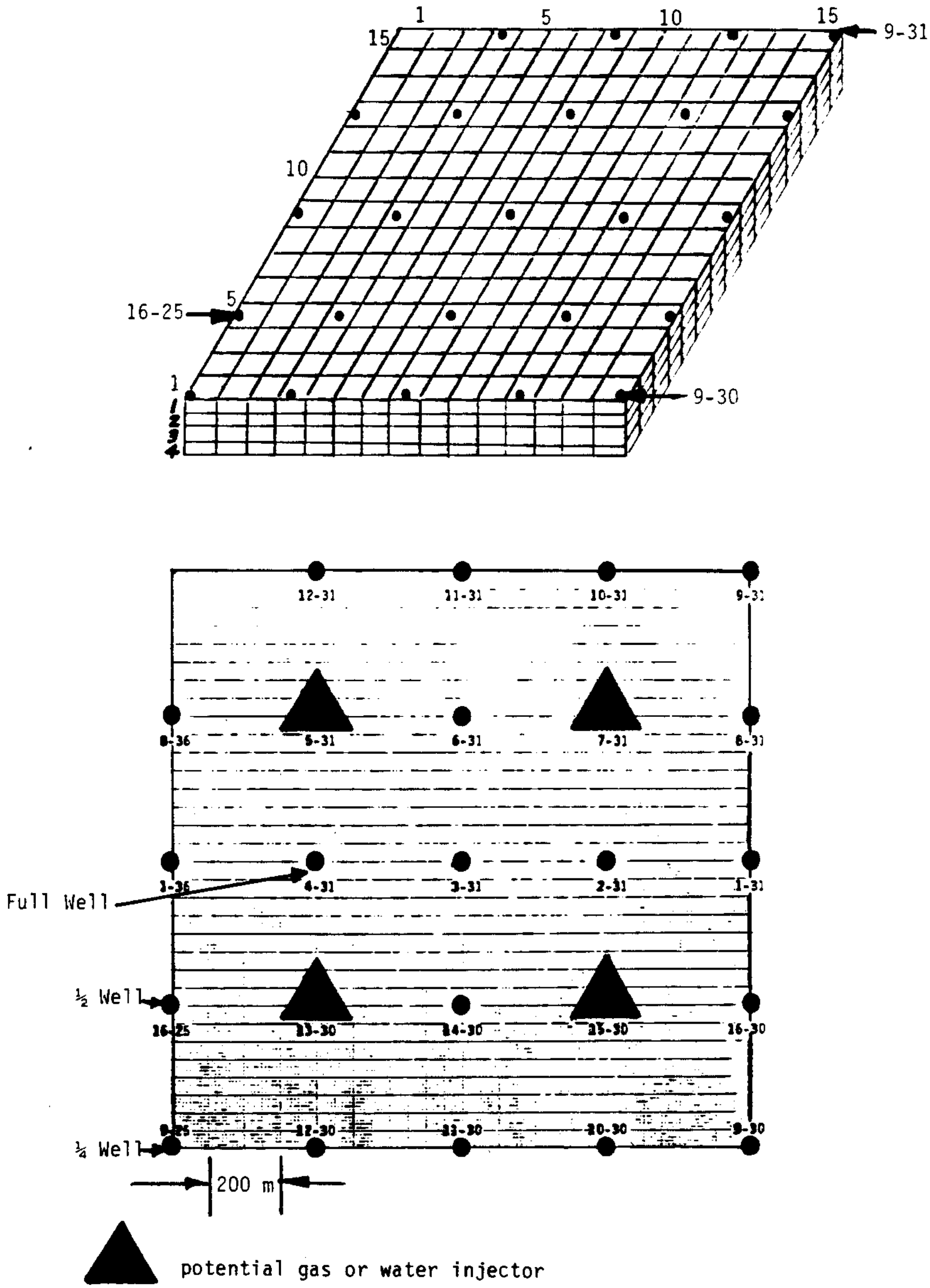


Figure A-2

C SAND STRUCTURE MAP

(Contour Interval = 0.5 m)

Waskada Lower Amaranth Pool

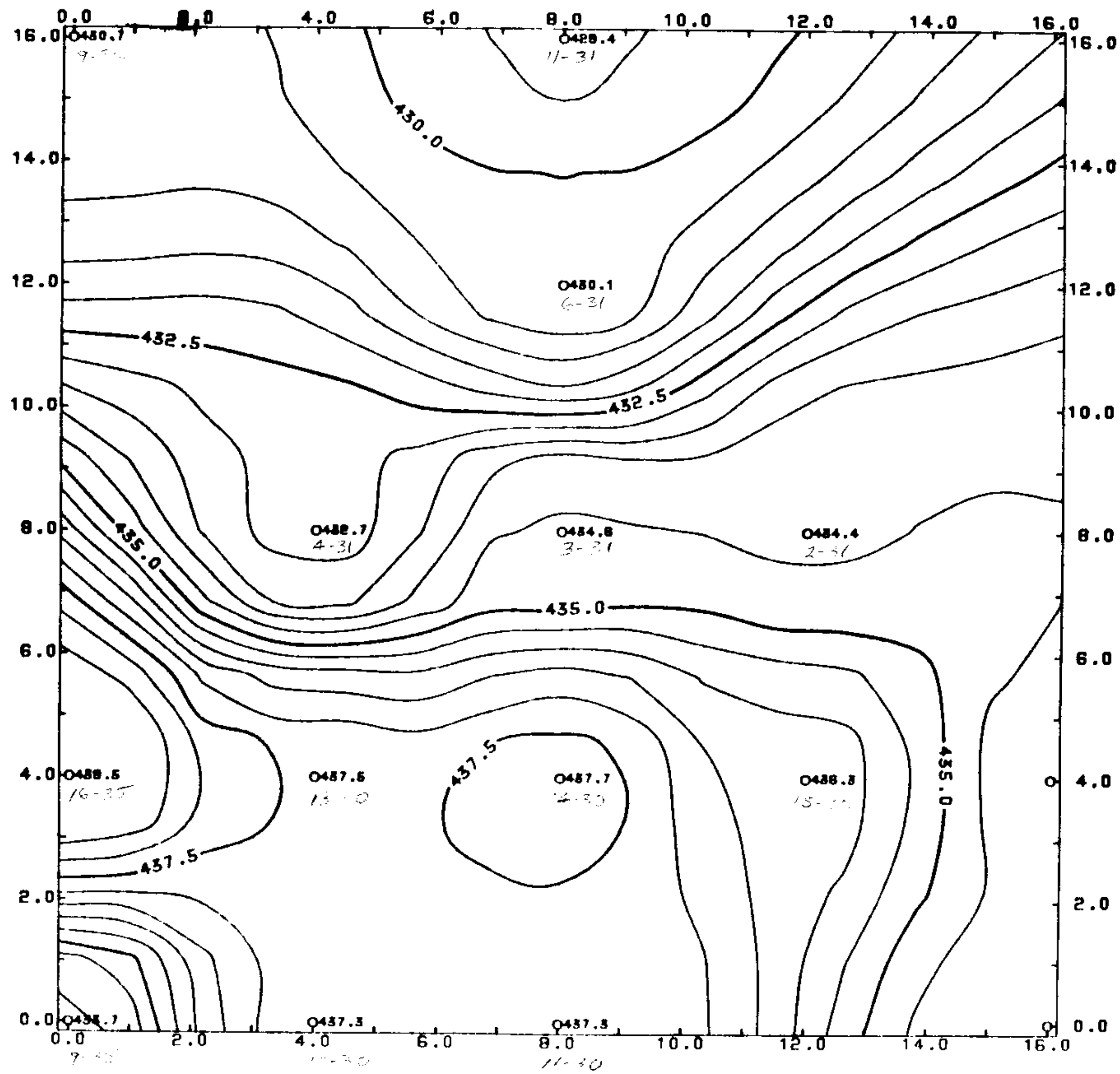


Figure A-3

A SAND NET PAY CONTOUR MAP

(Contour Interval = 0.1 m)

Waskada Lower Amaranth Pool

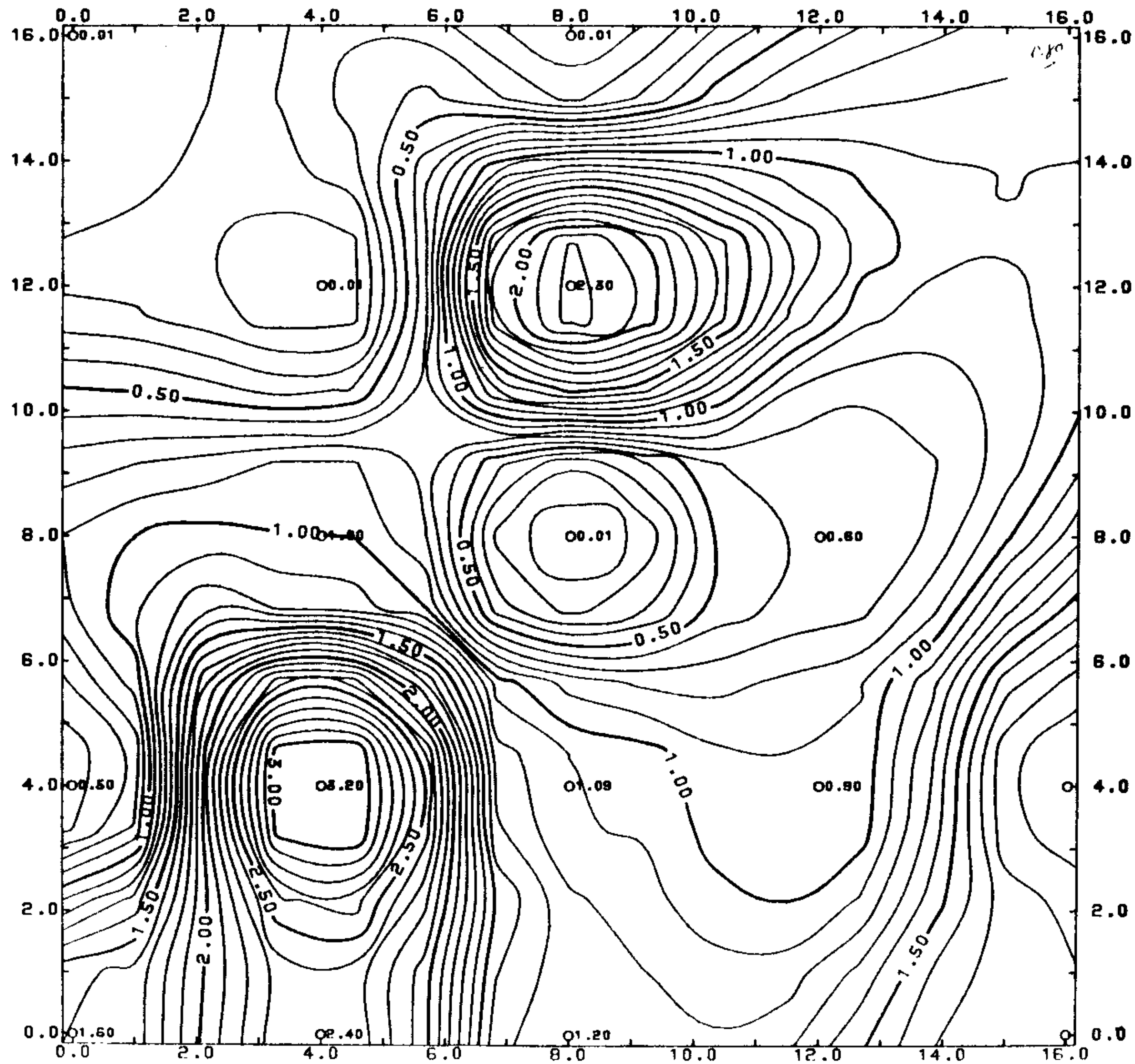


Figure A-4

B SAND NET PAY CONTOUR MAP

(Contour Interval = 0.2 m)

Waskada Lower Amaranth Pool

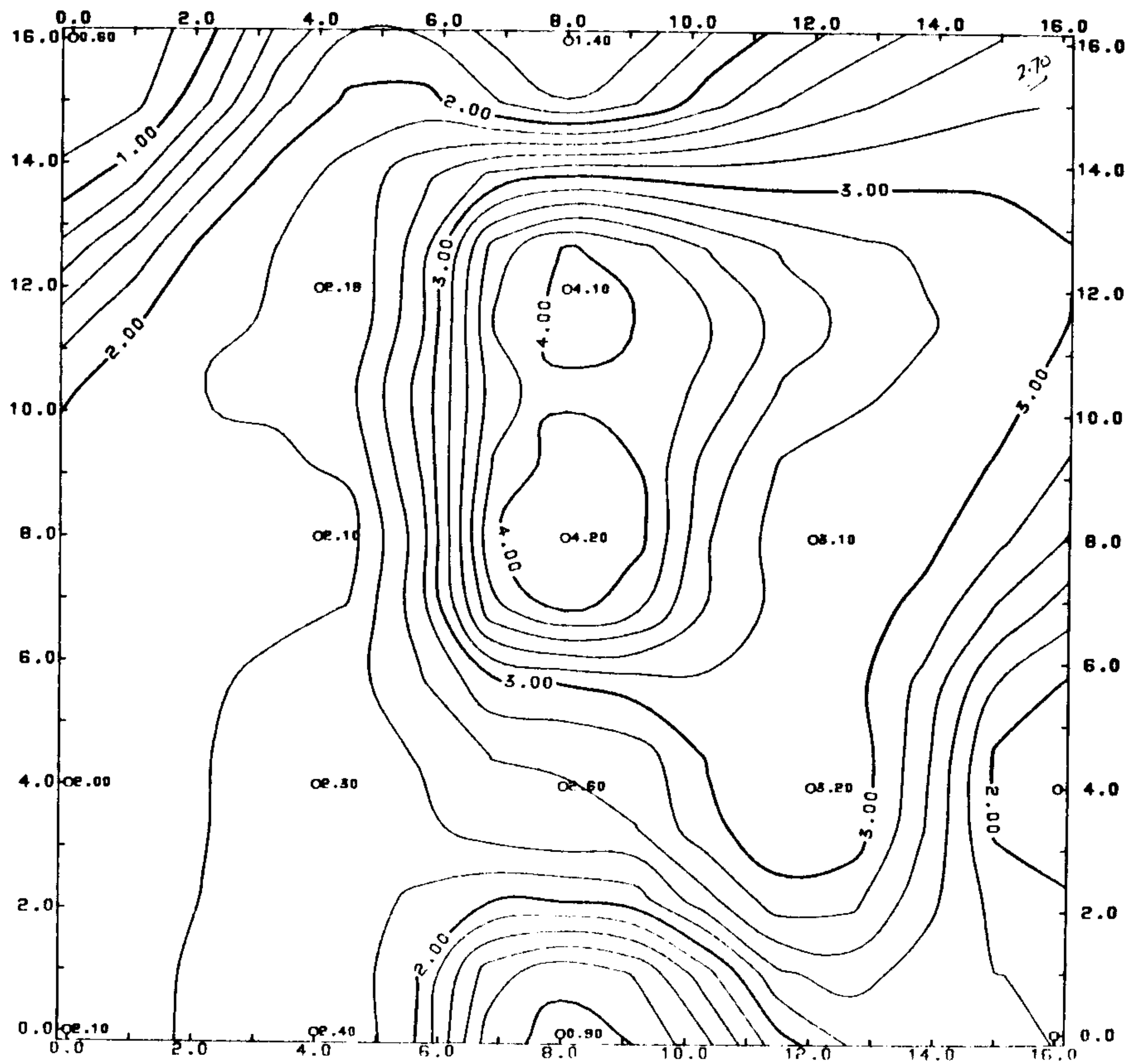
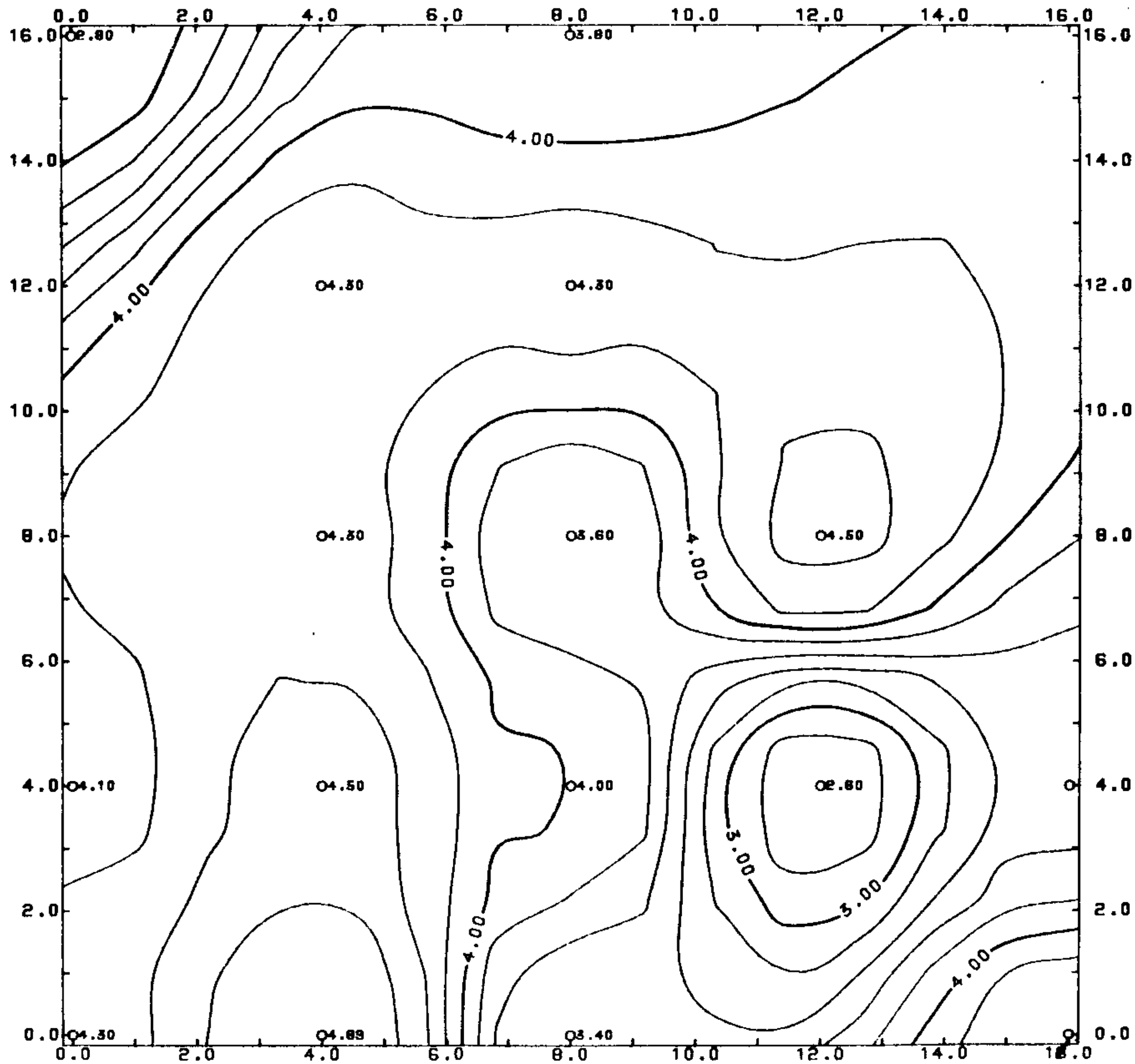


Figure A-5

C SAND NET PAY CONTOUR MAP

(Contour Interval = 0.2 m)

Waskada Lower Amaranth Pool



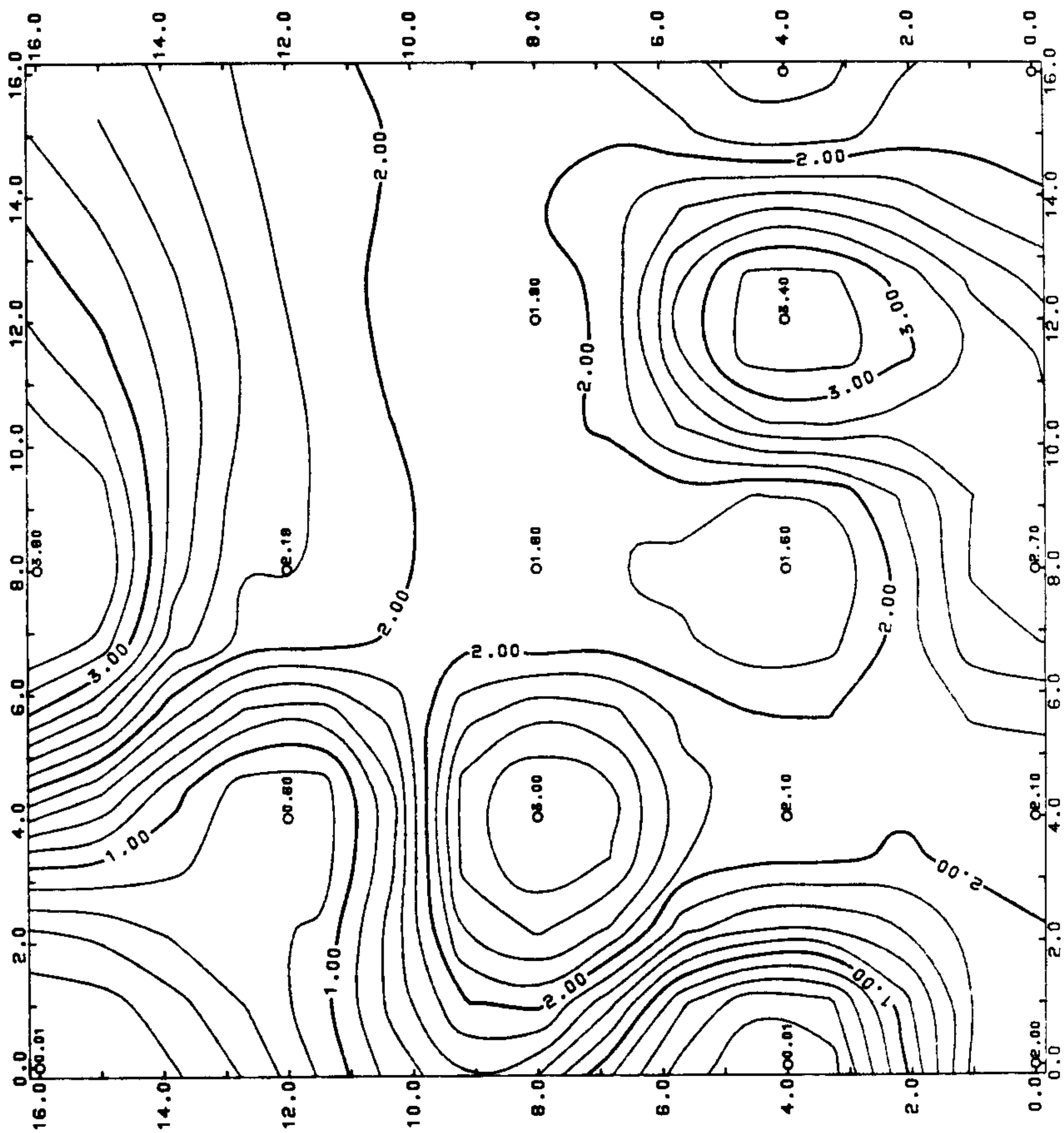


Figure A-6
D SAND NET PAY CONTOUR MAP
(Contour Interval = 0.2 m)
Waskada Lower Amaranth Pool

Figure A-7
A SAND POROSITY CONTOUR MAP
(Contour Interval = 0.01)
Waskada Lower Amaranth Pool

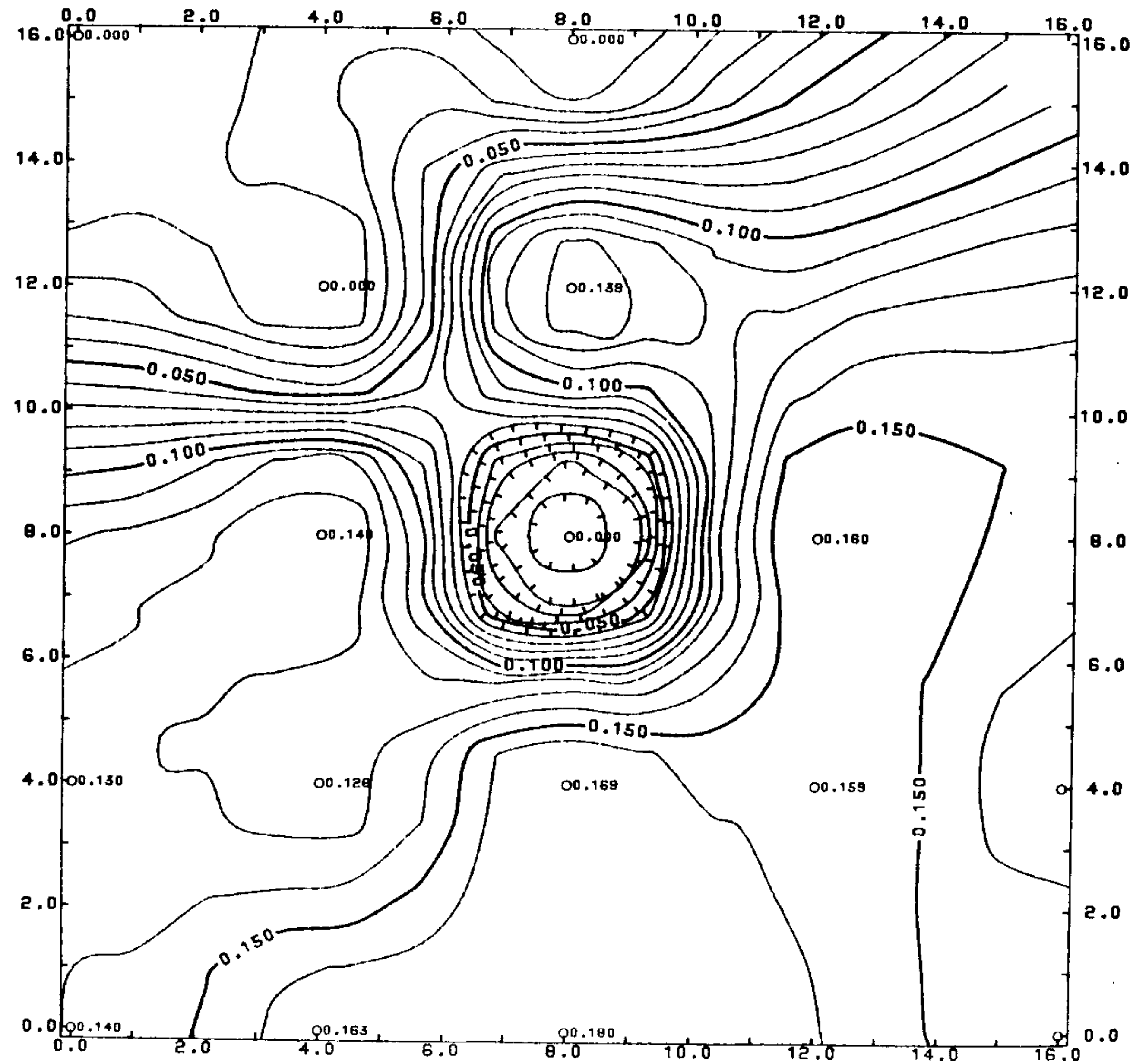


Figure A-8
B SAND POROSITY CONTOUR MAP
(Contour Interval = 0.01)
Waskada Lower Amaranth Pool

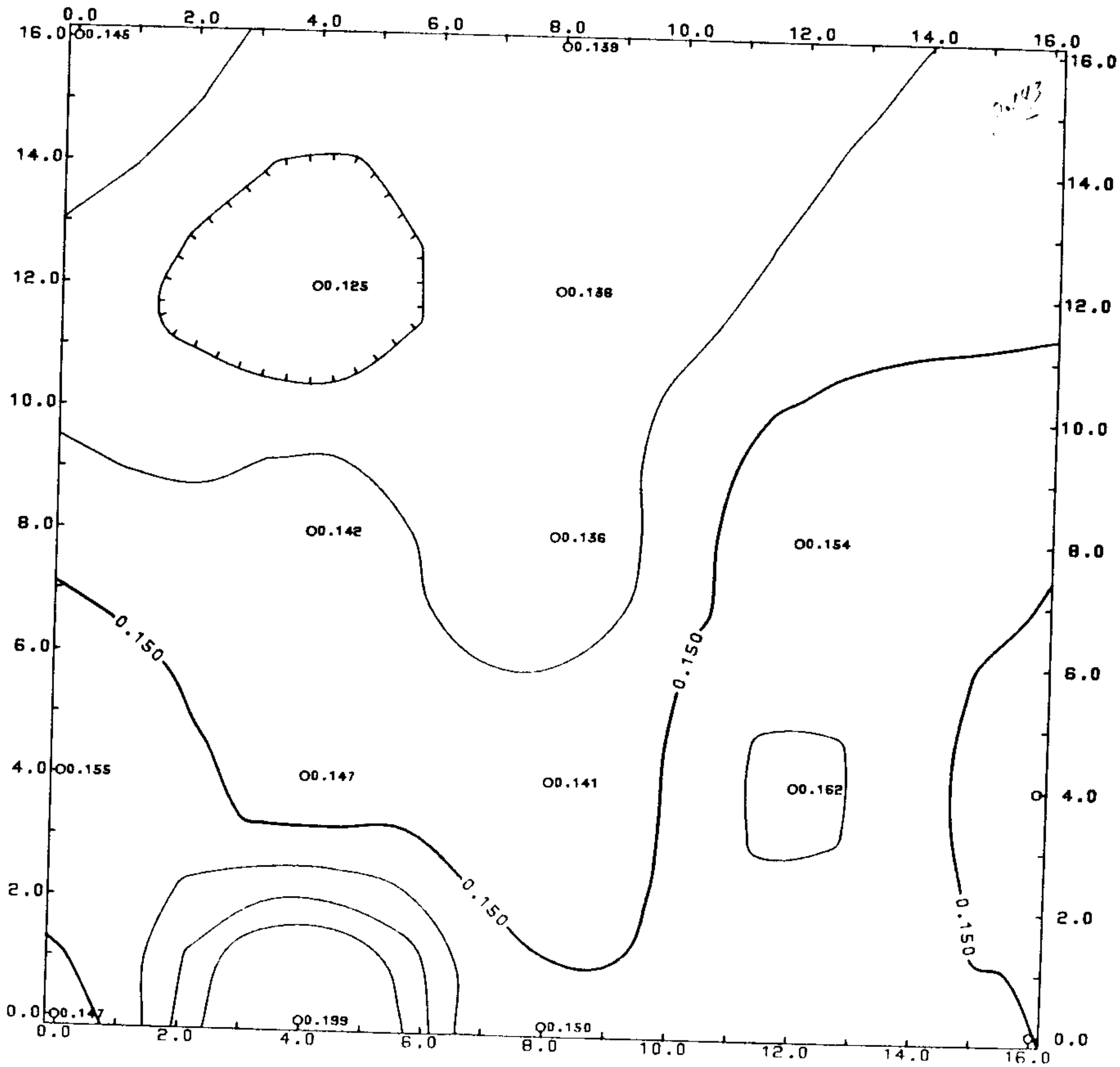


Figure A-9
C SAND POROSITY CONTOUR MAP
(Contour Interval = 0.01)
Waskada Lower Amaranth Pool

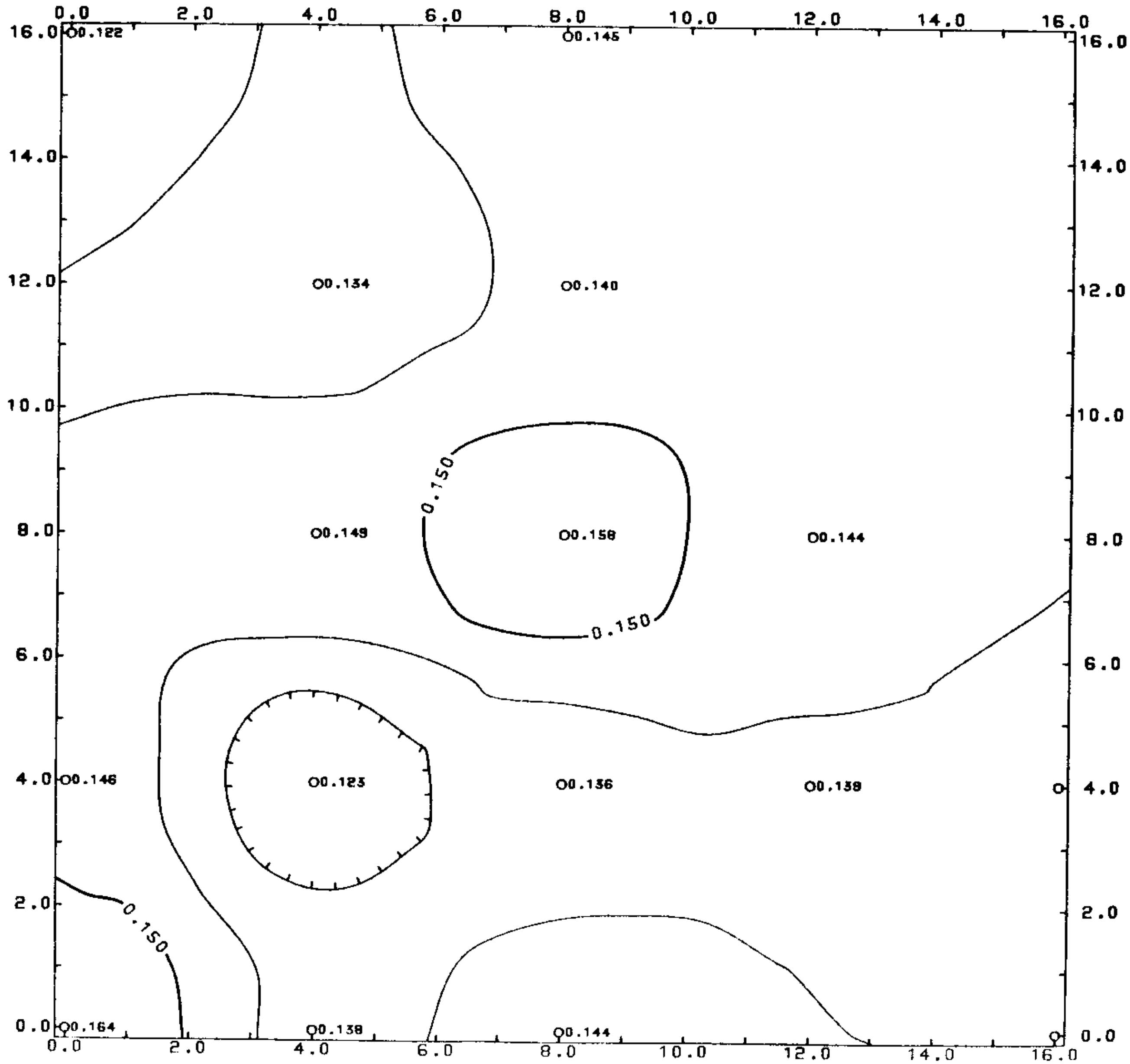


Figure A-10
D SAND POROSITY CONTOUR MAP
(Contour Interval = 0.01)
Waskada Lower Amaranth Pool

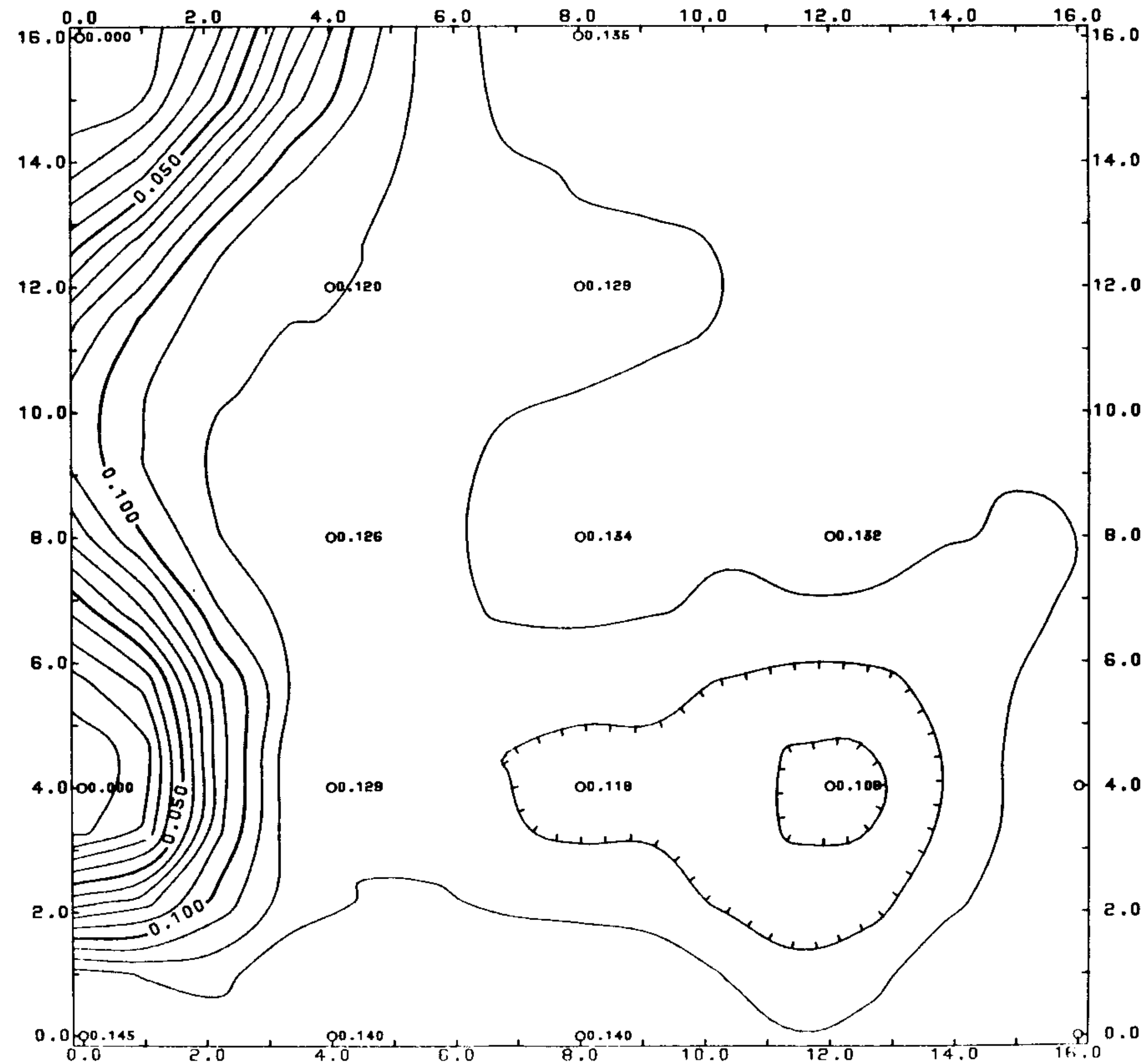


Figure A-11

PERMEABILITY VS POROSITY

Waskada Lower Amaranth Pool

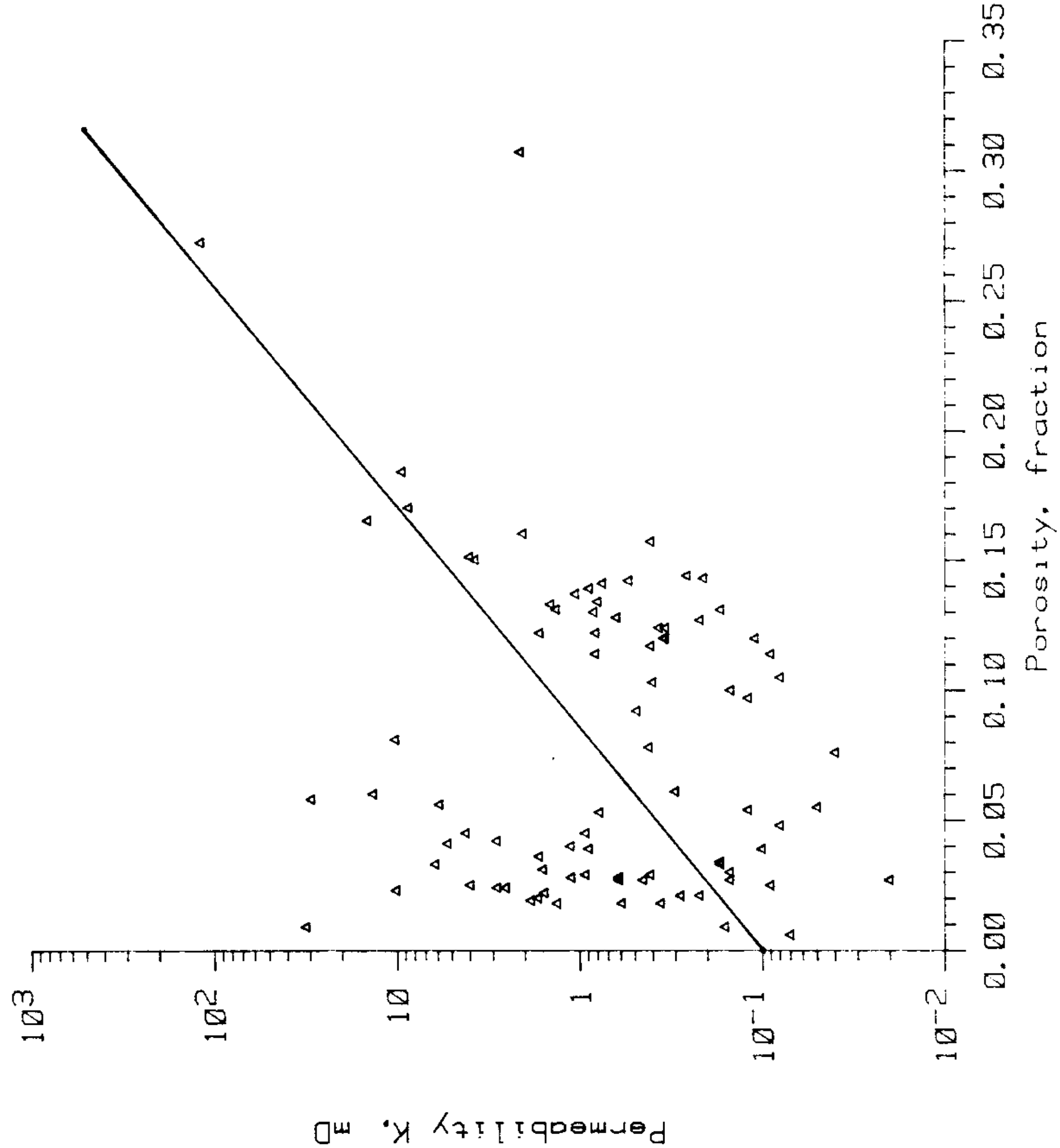


Figure A-12

OIL - WATER CAPILLARY PRESSURE

Waskada Lower Amaranth Pool

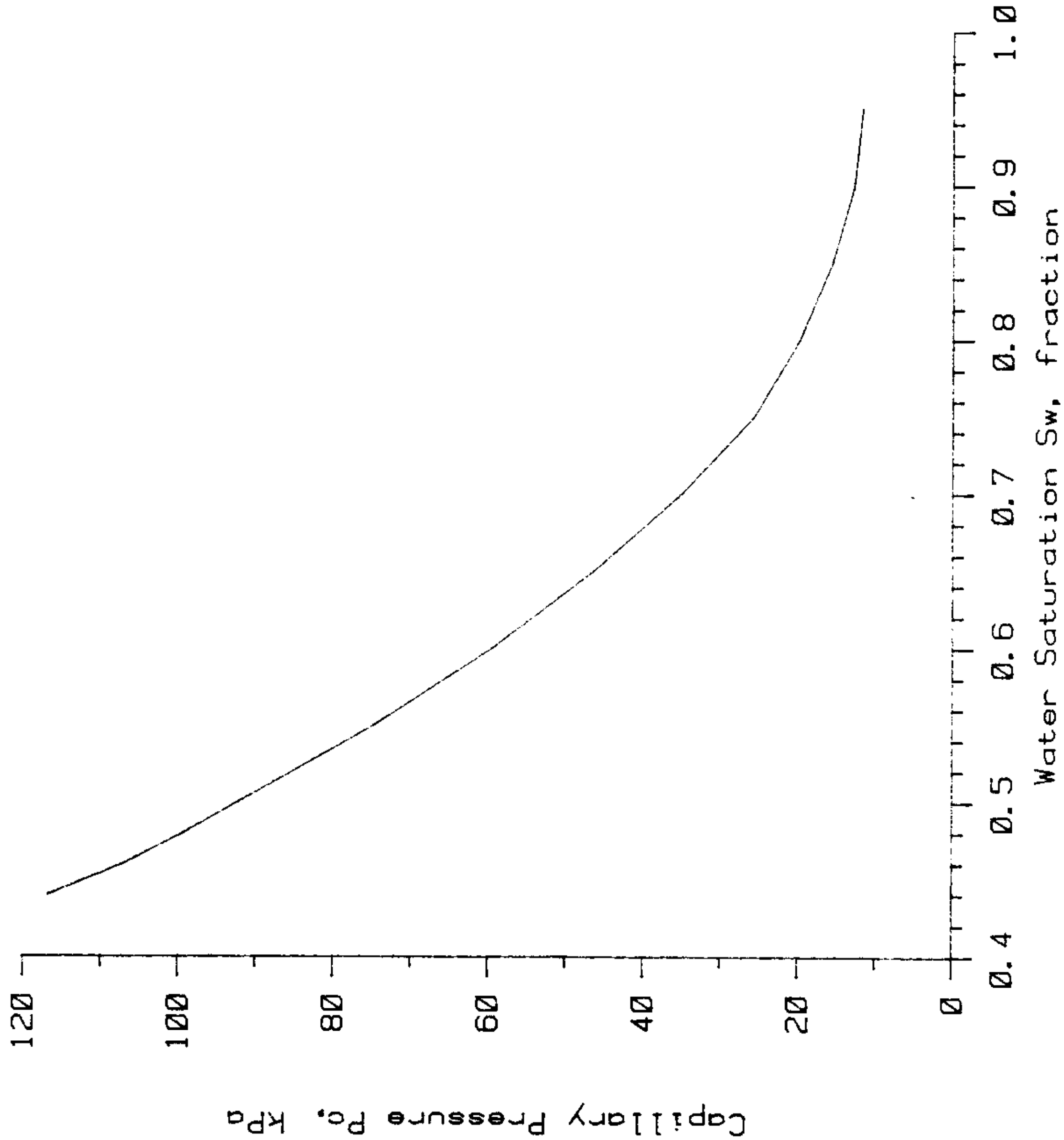


Figure A-13

OIL-WATER RELATIVE PERMEABILITY

Waskada Lower Amaranth Pool

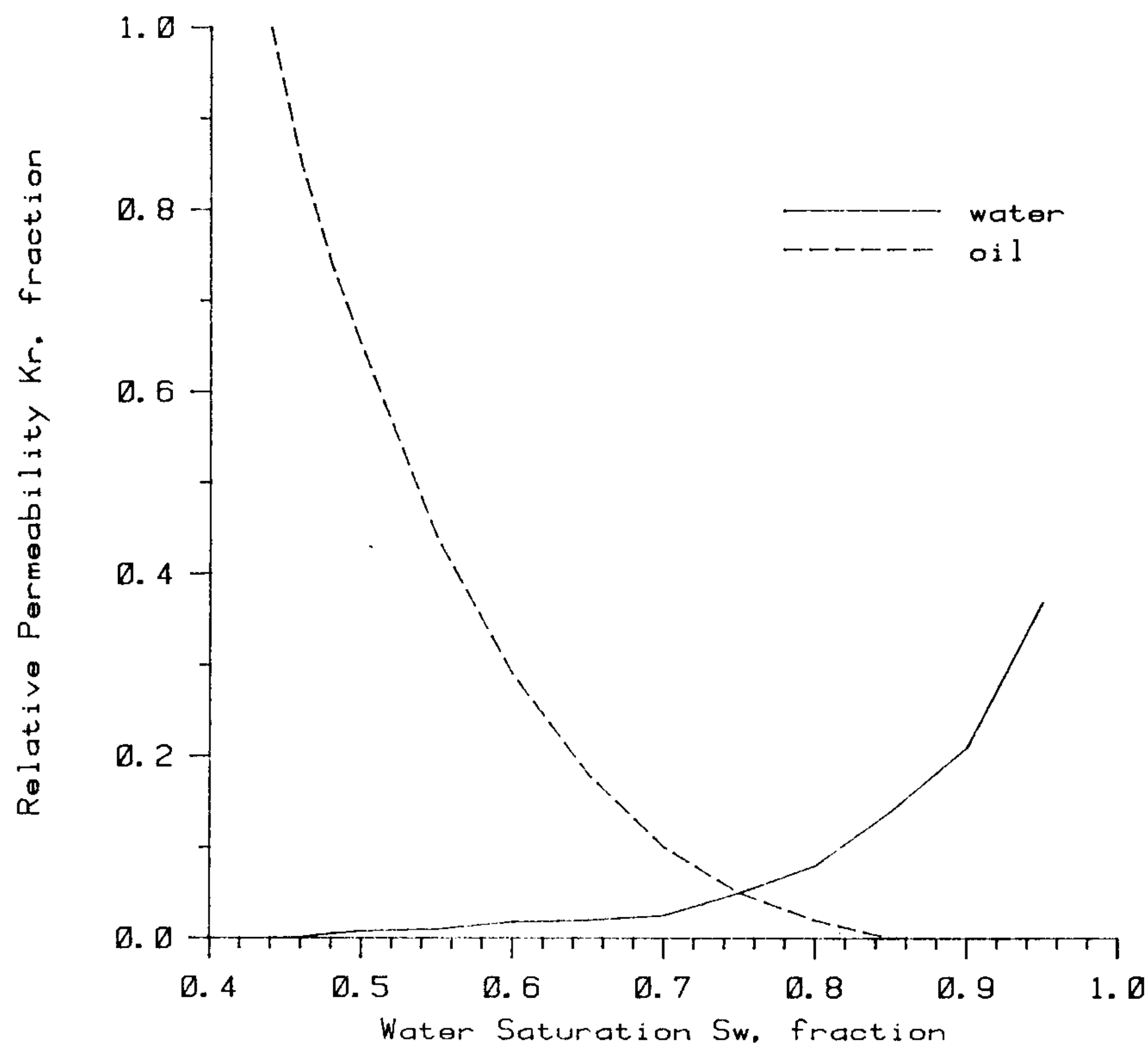


Figure A-14

GAS-OIL RELATIVE PERMEABILITY

Waskada Lower Amaranth Pool

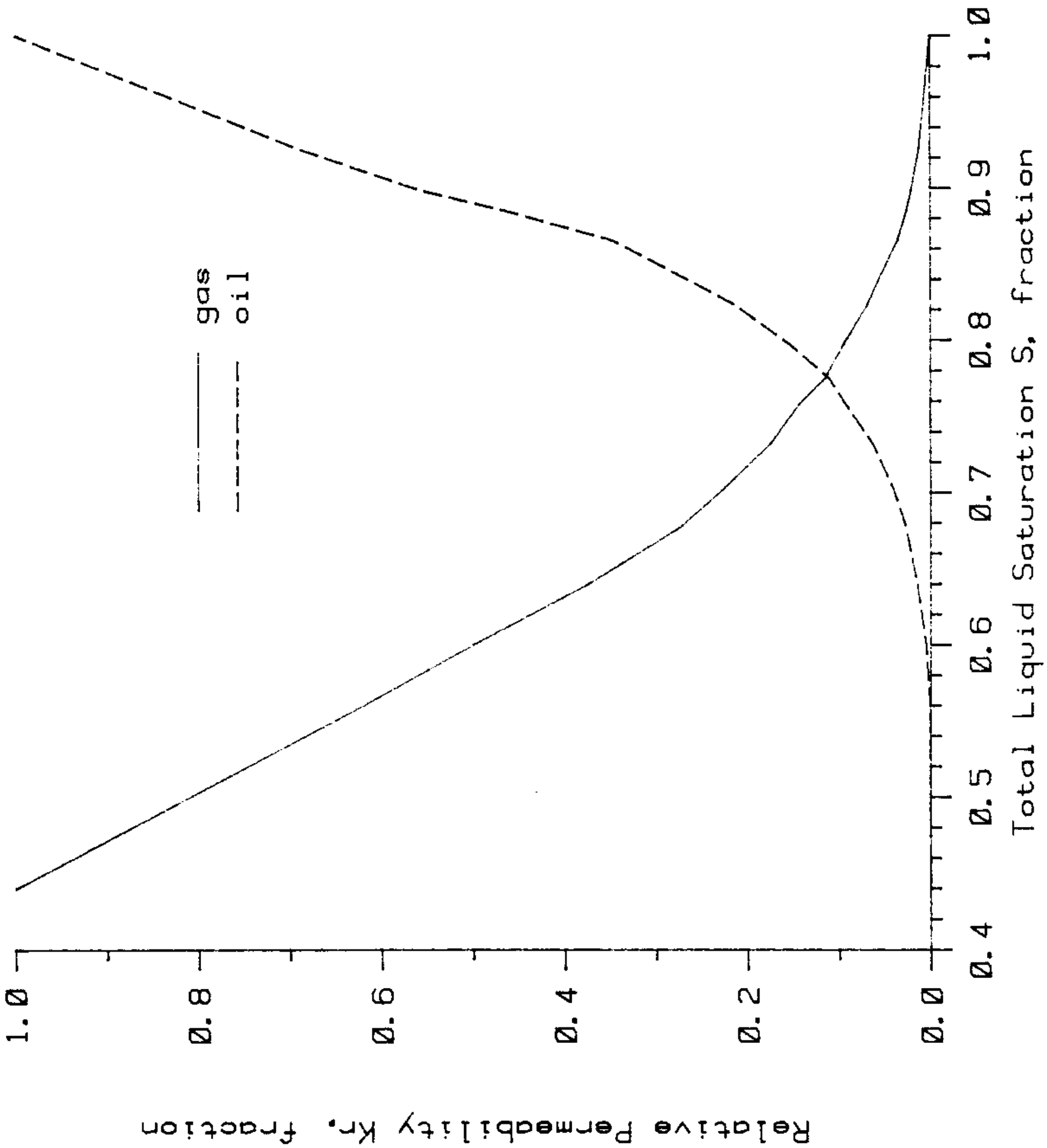


Table A-1

BLOCK CENTER DEPTH (RESERVOIR STRUCTURE)

Waskada Lower Amaranth Pool

time: 0.000 days

plane z= 1

y \ x	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
y = 15	-430.094	-430.044	-429.688	-428.923	-428.148	-427.802	-427.898	-427.993	-427.894	-427.698	-427.612	-427.608	-427.873	-428.134	-428.410
y = 14	-430.066	-429.969	-429.484	-428.693	-427.983	-427.552	-427.628	-427.801	-427.621	-427.394	-427.388	-427.626	-427.979	-428.375	-428.815
y = 13	-429.959	-429.691	-429.119	-428.560	-428.075	-427.301	-426.615	-426.346	-426.437	-426.756	-427.209	-427.724	-428.316	-428.868	-429.305
y = 12	-429.943	-429.562	-429.231	-429.041	-428.649	-427.436	-425.613	-424.999	-425.403	-426.336	-427.319	-428.273	-429.029	-429.521	-429.872
y = 11	-430.379	-430.107	-429.966	-429.851	-429.414	-427.877	-425.635	-424.951	-425.462	-426.781	-428.300	-429.402	-429.925	-430.204	-430.450
y = 10	-431.294	-430.812	-430.460	-430.284	-430.004	-429.002	-427.471	-426.822	-427.283	-428.595	-429.990	-430.486	-430.622	-430.747	-430.919
y = 9	-432.408	-431.362	-430.596	-430.218	-430.119	-429.954	-429.816	-429.994	-429.839	-430.297	-430.867	-430.940	-430.963	-431.050	-431.152
y = 8	-433.775	-432.112	-430.739	-430.170	-430.129	-430.337	-430.379	-430.395	-430.429	-430.828	-430.999	-431.010	-431.104	-431.236	-431.319
y = 7	-435.357	-433.916	-431.857	-430.719	-430.611	-430.965	-430.919	-430.736	-431.009	-431.281	-431.189	-431.209	-431.377	-431.455	-431.449
y = 6	-436.524	-435.746	-433.809	-432.844	-432.673	-432.623	-433.019	-433.276	-432.964	-432.394	-432.202	-432.104	-431.839	-431.553	-431.451
y = 5	-437.177	-436.730	-434.635	-433.616	-433.578	-433.627	-434.280	-434.519	-434.171	-433.018	-432.642	-432.583	-432.070	-431.494	-431.407
y = 4	-437.046	-436.496	-434.622	-433.669	-433.621	-433.880	-434.413	-434.539	-434.344	-433.257	-432.678	-432.599	-432.083	-431.502	-431.408
y = 3	-434.573	-434.362	-433.953	-433.745	-433.775	-434.156	-434.694	-434.848	-434.676	-433.817	-432.906	-432.501	-431.915	-431.449	-431.314
y = 2	-431.360	-431.892	-433.112	-433.654	-433.760	-434.288	-435.319	-435.633	-435.472	-434.755	-433.414	-432.366	-431.561	-431.101	-430.983
y = 1	-430.815	-431.218	-432.840	-433.668	-433.713	-434.271	-435.530	-435.798	-435.681	-435.146	-433.817	-432.288	-431.339	-430.968	-430.902

plane z= 2

y \ x	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
y = 15	-430.400	-430.378	-430.194	-429.741	-429.185	-428.815	-428.712	-428.700	-428.708	-428.749	-428.884	-429.057	-429.436	-429.795	-430.160
y = 14	-430.394	-430.353	-430.119	-429.663	-429.179	-428.806	-428.692	-428.693	-428.691	-428.752	-428.952	-429.302	-429.731	-430.179	-430.651
y = 13	-430.403	-430.285	-430.028	-429.690	-429.343	-428.899	-428.592	-428.491	-428.547	-428.792	-429.198	-429.690	-430.259	-430.801	-431.231
y = 12	-430.612	-430.449	-430.320	-430.170	-429.807	-429.135	-428.377	-428.121	-428.338	-428.947	-429.652	-430.428	-431.084	-431.523	-431.844
y = 11	-431.334	-431.198	-431.121	-430.984	-430.566	-429.603	-428.494	-428.115	-428.493	-429.504	-430.655	-431.530	-431.956	-432.195	-432.421
y = 10	-432.533	-432.116	-431.778	-431.585	-431.388	-430.815	-429.971	-429.560	-429.978	-431.002	-432.069	-432.457	-432.575	-432.676	-432.856
y = 9	-433.818	-432.835	-432.102	-431.756	-431.695	-431.747	-431.938	-432.162	-432.032	-432.348	-432.761	-432.819	-432.860	-432.963	-433.077
y = 8	-435.272	-433.678	-432.334	-431.731	-431.639	-432.093	-432.452	-432.500	-432.525	-432.785	-432.855	-432.866	-432.991	-433.149	-433.243
y = 7	-436.821	-435.506	-433.549	-432.391	-432.273	-432.825	-432.961	-432.817	-433.059	-433.232	-433.074	-433.091	-433.281	-433.371	-433.365
y = 6	-437.876	-437.247	-435.789	-435.151	-435.010	-434.806	-435.014	-435.212	-434.906	-434.360	-434.186	-434.083	-433.790	-433.473	-433.361
y = 5	-438.440	-438.108	-436.757	-436.307	-436.293	-436.040	-436.205	-436.372	-436.044	-434.992	-434.684	-434.621	-434.046	-433.406	-433.308
y = 4	-438.330	-437.920	-436.758	-436.350	-436.339	-435.283	-436.324	-436.386	-436.185	-435.207	-434.715	-434.633	-434.053	-433.418	-433.312
y = 3	-436.153	-436.080	-436.057	-436.176	-436.246	-436.355	-436.451	-436.468	-436.296	-435.597	-434.859	-434.484	-433.878	-433.395	-433.254
y = 2	-433.193	-433.770	-435.240	-436.000	-436.109	-436.319	-436.678	-436.780	-436.693	-436.190	-435.169	-434.275	-433.520	-433.084	-432.974
y = 1	-432.665	-433.099	-434.987	-436.045	-436.097	-436.285	-436.749	-436.849	-436.788	-436.425	-435.401	-434.134	-433.298	-432.961	-432.902

plane z= 3

Table A-1

BLOCK CENTER DEPTH (RESERVOIR STRUCTURE) (continued)

Waskada Lower Amaranth Pool

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	-432.101	-432.122	-432.202	-432.213	-431.974	-431.630	-431.389	-431.302	-431.383	-431.589
y = 14	-432.131	-432.179	-432.349	-432.418	-432.190	-431.830	-431.547	-431.420	-431.539	-431.799
y = 13	-432.333	-432.468	-432.755	-432.791	-432.568	-432.239	-432.071	-432.042	-432.076	-432.293
y = 12	-432.916	-433.146	-433.421	-433.410	-433.070	-432.615	-432.351	-432.277	-432.391	-432.835
y = 11	-434.059	-434.213	-434.328	-434.236	-433.831	-433.118	-432.534	-432.298	-432.620	-433.515
y = 10	-435.537	-435.263	-435.008	-434.847	-434.701	-434.355	-433.881	-433.596	-434.017	-434.963
y = 9	-436.946	-436.035	-435.329	-434.984	-434.951	-435.220	-435.753	-436.063	-435.934	-436.192
y = 8	-438.425	-436.878	-435.557	-434.938	-434.897	-435.506	-436.285	-436.400	-436.401	-436.575
y = 7	-439.944	-438.674	-436.771	-435.619	-435.540	-436.242	-436.704	-436.648	-436.827	-436.907
y = 6	-440.956	-440.367	-439.031	-438.480	-438.364	-439.203	-438.467	-438.662	-438.347	-437.685
y = 5	-441.494	-441.192	-440.024	-439.697	-439.690	-439.410	-439.520	-439.673	-439.323	-438.073
y = 4	-441.389	-441.018	-440.037	-439.743	-439.737	-439.623	-439.589	-439.672	-439.401	-438.209
y = 3	-439.297	-439.271	-439.380	-439.600	-439.665	-439.605	-439.432	-439.370	-439.160	-438.456
y = 2	-436.395	-437.004	-438.637	-439.568	-439.672	-439.517	-439.170	-439.045	-439.020	-438.725
y = 1	-435.865	-436.325	-438.415	-439.669	-439.728	-439.495	-439.085	-439.001	-439.002	-438.811

	x = 11	12	13	14	15
y = 15	-431.883	-432.194	-432.667	-433.105	-433.560
y = 14	-432.156	-432.606	-433.111	-433.606	-434.092
y = 13	-432.704	-433.222	-433.807	-434.347	-434.751
y = 12	-433.429	-434.153	-434.772	-435.160	-435.401
y = 11	-434.547	-435.346	-435.697	-435.841	-435.971
y = 10	-435.916	-436.248	-436.298	-436.323	-436.357
y = 9	-436.560	-436.600	-436.575	-436.533	-436.449
y = 8	-436.650	-436.653	-436.653	-436.569	-436.435
y = 7	-436.771	-436.754	-436.734	-436.517	-436.309
y = 6	-437.379	-437.241	-436.859	-436.318	-436.105
y = 5	-437.605	-437.542	-436.944	-436.120	-435.968
y = 4	-437.627	-437.543	-436.935	-436.151	-435.986
y = 3	-437.759	-437.405	-436.818	-436.326	-436.174
y = 2	-437.956	-437.222	-436.600	-436.283	-436.219
y = 1	-438.079	-437.108	-436.466	-436.234	-436.201

plane z= 4

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	-433.507	-433.570	-433.924	-434.499	-434.885	-435.055	-435.112	-435.101	-435.139	-435.262
y = 14	-433.568	-433.694	-434.219	-434.799	-435.002	-435.092	-435.157	-435.151	-435.221	-435.394
y = 13	-433.927	-434.259	-434.955	-435.268	-435.202	-435.215	-435.371	-435.442	-435.500	-435.715
y = 12	-434.815	-435.326	-435.848	-435.882	-435.559	-435.403	-435.537	-435.527	-435.653	-436.114
y = 11	-436.361	-436.704	-436.871	-436.720	-436.319	-435.886	-435.700	-435.541	-435.845	-436.715
y = 10	-438.200	-438.084	-437.879	-437.671	-437.534	-437.294	-436.928	-436.686	-437.101	-438.066
y = 9	-439.820	-439.149	-438.670	-438.472	-438.429	-438.433	-438.628	-438.830	-438.775	-439.245
y = 8	-441.229	-440.042	-439.017	-438.563	-438.530	-439.837	-439.074	-439.100	-439.158	-439.626
y = 7	-442.440	-441.518	-440.106	-439.171	-439.090	-439.529	-439.541	-439.390	-439.628	-439.920
y = 6	-443.162	-442.771	-442.022	-441.785	-441.690	-441.382	-441.367	-441.475	-441.185	-440.642
y = 5	-443.565	-443.389	-442.903	-442.976	-442.932	-442.573	-442.376	-442.475	-442.151	-441.017
y = 4	-443.490	-443.271	-442.925	-443.013	-443.030	-442.789	-442.467	-442.480	-442.239	-441.154
y = 3	-441.872	-441.970	-442.401	-442.866	-442.975	-442.814	-442.438	-442.297	-442.086	-441.409
y = 2	-439.481	-440.085	-441.859	-442.992	-443.118	-442.822	-442.258	-442.091	-442.049	-441.727
y = 1	-439.014	-439.474	-441.714	-443.149	-443.218	-442.835	-442.174	-442.051	-442.051	-441.845

	x = 11	12	13	14	15
y = 15	-435.485	-435.733	-436.157	-436.527	-435.910
y = 14	-435.677	-436.077	-436.525	-436.954	-437.382
y = 13	-436.102	-436.592	-437.124	-437.615	-437.968
y = 12	-436.707	-437.412	-438.001	-438.352	-438.540
y = 11	-437.737	-438.532	-438.863	-438.966	-439.047
y = 10	-437.067	-439.409	-439.437	-439.417	-439.334
y = 9	-439.733	-439.778	-439.719	-439.600	-439.438
y = 8	-439.843	-439.845	-439.778	-439.564	-439.229
y = 7	-439.917	-439.898	-439.774	-439.371	-439.029
y = 6	-440.400	-440.250	-439.759	-438.993	-438.699
y = 5	-440.601	-440.531	-439.783	-438.692	-438.478
y = 4	-440.620	-440.526	-439.773	-438.749	-438.511
y = 3	-440.734	-440.362	-439.704	-439.136	-438.954
y = 2	-440.342	-440.201	-439.600	-439.347	-439.117
y = 1	-441.026	-440.133	-439.539	-439.365	-439.350

Table A-2

REFERENCE POROSITY

Waskada Lower Amaranth Pool

time: 0.000 days

plane z= 1

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.00000	0.00070	0.00490	0.01260	0.01860	0.01630	0.00590	0.00010	0.00600	0.01960
y = 14	0.00060	0.00180	0.00690	0.01420	0.02190	0.02720	0.01900	0.01010	0.02020	0.03690
y = 13	0.00380	0.00610	0.00950	0.01130	0.01740	0.04150	0.06800	0.07910	0.07770	0.07540
y = 12	0.01130	0.01270	0.00960	0.00380	0.00490	0.04310	0.11210	0.13430	0.12380	0.10870
y = 11	0.02960	0.02540	0.01550	0.00450	0.00480	0.04540	0.11670	0.13650	0.12820	0.11850
y = 10	0.06180	0.05970	0.05370	0.04470	0.04600	0.06280	0.08580	0.09710	0.09800	0.11330
y = 9	0.09500	0.09830	0.10910	0.12220	0.12050	0.08720	0.03670	0.01690	0.04060	0.11120
y = 8	0.11820	0.12190	0.12850	0.13790	0.13830	0.10000	0.01780	0.00000	0.01960	0.11680
y = 7	0.12840	0.12980	0.13240	0.13550	0.13290	0.10340	0.03870	0.02080	0.04900	0.11900
y = 6	0.13020	0.13040	0.13060	0.12940	0.12760	0.12190	0.11850	0.12360	0.12340	0.13940
y = 5	0.13010	0.13030	0.12940	0.12660	0.12660	0.13510	0.15960	0.16800	0.16140	0.15560
y = 4	0.13030	0.13110	0.13130	0.12750	0.12740	0.14050	0.16300	0.16850	0.16600	0.16080
y = 3	0.13500	0.13630	0.13940	0.14110	0.14320	0.15290	0.16560	0.17000	0.16960	0.16550
y = 2	0.13980	0.14100	0.14880	0.15860	0.16070	0.16390	0.17450	0.17820	0.17710	0.17240
y = 1	0.14000	0.14130	0.15220	0.16210	0.16290	0.16620	0.17730	0.18000	0.17900	0.17520

	x = 11	12	13	14	15
y = 15	0.03310	0.04610	0.05690	0.06870	0.08000
y = 14	0.05100	0.06200	0.07340	0.08430	0.09370
y = 13	0.07790	0.08520	0.09440	0.10330	0.11050
y = 12	0.10420	0.10970	0.11740	0.12320	0.12590
y = 11	0.12260	0.13220	0.13600	0.13620	0.13810
y = 10	0.13710	0.14580	0.14590	0.14570	0.14660
y = 9	0.15180	0.15550	0.15300	0.15010	0.14640
y = 8	0.15850	0.15890	0.15420	0.14860	0.14410
y = 7	0.15290	0.15600	0.15240	0.14580	0.14110
y = 6	0.15310	0.15480	0.14950	0.14060	0.13690
y = 5	0.15840	0.15790	0.14910	0.13680	0.13430
y = 4	0.15880	0.15790	0.14910	0.13760	0.13480
y = 3	0.15950	0.15590	0.14910	0.14330	0.14140
y = 2	0.16300	0.15530	0.14970	0.14800	0.14810
y = 1	0.16610	0.15560	0.15010	0.14890	0.14900

plane z= 2

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.14500	0.14460	0.14210	0.13820	0.13650	0.13740	0.13860	0.13900	0.13880	0.13850
y = 14	0.14460	0.14370	0.13950	0.13450	0.13340	0.13550	0.13780	0.13860	0.13840	0.13820
y = 13	0.14260	0.13970	0.13340	0.12910	0.12880	0.13230	0.13570	0.13670	0.13710	0.13770
y = 12	0.13880	0.13390	0.12840	0.12580	0.12570	0.12980	0.13510	0.13600	0.13630	0.13760
y = 11	0.13590	0.13130	0.12760	0.12560	0.12560	0.12970	0.13520	0.13600	0.13640	0.13870
y = 10	0.13730	0.13450	0.13220	0.13060	0.13070	0.13290	0.13530	0.13630	0.13760	0.14280
y = 9	0.14110	0.13920	0.13890	0.14010	0.14010	0.13900	0.13650	0.13640	0.13840	0.14700
y = 8	0.14630	0.14350	0.14190	0.14190	0.14190	0.14000	0.13660	0.13600	0.13770	0.14860
y = 7	0.15120	0.14830	0.14430	0.14260	0.14220	0.14080	0.13760	0.13710	0.13990	0.14910
y = 6	0.15410	0.15270	0.14850	0.14620	0.14540	0.14340	0.14080	0.14060	0.14320	0.15180
y = 5	0.15490	0.15440	0.15060	0.14730	0.14710	0.14570	0.14180	0.14110	0.14310	0.15460
y = 4	0.15490	0.15480	0.15300	0.14850	0.14780	0.14840	0.14330	0.14130	0.14370	0.15520
y = 3	0.15340	0.15540	0.16100	0.16470	0.16460	0.16010	0.15020	0.14650	0.14750	0.15530
y = 2	0.14880	0.15300	0.17130	0.19010	0.19180	0.17610	0.15490	0.15050	0.15020	0.15160
y = 1	0.14710	0.15070	0.17530	0.19670	0.19790	0.18120	0.15430	0.15000	0.15050	0.15130

	x = 11	12	13	14	15
y = 15	0.13860	0.13900	0.13980	0.14090	0.14300
y = 14	0.13860	0.13950	0.14080	0.14230	0.14360
y = 13	0.13890	0.14060	0.14260	0.14450	0.14570
y = 12	0.14010	0.14320	0.14560	0.14710	0.14790
y = 11	0.14360	0.14750	0.14910	0.14950	0.14990
y = 10	0.14910	0.15120	0.15140	0.15140	0.15140
y = 9	0.15280	0.15330	0.15300	0.15240	0.15140
y = 8	0.15380	0.15390	0.15330	0.15210	0.15050
y = 7	0.15360	0.15410	0.15360	0.15130	0.14930
y = 6	0.15740	0.15760	0.15430	0.14930	0.14740
y = 5	0.16130	0.16100	0.15490	0.14750	0.14620
y = 4	0.16120	0.16080	0.15470	0.14770	0.14630
y = 3	0.15820	0.15770	0.15320	0.14950	0.14840
y = 2	0.15460	0.15420	0.15160	0.15010	0.14990
y = 1	0.15240	0.15210	0.15070	0.15010	0.15030

plane z= 3

Table A-2

REFERENCE POROSITY (continued)

Waskada Lower Amaranth Pool

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.12200	0.12250	0.12540	0.13130	0.13740	0.14700	0.14440	0.14500	0.14470	0.14620
y = 14	0.12240	0.12320	0.12720	0.13270	0.13690	0.14080	0.14360	0.14450	0.14420	0.14380
y = 13	0.12420	0.12640	0.13100	0.13410	0.13570	0.13860	0.14120	0.14190	0.14220	0.14270
y = 12	0.12780	0.13100	0.13380	0.13430	0.13440	0.13720	0.14010	0.14020	0.14080	0.14200
y = 11	0.13290	0.13480	0.13520	0.13440	0.13450	0.13770	0.14050	0.14020	0.14100	0.14280
y = 10	0.13790	0.13910	0.13940	0.13890	0.13930	0.14210	0.14470	0.14490	0.14560	0.14370
y = 9	0.14180	0.14310	0.14530	0.14710	0.14750	0.14820	0.15330	0.15590	0.15360	0.14750
y = 8	0.14370	0.14460	0.14650	0.14860	0.14890	0.14970	0.15610	0.15800	0.15600	0.14730
y = 7	0.14440	0.14350	0.14390	0.14620	0.14660	0.14710	0.15330	0.15540	0.15250	0.14630
y = 6	0.14520	0.14330	0.13690	0.13220	0.13220	0.13660	0.14120	0.14180	0.14260	0.14210
y = 5	0.14590	0.14470	0.13380	0.12410	0.12370	0.12920	0.13590	0.13610	0.13730	0.13920
y = 4	0.14610	0.14500	0.13470	0.12450	0.12370	0.12880	0.13560	0.13610	0.13690	0.13860
y = 3	0.15110	0.14850	0.14030	0.13260	0.13030	0.13320	0.13740	0.13870	0.13920	0.13930
y = 2	0.16150	0.15760	0.14550	0.13850	0.13770	0.13820	0.14170	0.14320	0.14270	0.14140
y = 1	0.16390	0.16110	0.14700	0.13850	0.13810	0.13940	0.14300	0.14400	0.14360	0.14250

	x = 11	12	13	14	15
y = 15	0.14400	0.14390	0.14380	0.14380	0.14200
y = 14	0.14360	0.14370	0.14380	0.14380	0.14360
y = 13	0.14320	0.14350	0.14380	0.14370	0.14350
y = 12	0.14310	0.14370	0.14390	0.14380	0.14340
y = 11	0.14390	0.14420	0.14410	0.14370	0.14310
y = 10	0.14490	0.14440	0.14400	0.14350	0.14270
y = 9	0.14450	0.14410	0.14380	0.14310	0.14200
y = 8	0.14410	0.14400	0.14350	0.14220	0.14100
y = 7	0.14390	0.14340	0.14230	0.14070	0.13960
y = 6	0.14090	0.14060	0.14010	0.13900	0.13850
y = 5	0.13910	0.13910	0.13910	0.13830	0.13800
y = 4	0.13900	0.13910	0.13900	0.13830	0.13810
y = 3	0.13920	0.13920	0.13920	0.13900	0.13890
y = 2	0.14010	0.13960	0.13960	0.13980	0.13990
y = 1	0.14110	0.14010	0.13990	0.13990	0.14000

plane z= 4

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.00010	0.00360	0.02560	0.06710	0.10360	0.12460	0.13330	0.13500	0.13440	0.13340
y = 14	0.00290	0.00990	0.04200	0.08490	0.11010	0.12430	0.13190	0.13410	0.13360	0.13290
y = 13	0.01770	0.03740	0.07950	0.10820	0.11720	0.12330	0.12880	0.13060	0.13110	0.13140
y = 12	0.04630	0.07680	0.10790	0.11870	0.11990	0.12310	0.12830	0.12900	0.12940	0.13020
y = 11	0.07700	0.10160	0.11650	0.11980	0.12020	0.12350	0.12840	0.12900	0.12930	0.13010
y = 10	0.09230	0.10950	0.11910	0.12180	0.12270	0.12540	0.12900	0.13000	0.13060	0.13120
y = 9	0.09160	0.11020	0.12170	0.12500	0.12570	0.12750	0.13170	0.13330	0.13270	0.13170
y = 8	0.07280	0.09990	0.11960	0.12560	0.12600	0.12780	0.13290	0.13400	0.13330	0.13130
y = 7	0.04130	0.06970	0.10910	0.12360	0.12570	0.12760	0.13120	0.13240	0.13060	0.12840
y = 6	0.01490	0.03300	0.08800	0.12030	0.12570	0.12600	0.12410	0.12260	0.12220	0.11950
y = 5	0.00180	0.01460	0.08410	0.12630	0.12840	0.12590	0.11980	0.11810	0.11830	0.11370
y = 4	0.00530	0.02170	0.08700	0.12590	0.12860	0.12670	0.12070	0.11830	0.11850	0.11300
y = 3	0.06480	0.07600	0.10410	0.12510	0.13060	0.13110	0.12820	0.12640	0.12490	0.11820
y = 2	0.13470	0.12910	0.12730	0.13630	0.13810	0.13690	0.13720	0.13840	0.13620	0.12950
y = 1	0.14480	0.14080	0.13570	0.13940	0.13980	0.13860	0.13920	0.14000	0.13900	0.13540

	x = 11	12	13	14	15
y = 15	0.13290	0.13270	0.13250	0.13210	0.13000
y = 14	0.13250	0.13230	0.13200	0.13170	0.13140
y = 13	0.13150	0.13160	0.13150	0.13130	0.13110
y = 12	0.13080	0.13110	0.13110	0.13100	0.13070
y = 11	0.13090	0.13120	0.13100	0.13060	0.13050
y = 10	0.13140	0.13130	0.13080	0.13050	0.13040
y = 9	0.13170	0.13160	0.13090	0.13030	0.13020
y = 8	0.13190	0.13180	0.13030	0.12960	0.13010
y = 7	0.12950	0.12930	0.12790	0.12900	0.13100
y = 6	0.11660	0.11740	0.12300	0.13000	0.13260
y = 5	0.10890	0.10970	0.12050	0.13220	0.13390
y = 4	0.10890	0.11000	0.12140	0.13250	0.13400
y = 3	0.11370	0.11650	0.12710	0.13540	0.13770
y = 2	0.12310	0.12670	0.13660	0.14410	0.14620
y = 1	0.13170	0.13490	0.14230	0.14690	0.14800

Table A-3

PERMEABILITY KX, mD

Waskada Lower Amaranth Pool

time: 0.000 days

plane z= 1

y \ x	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
y = 15	0.1	0.1	1.4	1.7	2.0	0.2	1.8	1.5	1.8	0.2	2.7	3.8	5.1	9.6	13.0
y = 14	0.1	0.1	1.4	1.8	2.2	0.2	2.5	2.0	2.6	0.3	4.3	5.8	8.0	14.5	18.7
y = 13	1.3	1.4	0.1	0.1	0.2	0.3	9.4	12.6	12.2	0.8	11.4	13.9	17.8	16.2	19.7
y = 12	1.6	1.7	0.1	0.1	0.1	0.3	30.8	56.0	42.2	1.9	23.2	26.9	33.1	27.7	29.8
y = 11	2.7	2.4	0.2	0.1	0.1	0.3	34.8	59.4	47.5	2.4	38.1	49.4	54.7	39.3	41.4
y = 10	0.5	0.5	0.4	0.3	0.3	0.5	1.0	1.4	1.4	2.1	4.0	5.1	5.1	5.1	5.2
y = 9	19.4	21.2	28.4	40.4	38.6	1.0	0.3	0.2	0.3	2.0	89.7	99.2	92.7	68.6	62.1
y = 8	36.3	40.1	47.9	61.7	62.4	1.5	0.2	0.1	0.2	2.3	107.5	108.7	95.7	65.9	58.3
y = 7	47.8	49.6	53.2	57.8	53.9	1.6	0.3	0.2	0.4	2.5	92.4	100.5	91.2	61.1	53.8
y = 6	3.3	3.4	3.4	3.3	3.1	2.7	2.4	2.8	2.8	4.3	6.2	6.5	5.6	4.4	4.0
y = 5	100.0	100.5	49.1	45.5	45.5	3.8	147.7	185.2	155.0	6.6	35.7	35.3	27.8	59.9	56.0
y = 4	100.5	102.7	51.6	46.6	46.5	4.4	161.8	187.7	175.5	7.6	36.1	35.3	27.8	61.2	56.8
y = 3	114.1	118.2	64.2	67.3	71.2	6.2	173.6	195.4	193.3	8.7	36.8	33.4	27.8	71.4	67.8
y = 2	129.9	134.2	82.8	107.8	114.1	8.3	165.5	182.8	177.5	10.4	80.9	65.7	56.5	108.0	108.3
y = 1	130.6	135.2	90.7	118.5	121.0	8.8	178.4	191.9	186.8	11.2	88.0	66.3	57.1	110.7	111.0

plane z= 2

y \ x	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
y = 15	5.0	4.9	55.3	49.8	47.5	4.1	62.9	63.6	63.2	4.2	46.1	46.6	47.6	66.9	70.8
y = 14	4.9	4.8	51.5	45.0	43.7	3.9	61.5	62.9	62.5	4.1	46.1	47.2	48.9	69.5	71.9
y = 13	56.0	51.8	36.4	32.4	32.2	3.5	58.1	59.7	60.4	4.1	59.2	61.9	65.4	48.9	50.8
y = 12	50.6	44.3	31.8	29.7	29.6	3.3	57.2	58.6	59.1	4.1	61.1	66.4	70.9	52.7	53.9
y = 11	46.9	41.3	31.2	29.5	29.5	3.3	57.4	58.6	59.3	4.2	67.2	74.6	77.9	56.2	56.8
y = 10	4.0	3.8	3.5	3.4	3.4	3.6	3.8	3.9	4.1	4.7	5.6	5.9	5.9	5.9	5.9
y = 9	67.3	63.9	63.4	65.5	65.5	4.1	59.4	59.3	62.5	5.3	97.2	93.4	92.7	73.0	71.0
y = 8	77.4	71.8	68.7	68.7	68.7	4.4	59.6	58.6	61.4	5.5	94.7	95.0	93.4	72.4	69.5
y = 7	88.3	81.7	73.3	70.0	69.3	4.4	61.2	60.4	65.1	5.6	94.2	95.5	94.2	70.8	67.1
y = 6	6.4	6.1	5.5	5.1	5.0	4.8	4.4	4.4	4.7	6.0	7.0	7.0	6.4	5.6	5.3
y = 5	195.1	192.5	86.9	79.5	79.1	5.1	91.4	89.7	94.6	6.5	38.6	38.3	32.5	79.9	77.2
y = 4	195.1	194.6	92.7	92.1	80.6	5.5	95.2	90.2	96.2	6.6	38.5	38.1	32.3	80.4	77.4
y = 3	187.4	197.8	115.0	127.1	126.7	7.5	114.6	103.7	106.6	6.2	35.5	35.1	31.1	84.3	81.9
y = 2	165.5	185.4	151.8	252.0	263.8	11.5	97.6	86.7	86.0	6.0	64.5	63.8	59.5	114.3	113.7
y = 1	158.1	174.2	169.1	301.0	310.9	13.2	96.0	85.5	86.7	5.9	60.3	60.3	58.1	114.3	114.0

plane z= 3

Table A-3
PERMEABILITY KX, mD (continued)
Waskada Lower Amaranth Pool

x =	1	2	3	4	5	6	7	8	9	10
y = 15	2.7	2.7	35.2	41.3	48.7	4.6	73.5	74.7	74.1	4.9
y = 14	2.7	2.8	37.0	42.9	48.0	4.4	71.9	73.7	73.1	4.8
y = 13	34.1	36.2	34.7	37.1	38.8	4.2	67.4	68.7	69.3	4.7
y = 12	37.6	41.0	36.8	37.3	37.4	4.0	65.5	65.6	66.7	4.6
y = 11	43.1	45.4	38.2	37.4	37.5	4.1	66.2	65.6	67.1	4.7
y = 10	4.1	4.2	4.3	4.2	4.3	4.6	4.9	5.0	5.1	5.1
y = 9	68.5	71.0	75.3	79.1	79.9	5.4	93.4	100.2	94.2	5.3
y = 8	72.1	73.9	77.9	82.3	93.0	5.7	100.8	106.1	100.5	5.3
y = 7	73.5	71.8	72.5	77.2	78.0	5.3	93.4	98.9	91.5	5.2
y = 6	5.0	4.8	4.0	3.5	3.5	4.0	4.5	4.6	4.7	4.6
y = 5	153.1	148.2	55.2	42.5	42.1	3.3	77.9	79.4	80.9	4.3
y = 4	153.9	149.4	56.6	43.0	42.1	3.2	77.3	78.4	80.1	4.2
y = 3	176.1	164.2	65.8	53.5	51.0	3.6	81.2	84.1	85.2	4.3
y = 2	233.1	209.9	75.7	62.7	61.4	4.1	68.4	71.2	70.2	4.5
y = 1	248.7	230.6	78.9	62.7	62.0	4.3	70.8	72.7	71.9	4.7

x =	11	12	13	14	15
y = 15	53.3	53.2	53.0	72.3	68.9
y = 14	52.8	52.9	53.0	72.3	71.9
y = 13	66.4	67.0	67.5	48.1	47.8
y = 12	66.3	67.3	67.7	48.2	47.7
y = 11	67.7	68.2	68.1	48.1	47.3
y = 10	5.0	4.9	4.8	4.8	4.7
y = 9	73.7	72.9	72.3	56.8	55.1
y = 8	72.9	72.7	71.8	55.4	53.7
y = 7	72.5	71.6	69.5	53.2	51.7
y = 6	4.5	4.4	4.4	4.2	4.2
y = 5	21.2	21.2	21.2	62.4	61.9
y = 4	21.2	21.2	21.2	62.4	62.0
y = 3	21.3	21.3	21.3	63.6	63.4
y = 2	43.6	43.1	43.1	86.6	86.8
y = 1	44.8	43.6	43.4	86.8	87.1

plane z= 4

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.1	0.1	2.4	7.3	19.6	2.9	54.5	57.1	56.1	3.6
y = 14	0.1	0.1	3.7	11.8	23.3	2.9	52.5	55.7	54.9	3.6
y = 13	1.9	3.3	8.5	18.5	23.5	2.8	48.3	50.7	51.4	3.5
y = 12	4.2	9.5	18.3	24.5	25.3	2.8	47.6	48.5	49.1	3.3
y = 11	9.6	18.6	23.1	25.3	25.5	2.8	47.8	48.5	48.9	3.3
y = 10	1.2	1.9	2.5	2.7	2.7	2.9	3.2	3.3	3.4	3.4
y = 9	17.7	29.2	39.9	43.6	44.4	3.1	52.2	54.5	53.6	3.5
y = 8	10.7	22.2	37.7	44.3	44.8	3.1	53.9	55.5	54.5	3.4
y = 7	4.6	9.8	28.4	42.0	44.4	3.1	51.5	53.2	50.7	3.2
y = 6	0.1	0.2	1.1	2.6	3.0	3.0	2.8	2.7	2.7	2.5
y = 5	0.1	0.1	14.5	45.1	47.8	3.0	50.5	48.2	48.5	2.1
y = 4	0.1	0.2	15.6	44.7	48.0	3.0	51.7	48.5	48.8	2.1
y = 3	0.6	0.8	24.8	43.7	50.7	3.4	63.3	60.3	58.0	2.4
y = 2	113.2	97.3	46.4	59.1	62.0	4.0	60.5	62.5	58.9	3.3
y = 1	148.6	133.4	58.1	64.2	64.9	4.2	63.9	65.3	63.6	3.8

x =	11	12	13	14	15
y = 15	39.5	39.3	39.1	52.8	49.9
y = 14	39.1	38.9	38.6	52.2	51.9
y = 13	48.5	48.6	48.5	34.4	34.2
y = 12	47.6	47.9	47.9	34.2	33.9
y = 11	47.7	48.1	47.8	33.8	33.7
y = 10	3.5	3.4	3.4	3.4	3.4
y = 9	52.2	52.1	51.1	40.2	40.1
y = 8	52.5	52.3	50.3	39.5	40.0
y = 7	49.2	48.9	47.1	38.8	41.0
y = 6	2.3	2.4	2.3	3.3	3.6
y = 5	9.4	9.6	12.9	52.9	55.4
y = 4	9.4	9.7	13.2	53.3	55.5
y = 3	10.7	11.6	15.4	57.7	61.4
y = 2	27.6	30.4	39.7	97.2	102.9
y = 1	34.8	37.9	46.3	104.9	108.0

Table A-4

PERMEABILITY K^v, mD

Waskada Lower Amaranth Pool

time: 0.000 days

plane z= 1

y \ x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.1	0.1	1.4	1.7	2.0	0.2	1.8	1.5	1.8	0.2
y = 14	0.1	0.1	1.4	1.8	2.2	0.2	2.5	2.0	2.6	0.3
y = 13	1.3	1.4	0.1	0.1	0.2	0.3	9.4	12.6	12.2	0.8
y = 12	1.6	1.7	0.1	0.1	0.1	0.3	30.8	56.0	42.2	1.9
y = 11	2.7	2.4	0.2	0.1	0.1	0.3	34.8	59.4	47.5	2.4
y = 10	0.5	0.5	0.4	0.3	0.3	0.5	1.0	1.4	1.4	2.1
y = 9	19.4	21.2	28.4	40.4	38.6	1.0	0.3	0.2	0.3	2.0
y = 8	36.3	40.1	47.9	61.7	62.4	1.5	0.2	0.1	0.2	2.3
y = 7	47.8	49.6	53.2	57.8	53.9	1.6	0.3	0.2	0.4	2.5
y = 6	3.3	3.4	3.4	3.3	3.1	2.7	2.4	2.8	2.8	4.3
y = 5	100.0	100.5	49.1	45.5	45.5	3.8	147.7	185.2	155.0	6.6
y = 4	100.5	102.7	51.6	46.6	46.5	4.4	161.8	187.7	175.5	7.6
y = 3	114.1	118.2	64.2	67.3	71.2	6.2	173.6	195.4	193.3	8.7
y = 2	129.9	134.2	82.8	107.8	114.1	8.3	165.5	182.8	177.5	10.4
y = 1	130.6	135.2	90.7	118.5	121.0	8.8	178.4	191.9	186.8	11.2

y \ x =	11	12	13	14	15
y = 15	2.7	3.8	5.1	9.6	13.0
y = 14	4.3	5.8	8.0	14.5	18.7
y = 13	11.4	13.9	17.8	16.2	19.7
y = 12	23.2	26.9	33.1	27.7	29.8
y = 11	38.1	49.4	54.7	39.3	41.6
y = 10	4.0	5.1	5.1	5.1	5.2
y = 9	89.7	99.2	92.7	68.6	62.1
y = 8	107.5	108.7	95.7	65.9	58.3
y = 7	92.4	100.5	91.2	61.1	53.8
y = 6	6.2	6.5	5.6	4.4	4.0
y = 5	35.7	35.3	27.8	59.9	56.0
y = 4	36.1	35.3	27.8	61.2	56.8
y = 3	36.8	33.4	27.8	71.4	67.8
y = 2	80.9	65.7	56.5	108.0	108.3
y = 1	88.0	66.3	57.1	110.7	111.0

plane z= 2

y \ x =	1	2	3	4	5	6	7	8	9	10
y = 15	5.0	4.9	55.3	49.8	47.5	4.1	62.9	63.6	63.2	4.2
y = 14	4.9	4.8	51.5	45.0	43.7	3.9	61.5	62.9	62.5	4.1
y = 13	56.0	51.8	36.4	32.4	32.2	3.5	58.1	59.7	60.4	4.1
y = 12	50.6	44.3	31.8	29.7	29.6	3.3	57.2	58.6	59.1	4.1
y = 11	46.8	41.3	31.2	29.5	29.5	3.3	57.4	58.6	59.3	4.2
y = 10	4.0	3.8	3.5	3.4	3.4	3.6	3.8	3.9	4.1	4.7
y = 9	67.3	63.9	63.4	65.5	65.5	4.1	59.4	59.3	62.5	5.3
y = 8	77.4	71.8	68.7	68.7	68.7	4.4	59.6	58.6	61.4	5.5
y = 7	88.3	81.7	73.3	70.0	69.3	4.4	61.2	60.4	65.1	5.6
y = 6	6.4	6.1	5.5	5.1	5.0	4.8	4.4	4.4	4.7	6.0
y = 5	195.1	192.5	86.9	79.5	79.1	5.1	91.4	89.7	94.6	6.5
y = 4	195.1	194.6	92.7	82.1	90.6	5.5	95.2	90.2	96.2	6.6
y = 3	187.4	197.8	115.0	127.1	126.7	7.5	114.6	103.7	106.6	6.2
y = 2	165.5	185.4	151.8	252.0	263.8	11.5	97.6	86.7	86.0	6.0
y = 1	158.1	174.2	169.1	301.0	310.9	13.2	96.0	85.5	86.7	5.9

y \ x =	11	12	13	14	15
y = 15	46.1	46.6	47.6	66.9	70.8
y = 14	46.1	47.2	48.9	69.5	71.9
y = 13	59.2	61.9	65.4	48.9	50.8
y = 12	61.1	66.4	70.9	52.7	53.9
y = 11	67.2	74.6	77.9	56.2	56.8
y = 10	5.6	5.9	5.9	5.9	5.9
y = 9	97.2	93.4	92.7	73.0	71.0
y = 8	94.7	95.0	93.4	72.4	69.5
y = 7	94.2	95.5	94.2	70.8	67.1
y = 6	7.0	7.0	6.4	5.6	5.3
y = 5	38.6	38.3	32.5	79.9	77.2
y = 4	38.5	38.1	32.3	80.4	77.4
y = 3	35.5	35.1	31.1	84.3	81.9
y = 2	64.5	63.8	59.5	114.3	113.7
y = 1	60.8	60.3	58.1	114.3	114.0

plane z= 3

Table A-4

PERMEABILITY KY, mD (continued)

Waskada Lower Amaranth Pool

x =	1	2	3	4	5	6	7	8	9	10
y = 15	2.7	2.7	35.2	41.3	48.7	4.6	73.5	74.7	74.1	4.9
y = 14	2.7	2.8	37.0	42.9	48.0	4.4	71.9	73.7	73.1	4.8
y = 13	34.1	36.2	34.2	37.1	38.8	4.2	67.4	68.7	69.3	4.7
y = 12	37.6	41.0	36.8	37.3	37.4	4.0	65.5	65.6	66.7	4.6
y = 11	43.1	45.4	38.2	37.4	37.5	4.1	66.2	65.6	67.1	4.7
y = 10	4.1	4.2	4.3	4.2	4.3	4.6	4.9	5.0	5.1	5.1
y = 9	68.5	71.0	75.3	79.1	79.9	5.4	93.4	100.2	94.2	5.3
y = 8	72.1	73.9	77.8	82.3	83.0	5.7	100.8	106.1	100.5	5.3
y = 7	73.5	71.3	77.5	77.2	78.0	5.3	93.4	98.9	91.5	5.2
y = 6	5.0	4.8	4.0	3.5	3.5	4.0	4.5	4.6	4.7	4.6
y = 5	153.1	148.2	55.2	42.5	42.1	3.3	77.9	78.4	80.9	4.3
y = 4	153.9	149.4	56.6	43.0	42.1	3.2	77.3	78.4	80.1	4.2
y = 3	176.1	164.2	65.8	53.5	51.0	3.6	91.2	84.1	85.2	4.3
y = 2	233.1	209.9	75.7	62.7	61.4	4.1	68.4	71.2	70.2	4.5
y = 1	248.7	230.6	78.9	62.7	62.0	4.3	70.8	72.7	71.9	4.7

x =	11	12	13	14	15
y = 15	53.3	53.2	53.0	72.3	68.9
y = 14	52.8	52.9	53.0	72.3	71.9
y = 13	66.4	67.0	67.5	48.1	47.8
y = 12	66.3	67.3	67.7	48.2	47.7
y = 11	67.7	68.2	68.1	48.1	47.3
y = 10	5.0	4.9	4.8	4.8	4.7
y = 9	73.7	72.9	72.3	56.8	55.1
y = 8	72.9	72.7	71.8	55.4	53.7
y = 7	72.5	71.6	69.5	53.2	51.7
y = 6	4.5	4.4	4.4	4.2	4.2
y = 5	21.2	21.2	21.2	62.4	61.9
y = 4	21.2	21.2	21.2	62.4	62.0
y = 3	21.3	21.3	21.3	63.6	63.4
y = 2	43.6	43.1	43.1	86.6	96.8
y = 1	44.8	43.6	43.4	86.8	87.1

plane z= 4

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.1	0.1	2.4	7.3	19.6	2.9	54.5	57.1	56.1	3.6
y = 14	0.1	0.1	3.7	11.8	23.3	2.9	52.5	55.7	54.9	3.6
y = 13	1.9	3.3	8.5	18.5	23.5	2.8	48.3	50.7	51.4	3.3
y = 12	4.2	9.5	18.3	24.5	25.3	2.8	47.6	48.5	49.1	3.3
y = 11	9.6	18.6	23.1	25.3	25.5	2.8	47.8	48.5	48.9	3.3
y = 10	1.2	1.9	2.5	2.7	2.7	2.9	3.2	3.3	3.4	3.4
y = 9	17.7	29.2	39.9	43.6	44.4	3.1	52.2	54.5	53.6	3.5
y = 8	10.7	22.2	37.7	44.3	44.8	3.1	53.9	55.5	54.5	3.4
y = 7	4.6	9.8	28.4	42.0	44.4	3.1	51.5	53.2	50.7	3.2
y = 6	0.1	0.2	1.1	2.6	3.0	3.0	2.8	2.7	2.7	3.3
y = 5	0.1	0.1	14.5	45.1	47.8	3.0	50.5	48.2	48.5	2.1
y = 4	0.1	0.2	15.6	44.7	48.0	3.0	51.7	48.5	48.8	2.1
y = 3	0.6	0.8	24.8	43.7	50.7	3.4	63.3	60.3	58.0	2.6
y = 2	113.2	97.3	46.4	59.1	62.0	4.0	60.5	62.5	58.9	3.3
y = 1	148.6	133.4	58.1	64.2	64.9	4.2	63.9	65.3	63.6	3.8

x =	11	12	13	14	15
y = 15	39.5	39.3	39.1	52.8	49.9
y = 14	39.1	38.9	33.6	52.2	51.8
y = 13	48.5	48.6	48.5	34.4	34.2
y = 12	47.6	47.9	47.9	34.2	33.9
y = 11	47.7	48.1	47.8	33.8	33.7
y = 10	3.5	3.4	3.4	3.4	3.4
y = 9	52.2	52.1	51.1	40.2	40.1
y = 8	52.5	52.3	50.3	39.5	40.0
y = 7	49.2	48.9	47.1	38.8	41.0
y = 6	2.3	2.4	2.8	3.3	3.6
y = 5	9.4	9.6	12.9	52.9	55.4
y = 4	9.4	9.7	13.2	53.3	55.5
y = 3	10.7	11.6	15.4	57.7	61.4
y = 2	27.6	30.4	30.7	97.2	102.9
y = 1	34.8	37.9	46.3	104.9	108.0

Table A-5

PERMEABILITY KZ, mD

Waskada Lower Amaranth Pool

time: 0.000 days

plane z= 1

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
y = 14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
y = 13	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
y = 12	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.2
y = 11	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.2
y = 10	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2
y = 9	0.1	0.1	0.2	0.3	0.3	0.1	0.0	0.0	0.0	0.2
y = 8	0.2	0.3	0.3	0.4	0.4	0.1	0.0	0.0	0.0	0.2
y = 7	0.3	0.3	0.4	0.4	0.4	0.2	0.0	0.0	0.0	0.2
y = 6	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.4
y = 5	0.3	0.3	0.3	0.3	0.3	0.4	0.7	0.9	0.8	0.7
y = 4	0.3	0.3	0.3	0.3	0.3	0.4	0.8	0.9	0.9	0.8
y = 3	0.4	0.4	0.4	0.4	0.5	0.6	0.9	1.0	1.0	0.9
y = 2	0.4	0.4	0.6	0.7	0.8	0.8	1.1	1.2	1.2	1.0
y = 1	0.4	0.5	0.6	0.8	0.8	0.9	1.2	1.3	1.2	1.1

	x = 11	12	13	14	15
y = 15	0.0	0.0	0.0	0.1	0.1
y = 14	0.0	0.1	0.1	0.1	0.1
y = 13	0.1	0.1	0.1	0.2	0.2
y = 12	0.2	0.2	0.2	0.3	0.3
y = 11	0.3	0.4	0.4	0.4	0.4
y = 10	0.4	0.5	0.5	0.5	0.5
y = 9	0.6	0.7	0.6	0.6	0.5
y = 8	0.7	0.7	0.6	0.5	0.5
y = 7	0.6	0.7	0.6	0.5	0.4
y = 6	0.6	0.6	0.6	0.4	0.4
y = 5	0.7	0.7	0.6	0.4	0.4
y = 4	0.7	0.7	0.6	0.4	0.4
y = 3	0.7	0.7	0.6	0.5	0.5
y = 2	0.8	0.7	0.6	0.5	0.5
y = 1	0.9	0.7	0.6	0.6	0.6

plane z= 2

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4
y = 14	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
y = 13	0.5	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4
y = 12	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
y = 11	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
y = 10	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.5
y = 9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
y = 8	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5
y = 7	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.6
y = 6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.6
y = 5	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.6
y = 4	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.7
y = 3	0.6	0.7	0.8	0.8	0.8	0.7	0.6	0.5	0.5	0.6
y = 2	0.6	0.6	1.0	1.7	1.8	1.2	0.7	0.6	0.6	0.6
y = 1	0.5	0.6	1.1	2.0	2.1	1.3	0.6	0.6	0.6	0.6

	x = 11	12	13	14	15
y = 15	0.4	0.4	0.4	0.4	0.5
y = 14	0.4	0.4	0.4	0.5	0.5
y = 13	0.4	0.4	0.5	0.5	0.5
y = 12	0.4	0.5	0.5	0.5	0.5
y = 11	0.5	0.5	0.6	0.6	0.6
y = 10	0.6	0.6	0.6	0.6	0.6
y = 9	0.6	0.6	0.6	0.6	0.6
y = 8	0.6	0.6	0.6	0.6	0.6
y = 7	0.6	0.6	0.6	0.6	0.6
y = 6	0.7	0.7	0.6	0.6	0.5
y = 5	0.8	0.8	0.7	0.5	0.5
y = 4	0.8	0.8	0.6	0.5	0.5
y = 3	0.7	0.7	0.6	0.6	0.5
y = 2	0.6	0.6	0.6	0.5	0.6
y = 1	0.6	0.5	0.6	0.6	0.5

plane z= 3

Table A-5

PERMEABILITY KZ, mD (continued)

Waskada Lower Amaranth Pool

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.5	0.5
y = 14	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5
y = 13	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5
y = 12	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
y = 11	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
y = 10	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5
y = 9	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.6	0.5
y = 8	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.5
y = 7	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.6	0.5
y = 6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
y = 5	0.5	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4
y = 4	0.5	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4
y = 3	0.6	0.5	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4
y = 2	0.8	0.7	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5
y = 1	0.8	0.8	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5

	x = 11	12	13	14	15
y = 15	0.5	0.5	0.5	0.5	0.5
y = 14	0.5	0.5	0.5	0.5	0.5
y = 13	0.5	0.5	0.5	0.5	0.5
y = 12	0.5	0.5	0.5	0.5	0.5
y = 11	0.5	0.5	0.5	0.5	0.5
y = 10	0.5	0.5	0.5	0.5	0.5
y = 9	0.5	0.5	0.5	0.5	0.5
y = 8	0.5	0.5	0.5	0.5	0.4
y = 7	0.5	0.5	0.5	0.4	0.4
y = 6	0.4	0.4	0.4	0.4	0.4
y = 5	0.4	0.4	0.4	0.4	0.4
y = 4	0.4	0.4	0.4	0.4	0.4
y = 3	0.4	0.4	0.4	0.4	0.4
y = 2	0.4	0.4	0.4	0.4	0.4
y = 1	0.4	0.4	0.4	0.4	0.4

plane z= 4

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.4
y = 14	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.4	0.4
y = 13	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3
y = 12	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
y = 11	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
y = 10	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
y = 9	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3
y = 8	0.1	0.1	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3
y = 7	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.3
y = 6	0.0	0.0	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3
y = 5	0.0	0.0	0.1	0.3	0.3	0.3	0.3	0.2	0.2	0.2
y = 4	0.0	0.0	0.1	0.3	0.3	0.3	0.3	0.2	0.2	0.2
y = 3	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2
y = 2	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3
y = 1	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

	x = 11	12	13	14	15
y = 15	0.4	0.4	0.4	0.4	0.3
y = 14	0.4	0.4	0.4	0.3	0.3
y = 13	0.3	0.3	0.3	0.3	0.3
y = 12	0.3	0.3	0.3	0.3	0.3
y = 11	0.3	0.3	0.3	0.3	0.3
y = 10	0.3	0.3	0.3	0.3	0.3
y = 9	0.3	0.3	0.3	0.3	0.3
y = 8	0.3	0.3	0.3	0.3	0.3
y = 7	0.3	0.3	0.3	0.3	0.3
y = 6	0.2	0.2	0.3	0.3	0.4
y = 5	0.2	0.2	0.3	0.4	0.4
y = 4	0.2	0.2	0.3	0.4	0.4
y = 3	0.2	0.2	0.3	0.4	0.4
y = 2	0.3	0.3	0.4	0.5	0.5
y = 1	0.3	0.4	0.5	0.5	0.5

Table A-6

NET PAY (BLOCK SIZE DZ, METERS)

Waskada Lower Amaranth Pool

time: 0.000 days

plane z= 1

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.010	0.019	0.076	0.189	0.285	0.257	0.100	0.012	0.101	0.299
y = 14	0.017	0.031	0.098	0.207	0.335	0.429	0.310	0.171	0.325	0.564
y = 13	0.047	0.074	0.123	0.160	0.264	0.656	1.102	1.291	1.252	1.152
y = 12	0.105	0.126	0.109	0.055	0.077	0.680	1.835	2.217	2.013	1.643
y = 11	0.243	0.213	0.140	0.054	0.067	0.681	1.897	2.253	2.068	1.649
y = 10	0.511	0.493	0.435	0.363	0.414	0.749	1.297	1.518	1.421	1.098
y = 9	0.747	0.796	0.843	0.910	0.909	0.762	0.427	0.221	0.388	0.599
y = 8	0.902	1.000	1.036	1.006	0.999	0.807	0.170	0.010	0.126	0.512
y = 7	0.866	1.083	1.278	1.193	1.156	1.006	0.351	0.161	0.295	0.545
y = 6	0.681	0.946	1.793	2.363	2.355	1.790	1.051	0.856	0.778	0.768
y = 5	0.523	0.728	2.057	3.089	3.128	2.412	1.245	1.099	1.050	0.923
y = 4	0.560	0.809	2.081	3.070	3.135	2.461	1.316	1.110	1.088	0.964
y = 3	1.096	1.335	2.004	2.577	2.658	2.229	1.487	1.221	1.142	1.029
y = 2	1.564	1.631	2.021	2.346	2.363	2.059	1.407	1.232	1.205	1.146
y = 1	1.600	1.646	2.045	2.372	2.385	2.044	1.333	1.201	1.215	1.219

x =	11	12	13	14	15
y = 15	0.475	0.602	0.677	0.736	0.800
y = 14	0.712	0.779	0.808	0.827	0.854
y = 13	1.058	0.986	0.918	0.896	0.909
y = 12	1.298	1.062	0.940	0.907	0.936
y = 11	1.185	0.924	0.847	0.873	0.948
y = 10	0.796	0.720	0.751	0.836	0.964
y = 9	0.617	0.627	0.694	0.847	1.075
y = 8	0.602	0.608	0.721	0.987	1.271
y = 7	0.637	0.673	0.877	1.273	1.570
y = 6	0.821	0.890	1.170	1.651	1.850
y = 5	0.903	0.927	1.289	1.869	1.985
y = 4	0.914	0.948	1.342	1.860	1.974
y = 3	0.998	1.110	1.450	1.747	1.840
y = 2	1.147	1.330	1.606	1.763	1.794
y = 1	1.278	1.482	1.694	1.786	1.800

plane z= 2

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.601	0.648	0.937	1.447	1.790	1.770	1.528	1.402	1.526	1.804
y = 14	0.639	0.736	1.174	1.754	2.057	2.081	1.819	1.612	1.815	2.152
y = 13	0.843	1.114	1.694	2.099	2.270	2.540	2.852	2.999	2.966	2.920
y = 12	1.233	1.648	2.070	2.204	2.240	2.717	3.694	4.027	3.857	3.578
y = 11	1.668	1.970	2.171	2.213	2.237	2.771	3.871	4.075	3.994	3.797
y = 10	1.967	2.115	2.200	2.239	2.355	2.877	3.703	3.959	3.969	3.717
y = 9	2.073	2.151	2.170	2.166	2.241	2.824	3.818	4.114	3.995	3.503
y = 8	2.091	2.132	2.156	2.116	2.120	2.706	3.976	4.200	4.067	3.403
y = 7	2.062	2.097	2.146	2.151	2.238	2.713	3.733	4.001	3.807	3.357
y = 6	2.024	2.057	2.164	2.252	2.321	2.576	2.939	3.014	3.106	3.164
y = 5	2.003	2.029	2.187	2.294	2.304	2.415	2.606	2.607	2.696	3.024
y = 4	2.007	2.038	2.190	2.233	2.301	2.344	2.506	2.585	2.594	2.935
y = 3	2.065	2.102	2.203	2.284	2.283	2.169	2.027	2.019	2.097	2.530
y = 2	2.102	2.124	2.235	2.346	2.335	2.005	1.311	1.063	1.216	1.724
y = 1	2.100	2.117	2.249	2.381	2.383	1.985	1.105	0.902	1.000	1.339

x =	11	12	13	14	15
y = 15	2.069	2.297	2.449	2.587	2.700
y = 14	2.414	2.574	2.698	2.781	2.817
y = 13	2.921	2.947	2.969	2.969	2.943
y = 12	3.370	3.249	3.170	3.097	3.008
y = 11	3.524	3.333	3.215	3.108	2.974
y = 10	3.361	3.223	3.155	3.060	2.910
y = 9	3.171	3.130	3.100	2.978	2.774
y = 8	3.110	3.103	3.053	2.841	2.578
y = 7	3.138	3.091	2.932	2.559	2.263
y = 6	3.146	3.069	2.733	2.190	1.969
y = 5	3.180	3.147	2.661	1.955	1.819
y = 4	3.161	3.121	2.608	1.972	1.834
y = 3	2.908	2.857	2.475	2.143	2.041
y = 2	2.364	2.498	2.311	2.202	2.187
y = 1	1.891	2.211	2.223	2.201	2.200

plane z= 3

Table A-6

NET PAY (BLOCK SIZE DZ, METERS) (continued)

Waskada Lower Amaranth Pool

x =	1	2	3	4	5	6	7	8	9	10
y = 15	2.801	2.841	3.079	3.496	3.789	3.860	3.824	3.800	3.824	3.877
y = 14	2.834	2.916	3.285	3.757	3.965	3.967	3.889	3.842	3.879	3.942
y = 13	3.015	3.252	3.761	4.104	4.131	4.139	4.105	4.104	4.092	4.083
y = 12	3.375	3.746	4.132	4.275	4.287	4.244	4.253	4.287	4.250	4.197
y = 11	3.781	4.061	4.243	4.292	4.294	4.260	4.260	4.292	4.260	4.226
y = 10	4.042	4.180	4.261	4.285	4.271	4.201	4.118	4.114	4.110	4.204
y = 9	4.183	4.247	4.284	4.289	4.271	4.121	3.812	3.689	3.806	4.184
y = 8	4.216	4.267	4.290	4.297	4.295	4.119	3.688	3.600	3.685	4.176
y = 7	4.184	4.238	4.299	4.305	4.286	4.121	3.754	3.661	3.728	3.992
y = 6	4.135	4.181	4.323	4.406	4.387	4.218	3.968	3.887	3.777	3.484
y = 5	4.105	4.140	4.347	4.487	4.489	4.325	4.024	3.995	3.863	3.137
y = 4	4.112	4.159	4.369	4.493	4.495	4.336	4.023	3.988	3.837	3.070
y = 3	4.221	4.280	4.443	4.565	4.555	4.330	3.935	3.784	3.632	3.187
y = 2	4.302	4.343	4.559	4.789	4.771	4.391	3.674	3.467	3.459	3.347
y = 1	4.300	4.335	4.606	4.867	4.878	4.434	3.567	3.401	3.428	3.434

x =	11	12	13	14	15
y = 15	3.929	3.977	4.011	4.033	4.100
y = 14	3.995	4.033	4.063	4.071	4.064
y = 13	4.090	4.116	4.126	4.123	4.097
y = 12	4.184	4.201	4.206	4.178	4.108
y = 11	4.259	4.298	4.268	4.184	4.105
y = 10	4.334	4.358	4.291	4.194	4.092
y = 9	4.428	4.432	4.330	4.163	3.971
y = 8	4.479	4.471	4.270	3.999	3.806
y = 7	4.257	4.235	3.973	3.733	3.625
y = 6	3.241	3.246	3.404	3.500	3.520
y = 5	2.662	2.696	3.135	3.474	3.502
y = 4	2.662	2.697	3.146	3.493	3.515
y = 3	2.890	2.985	3.405	3.719	3.799
y = 2	3.209	3.406	3.850	4.196	4.302
y = 1	3.466	3.738	4.113	4.344	4.398

plane z= 4

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.011	0.056	0.364	1.077	2.034	2.989	3.622	3.798	3.689	3.469
y = 14	0.040	0.113	0.454	1.005	1.659	2.558	3.333	3.621	3.485	3.247
y = 13	0.174	0.331	0.638	0.849	1.087	1.813	2.496	2.696	2.756	2.762
y = 12	0.424	0.614	0.723	0.668	0.692	1.331	2.119	2.212	2.273	2.362
y = 11	0.824	0.921	0.842	0.676	0.682	1.275	2.070	2.194	2.190	2.173
y = 10	1.284	1.462	1.481	1.364	1.395	1.677	1.976	2.065	2.056	2.004
y = 9	1.566	1.981	2.396	2.687	2.686	2.306	1.937	1.844	1.875	1.922
y = 8	1.397	2.062	2.630	2.953	2.971	2.544	1.890	1.800	1.828	1.927
y = 7	0.807	1.451	2.370	2.729	2.815	2.453	1.920	1.822	1.876	2.036
y = 6	0.278	0.627	1.659	2.205	2.265	2.141	1.832	1.739	1.899	2.429
y = 5	0.039	0.254	1.411	2.070	2.097	2.000	1.687	1.610	1.794	2.752
y = 4	0.089	0.347	1.406	2.048	2.090	1.994	1.735	1.626	1.839	2.819
y = 3	0.929	1.119	1.599	1.966	2.065	2.088	2.077	2.071	2.220	2.721
y = 2	1.870	1.819	1.886	2.058	2.100	2.218	2.502	2.626	2.598	2.657
y = 1	1.997	1.962	1.992	2.093	2.103	2.246	2.611	2.699	2.670	2.634

x =	11	12	13	14	15
y = 15	3.275	3.101	2.969	2.811	2.600
y = 14	3.047	2.910	2.765	2.624	2.516
y = 13	2.706	2.626	2.509	2.413	2.337
y = 12	2.372	2.317	2.252	2.204	2.169
y = 11	2.123	2.074	2.064	2.068	2.048
y = 10	1.967	1.965	1.987	1.994	1.961
y = 9	1.919	1.925	1.957	1.972	1.947
y = 8	1.907	1.913	1.980	1.990	1.922
y = 7	2.033	2.051	2.107	1.975	1.815
y = 6	2.800	2.773	2.379	1.849	1.647
y = 5	3.330	3.281	2.542	1.670	1.518
y = 4	3.325	3.270	2.531	1.702	1.537
y = 3	3.061	2.929	2.367	1.901	1.761
y = 2	2.762	2.553	2.150	1.933	1.836
y = 1	2.568	2.313	2.033	1.914	1.900

Table A-7

INITIAL RESERVOIR PRESSURE

Waskada Lower Amaranth Pool

time: 0.000 days

plane z= 1

y	x = 1	2	3	4	5
y = 15	8659.735	8658.388	8655.909	8650.586	8645.123
y = 14	8658.542	8657.869	8654.489	8648.915	8644.049
y = 13	8657.794	8655.930	8651.955	8648.064	8644.699
y = 12	8657.686	8655.035	8652.731	8651.410	8648.679
y = 11	8660.719	8658.825	8657.844	8657.045	8654.006
y = 10	8667.086	8663.733	8661.283	8660.059	8658.109
y = 9	8674.836	8667.559	8662.230	8659.601	8658.914
y = 8	8684.353	8672.781	8663.225	8659.269	8658.982
y = 7	8695.357	8685.333	8670.866	8663.086	8662.334
y = 6	8703.477	8698.066	8684.588	8677.872	8676.692
y = 5	8708.020	8704.911	8690.334	8683.242	8682.978
y = 4	8707.112	8703.284	8690.243	8683.613	8683.278
y = 3	8689.902	8688.433	8685.590	8684.145	8684.350
y = 2	8667.550	8671.251	8679.737	8683.509	8684.245
y = 1	8663.752	8666.556	8677.845	8683.610	8683.920

y	x = 6	7	8	9	10
y = 15	8647.787	8643.454	8644.118	8643.431	8642.064
y = 14	8641.045	8641.575	8642.783	8641.529	8639.946
y = 13	8637.307	8634.526	8632.654	8633.292	8635.509
y = 12	8640.243	8627.552	8623.282	8626.094	8632.386
y = 11	8643.312	8627.707	8622.946	8626.506	8635.680
y = 10	8651.138	8640.481	8635.966	8639.173	8648.304
y = 9	8657.764	8656.803	8658.044	8656.965	8660.149
y = 8	8660.425	8660.724	8660.831	8661.065	8663.843
y = 7	8664.900	8664.476	8663.207	8665.102	8666.994
y = 6	8676.333	8679.090	8690.883	8678.710	8674.745
y = 5	8683.323	8687.865	8689.525	8687.106	8679.085
y = 4	8685.080	8688.793	8689.668	8688.310	8680.747
y = 3	8687.003	8690.746	8691.417	8690.620	8684.646
y = 2	8687.919	8695.095	8697.280	8696.162	8691.169
y = 1	8687.803	8696.563	8698.426	8697.612	8693.891

y	x = 11	12	13	14	15
y = 15	8641.467	8641.435	8643.282	8645.098	8647.020
y = 14	8639.909	8641.561	8644.010	8646.776	8649.840
y = 13	8638.658	8642.243	8646.363	8650.208	8653.248
y = 12	8639.424	8646.066	8651.326	8654.747	8657.190
y = 11	8646.257	8653.919	8657.560	8659.500	8661.217
y = 10	8658.016	8661.463	8662.412	8663.284	8664.479
y = 9	8664.116	8664.626	8664.783	8665.388	8666.102
y = 8	8665.037	8665.111	8665.766	8666.681	8667.261
y = 7	8666.355	8666.498	8667.661	8668.206	8668.163
y = 6	8673.406	8672.723	8670.880	8668.887	8668.183
y = 5	8676.469	8676.059	8672.490	8668.477	8667.873
y = 4	8676.718	8676.165	8672.576	8668.534	8667.880
y = 3	8678.303	8675.483	8671.408	8668.167	8667.225
y = 2	8681.837	8674.547	8668.946	8665.745	8664.926
y = 1	8684.642	8674.004	8667.400	8664.816	8664.363

plane z= 2

y	x = 1	2	3	4	5
y = 15	8660.863	8660.710	8659.433	8656.279	8652.410
y = 14	8660.825	8660.538	8658.914	8655.738	8652.370
y = 13	8660.890	8660.064	8658.275	8655.922	8653.507
y = 12	8662.340	8661.206	8660.310	8659.268	8656.740
y = 11	8667.369	8666.419	8665.885	8664.931	8662.021
y = 10	8675.706	8672.807	8670.454	8669.112	8667.742
y = 9	8684.648	8677.814	8672.713	8670.304	8669.876
y = 8	8694.764	8683.678	8674.327	8670.132	8669.838
y = 7	8705.544	8696.399	8682.779	8674.722	8674.038
y = 6	8712.888	8708.513	8698.355	8693.926	8692.948
y = 5	8716.809	8714.500	8705.100	8701.969	8701.873
y = 4	8716.043	8713.189	8705.104	8702.269	8702.193
y = 3	8700.901	8700.389	8700.229	8701.055	8701.542
y = 2	8680.304	8684.316	8694.545	8699.834	8700.591
y = 1	8676.627	8679.650	8692.785	8700.144	8700.509

y	x = 6	7	8	9	10
y = 15	8649.839	8649.120	8649.038	8649.092	8649.379
y = 14	8649.775	8648.984	8648.986	8648.977	8649.397
y = 13	8650.421	8648.285	8647.580	8647.968	8649.676
y = 12	8652.061	8646.790	8645.004	8646.516	8650.754
y = 11	8655.320	8647.601	8644.963	8647.597	8654.629
y = 10	8663.756	8657.880	8655.021	8657.928	8665.057
y = 9	8670.240	8671.571	8673.127	8672.226	8674.420
y = 8	8672.650	8675.148	8675.479	8675.653	8677.464
y = 7	8677.741	8678.685	8677.687	8679.372	8680.573
y = 6	8691.523	8692.974	8694.348	8692.221	8688.423
y = 5	8700.114	8701.262	8702.419	8700.137	8692.817
y = 4	8701.799	8702.091	8702.520	8701.121	8694.312
y = 3	8702.305	8702.969	8703.090	8701.891	8697.030
y = 2	8702.055	8704.550	8705.262	8704.586	8701.154
y = 1	8701.818	8705.047	8705.741	8705.317	8702.788

y	x = 11	12	13	14	15
y = 15	8650.317	8651.520	8654.159	8656.657	8659.197
y = 14	8650.789	8653.228	8656.208	8659.331	8662.613
y = 13	8652.501	8655.927	8659.897	8663.656	8666.649
y = 12	8655.665	8661.064	8665.676	8668.678	8670.911
y = 11	8662.643	8668.732	8671.692	8673.354	8674.931
y = 10	8672.478	8675.181	8676.004	8676.842	8677.757
y = 9	8677.293	8677.698	8677.985	8678.698	8679.493
y = 8	8677.951	8678.025	8678.897	8679.998	8680.652
y = 7	8679.471	8679.593	8680.917	8681.541	8681.497
y = 6	8687.210	8686.498	8684.458	8682.250	8681.471
y = 5	8690.675	8690.235	8686.234	8681.782	8681.105
y = 4	8690.893	8690.324	8686.319	8681.868	8681.127
y = 3	8691.896	8689.284	8685.065	8681.705	8680.723
y = 2	8694.055	8687.828	8682.574	8679.540	8679.779
y = 1	8695.665	8686.851	8681.031	8678.688	8678.278

plane z= 3

Table A-7

INITIAL RESERVOIR PRESSURE (continued)

Waskada Lower Amaranth Pool

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	8672.702	8672.849	8673.407	8673.480	8671.820	8669.427	8667.745	8667.140	8667.704	8669.142
y = 14	8672.911	8673.245	8674.429	8674.912	8673.324	8670.816	8668.844	8667.962	8668.789	8670.602
y = 13	8674.314	8675.254	8677.257	8677.506	8675.953	8673.660	8672.491	8672.293	8672.527	8674.039
y = 12	8678.372	8679.973	8681.897	8681.811	8679.447	8676.281	8674.441	8673.930	8674.724	8677.807
y = 11	8686.325	8687.401	8688.201	8687.561	8684.741	8679.782	8675.719	8674.074	8676.314	8682.544
y = 10	8696.613	8694.706	8692.934	8691.811	8690.795	8688.385	8685.091	8693.108	8686.038	8692.615
y = 9	8706.415	8700.075	8695.167	8692.762	8692.535	8694.404	8698.116	8700.273	8699.377	8701.166
y = 8	8716.705	8705.942	8696.751	8692.445	8692.159	8696.395	8701.513	8702.616	8702.624	8703.833
y = 7	8727.273	8718.436	8705.199	8697.135	8696.632	8701.516	8704.733	8704.343	8705.585	8706.141
y = 6	8734.314	8730.215	8720.924	8717.088	8716.283	8715.158	8717.001	8718.357	8716.164	8711.556
y = 5	8738.055	8735.959	8727.831	8725.557	8725.503	8723.560	8724.326	8725.385	8722.954	8714.253
y = 4	8737.328	8734.746	8727.924	8725.874	8725.837	8725.040	8724.802	8725.385	8723.493	8715.206
y = 3	8722.769	8722.590	8723.348	8724.881	8725.331	8724.914	8723.709	8723.278	8721.821	8716.918
y = 2	8702.584	8706.817	8718.180	8724.656	8725.382	8724.304	8721.892	8721.020	8720.848	8718.794
y = 1	8698.896	8702.097	8716.634	8725.360	8725.770	8724.148	8721.300	8720.710	8720.720	8719.391

	x = 11	12	13	14	15
y = 15	8671.185	8673.348	8676.639	8679.690	8682.857
y = 14	8673.087	8676.216	8679.732	8683.173	8686.555
y = 13	8676.895	8680.501	8684.574	8688.332	8691.140
y = 12	8681.945	8686.983	8691.288	8693.992	8695.668
y = 11	8689.722	8695.282	8697.726	8698.724	8699.629
y = 10	8699.250	8701.556	8701.909	8702.082	8702.319
y = 9	8703.729	8704.005	8703.834	8703.542	8702.957
y = 8	8704.353	8704.377	8704.373	8703.795	8702.861
y = 7	8705.200	8705.081	8704.942	8703.431	8701.981
y = 6	8709.430	8708.467	8705.810	8702.047	8700.567
y = 5	8711.000	8710.565	8706.401	8700.671	8699.612
y = 4	8711.150	8710.567	8706.337	8700.882	8699.734
y = 3	8712.069	8709.607	8705.523	8702.100	8701.044
y = 2	8713.442	8708.333	8704.010	8701.799	8701.354
y = 1	8714.300	8707.546	8703.074	8701.458	8701.231

plane z= 4

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	8682.488	8682.928	8685.386	8689.392	8692.078	8693.256	8693.652	8693.575	8693.841	8694.697
y = 14	8682.912	8683.785	8687.440	8691.478	8692.690	8693.518	8693.969	8693.928	8694.411	8695.614
y = 13	8685.410	8687.719	8692.562	8694.738	8694.280	8694.371	8695.460	8695.952	8696.354	8697.833
y = 12	8691.589	8695.143	8698.778	8699.010	8696.768	8695.679	8696.611	8696.542	8697.418	8700.627
y = 11	8702.344	8704.733	8705.891	8704.845	8702.050	8699.043	8697.744	8696.662	8698.752	8704.807
y = 10	8715.143	8714.335	8712.908	8711.462	8710.506	8708.835	8706.290	8704.603	8707.491	8714.210
y = 9	8726.414	8721.742	8718.408	8717.030	8716.736	8716.764	8718.117	8719.522	8719.138	8722.408
y = 8	8736.214	8727.958	8720.823	8717.667	8717.438	8719.574	8721.219	8721.402	8721.805	8725.064
y = 7	8744.636	8738.223	8728.398	8721.898	8721.336	8724.366	8724.471	8723.418	8725.078	8727.110
y = 6	8749.664	8746.941	8741.732	8740.085	8739.423	8737.277	8737.175	8737.927	8735.906	8732.126
y = 5	8752.469	8751.242	8747.862	8748.365	8748.412	8745.562	8744.190	8744.881	8742.631	8734.738
y = 4	8751.941	8750.420	8748.012	8748.626	8748.742	8747.059	8744.829	8744.915	8743.238	8735.691
y = 3	8740.685	8741.370	8744.365	8747.599	8748.360	8747.237	8744.621	8743.645	8742.176	8737.467
y = 2	8724.055	8728.253	8740.597	8748.476	8749.352	8747.293	8743.376	8742.212	8741.918	8739.681
y = 1	8720.806	8724.003	8739.595	8749.570	8750.051	8747.388	8742.788	8741.930	8741.933	8740.501

	x = 11	12	13	14	15
y = 15	8696.251	8697.974	8700.926	8703.500	8706.166
y = 14	8697.586	8700.369	8703.488	8706.468	8709.450
y = 13	8700.541	8703.955	8707.657	8711.071	8713.522
y = 12	8704.754	8709.660	8713.754	8716.195	8717.507
y = 11	8711.922	8717.448	8719.753	8720.472	8721.034
y = 10	8721.171	8723.551	8723.749	8723.611	8723.376
y = 9	8725.804	8726.120	8725.705	8724.883	8723.545
y = 8	8726.570	8726.584	8726.116	8724.629	8722.785
y = 7	8727.082	8726.952	8726.094	8723.288	8720.906
y = 6	8730.445	8729.405	8725.927	8720.656	8718.542
y = 5	8731.846	8731.357	8726.152	8718.565	8717.075
y = 4	8731.976	8731.324	8726.085	8718.956	8717.307
y = 3	8732.770	8730.181	8725.603	8721.649	8720.335
y = 2	8734.214	8729.062	8724.881	8723.120	8722.915
y = 1	8735.289	8728.592	8724.454	8723.231	8723.140

Table A-8

INITIAL OIL SATURATION

Waskada Lower Amaranth Pool

time: 0.000 days

plane z= 1

y	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.35168	0.35215	0.35548	0.36264	0.36990	0.37313	0.37224	0.37134	0.37227	0.37411
y = 14	0.35194	0.35285	0.35739	0.36489	0.37144	0.37548	0.37476	0.37314	0.37483	0.37696
y = 13	0.35295	0.35545	0.36080	0.36604	0.37058	0.37782	0.38425	0.38676	0.38591	0.38292
y = 12	0.35309	0.35666	0.35976	0.36153	0.36521	0.37656	0.39363	0.39937	0.39559	0.38686
y = 11	0.34885	0.35156	0.35288	0.35395	0.35804	0.37243	0.39342	0.39982	0.39503	0.38269
y = 10	0.33883	0.34411	0.34796	0.34988	0.35252	0.36190	0.37624	0.38231	0.37800	0.36571
y = 9	0.32665	0.33808	0.34647	0.35052	0.35144	0.35299	0.35428	0.35261	0.35406	0.34974
y = 8	0.31170	0.32988	0.34491	0.35096	0.35135	0.34931	0.34884	0.34867	0.34830	0.34394
y = 7	0.29320	0.31016	0.33289	0.34513	0.34631	0.34243	0.34294	0.34494	0.34196	0.33897
y = 6	0.27769	0.28803	0.31133	0.32188	0.32375	0.32430	0.31997	0.31715	0.32057	0.32679
y = 5	0.26902	0.27496	0.30230	0.31344	0.31386	0.31332	0.30618	0.30357	0.30737	0.31998
y = 4	0.27075	0.27807	0.30244	0.31286	0.31339	0.31056	0.30472	0.30335	0.30548	0.31736
y = 3	0.30298	0.30529	0.30975	0.31203	0.31170	0.30753	0.30165	0.29996	0.30185	0.31124
y = 2	0.33810	0.33228	0.31895	0.31302	0.31137	0.30610	0.29370	0.28953	0.29166	0.30099
y = 1	0.34408	0.33968	0.32192	0.31287	0.31238	0.30628	0.29090	0.28734	0.28890	0.29600

y	x = 11	12	13	14	15
y = 15	0.37491	0.37495	0.37247	0.37003	0.36744
y = 14	0.37701	0.37478	0.37149	0.36777	0.36365
y = 13	0.37869	0.37387	0.36832	0.36315	0.35906
y = 12	0.37766	0.36872	0.36165	0.35705	0.35376
y = 11	0.36847	0.35816	0.35326	0.35065	0.34806
y = 10	0.35265	0.34768	0.34619	0.34482	0.34294
y = 9	0.34351	0.34271	0.34246	0.34151	0.34039
y = 8	0.34206	0.34195	0.34092	0.33946	0.33855
y = 7	0.33999	0.33977	0.33792	0.33707	0.33714
y = 6	0.32890	0.32997	0.33287	0.33600	0.33710
y = 5	0.32409	0.32473	0.33034	0.33664	0.33759
y = 4	0.32370	0.32456	0.33020	0.33655	0.33758
y = 3	0.32120	0.32564	0.33204	0.33713	0.33861
y = 2	0.31565	0.32711	0.33591	0.34095	0.34224
y = 1	0.31124	0.32796	0.33833	0.34241	0.34312

plane z= 2

y	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.34862	0.34886	0.35074	0.35498	0.36019	0.36365	0.36461	0.36472	0.36465	0.36427
y = 14	0.34868	0.34913	0.35144	0.35571	0.36024	0.36373	0.36480	0.36479	0.36481	0.36424
y = 13	0.34858	0.34988	0.35230	0.35546	0.35871	0.36287	0.36574	0.36669	0.36616	0.36387
y = 12	0.34630	0.34808	0.34949	0.35096	0.35436	0.36066	0.36775	0.37015	0.36812	0.36262
y = 11	0.33838	0.33989	0.34073	0.34223	0.34680	0.35627	0.36666	0.37021	0.36666	0.35720
y = 10	0.32529	0.32984	0.33354	0.33564	0.33790	0.34407	0.35283	0.35668	0.35277	0.34203
y = 9	0.31123	0.32197	0.32999	0.33377	0.33444	0.33387	0.33178	0.32934	0.33075	0.32730
y = 8	0.29433	0.31276	0.32745	0.33404	0.33450	0.33009	0.32616	0.32564	0.32537	0.32252
y = 7	0.27375	0.29121	0.31417	0.32683	0.32791	0.32209	0.32060	0.32217	0.31953	0.31764
y = 6	0.25972	0.26808	0.28748	0.29593	0.29790	0.30043	0.29775	0.29513	0.29919	0.30530
y = 5	0.25223	0.25664	0.27460	0.28058	0.28076	0.28412	0.28193	0.27972	0.28407	0.29805
y = 4	0.25369	0.25915	0.27459	0.28000	0.28015	0.28090	0.28034	0.27952	0.28220	0.29520
y = 3	0.28262	0.28359	0.28390	0.28232	0.28139	0.27993	0.27867	0.27843	0.28072	0.29001
y = 2	0.31806	0.31176	0.29475	0.28465	0.28321	0.28041	0.27565	0.27429	0.27555	0.28213
y = 1	0.32384	0.31909	0.29811	0.28406	0.28336	0.28086	0.27470	0.27337	0.27418	0.27901

y	x = 11	12	13	14	15
y = 15	0.36301	0.36139	0.35784	0.35448	0.35106
y = 14	0.36237	0.35909	0.35508	0.35088	0.34587
y = 13	0.36007	0.35546	0.35013	0.34423	0.33953
y = 12	0.35581	0.34830	0.34114	0.33633	0.33282
y = 11	0.34582	0.33624	0.33159	0.32898	0.32650
y = 10	0.33036	0.32611	0.32482	0.32350	0.32175
y = 9	0.32279	0.32216	0.32170	0.32058	0.31933
y = 8	0.32176	0.32164	0.32027	0.31854	0.31751
y = 7	0.31937	0.31918	0.31710	0.31612	0.31619
y = 6	0.30721	0.30833	0.31153	0.31500	0.31623
y = 5	0.30176	0.30246	0.30874	0.31574	0.31680
y = 4	0.30142	0.30232	0.30861	0.31560	0.31677
y = 3	0.29981	0.30395	0.31058	0.31586	0.31739
y = 2	0.29569	0.30624	0.31449	0.31926	0.32046
y = 1	0.29261	0.30777	0.31692	0.32060	0.32124

plane z= 3

Table A-8

INITIAL OIL SATURATION (continued)

Waskada Lower Amaranth Pool

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.33000	0.32977	0.32890	0.32878	0.33139	0.33515	0.33779	0.33874	0.33786	0.33540
y = 14	0.32968	0.32915	0.32729	0.32653	0.32903	0.33297	0.33606	0.33745	0.33615	0.33330
y = 13	0.32747	0.32599	0.32285	0.32246	0.32490	0.32850	0.33034	0.33065	0.33028	0.32790
y = 12	0.32110	0.31858	0.31557	0.31569	0.31941	0.32438	0.32727	0.32808	0.32683	0.32198
y = 11	0.30860	0.30691	0.30565	0.30666	0.31109	0.31888	0.32526	0.32785	0.32433	0.31454
y = 10	0.29080	0.29445	0.29783	0.29997	0.30158	0.30536	0.31054	0.31366	0.30905	0.29844
y = 9	0.27209	0.28419	0.29357	0.29816	0.29859	0.29502	0.28793	0.28381	0.28553	0.28211
y = 8	0.25243	0.27299	0.29054	0.29876	0.29931	0.29122	0.28087	0.27934	0.27935	0.27702
y = 7	0.22200	0.24862	0.27441	0.28971	0.29077	0.28144	0.27530	0.27604	0.27367	0.27261
y = 6	0.20080	0.21314	0.24112	0.25170	0.25324	0.25539	0.25186	0.24885	0.25346	0.26226
y = 5	0.18529	0.19416	0.22032	0.22717	0.22733	0.23319	0.23088	0.22769	0.23501	0.25711
y = 4	0.18837	0.19929	0.22005	0.22622	0.22633	0.22873	0.22945	0.22769	0.23339	0.25329
y = 3	0.23557	0.23611	0.23382	0.22921	0.22785	0.22911	0.23274	0.23404	0.23842	0.25202
y = 2	0.27940	0.27132	0.24939	0.22989	0.22770	0.23095	0.23821	0.24084	0.24135	0.24754
y = 1	0.28644	0.28033	0.25256	0.22777	0.22653	0.23141	0.23999	0.24177	0.24174	0.24574

	x = 11	12	13	14	15
y = 15	0.33239	0.32899	0.32382	0.31903	0.31405
y = 14	0.32940	0.32448	0.31896	0.31355	0.30824
y = 13	0.32342	0.31775	0.31135	0.30545	0.30103
y = 12	0.31548	0.30757	0.30080	0.29581	0.29261
y = 11	0.30326	0.29335	0.28868	0.28677	0.28504
y = 10	0.28577	0.28136	0.28069	0.28036	0.27991
y = 9	0.27721	0.27669	0.27701	0.27757	0.27869
y = 8	0.27602	0.27598	0.27598	0.27709	0.27887
y = 7	0.27440	0.27463	0.27490	0.27778	0.28055
y = 6	0.26632	0.26816	0.27324	0.28043	0.28325
y = 5	0.26333	0.26416	0.27211	0.28306	0.28508
y = 4	0.26304	0.26415	0.27223	0.28265	0.28494
y = 3	0.26129	0.26599	0.27379	0.28033	0.28234
y = 2	0.25866	0.26842	0.27668	0.28090	0.28175
y = 1	0.25702	0.26992	0.27846	0.28155	0.28198

plane z= 4

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.31463	0.31394	0.31008	0.30378	0.29946	0.29721	0.29646	0.29661	0.29610	0.29446
y = 14	0.31396	0.31259	0.30685	0.30050	0.29791	0.29672	0.29585	0.29593	0.29501	0.29271
y = 13	0.31004	0.30641	0.29854	0.29439	0.29526	0.29509	0.29301	0.29207	0.29130	0.28844
y = 12	0.30033	0.29361	0.28667	0.28623	0.29051	0.29259	0.29081	0.29094	0.28927	0.28314
y = 11	0.27986	0.27530	0.27309	0.27508	0.28042	0.28616	0.28865	0.29075	0.28672	0.27315
y = 10	0.25541	0.25696	0.25968	0.26244	0.26427	0.26746	0.27232	0.27554	0.27003	0.25720
y = 9	0.22459	0.23866	0.24870	0.25181	0.25237	0.25232	0.24958	0.24535	0.24650	0.23665
y = 8	0.19308	0.21994	0.24143	0.25059	0.25103	0.24519	0.24024	0.23969	0.23847	0.22866
y = 7	0.15744	0.18458	0.21862	0.23819	0.23988	0.23070	0.23044	0.23361	0.22861	0.22250
y = 6	0.12925	0.14653	0.16973	0.17670	0.17951	0.18858	0.18902	0.18583	0.19438	0.20739
y = 5	0.11144	0.11923	0.14069	0.13749	0.13720	0.15352	0.15933	0.15641	0.16595	0.19933
y = 4	0.11479	0.12445	0.13973	0.13584	0.13510	0.14578	0.15663	0.15626	0.16336	0.19530
y = 3	0.17416	0.17126	0.15859	0.14236	0.13753	0.14466	0.15751	0.16164	0.16785	0.18778
y = 2	0.23170	0.21905	0.17453	0.13679	0.13123	0.14430	0.16278	0.16770	0.16895	0.17841
y = 1	0.24148	0.23185	0.17882	0.12984	0.12679	0.14370	0.16526	0.16889	0.16888	0.17494

	x = 11	12	13	14	15
y = 15	0.29150	0.28821	0.28257	0.27765	0.27256
y = 14	0.28895	0.28363	0.27768	0.27198	0.26629
y = 13	0.28330	0.27678	0.26971	0.26319	0.25851
y = 12	0.27526	0.26589	0.25807	0.25340	0.25090
y = 11	0.26157	0.25101	0.24465	0.24248	0.24079
y = 10	0.24038	0.23321	0.23262	0.23303	0.23374
y = 9	0.22643	0.22548	0.22673	0.22920	0.23323
y = 8	0.22412	0.22408	0.22549	0.22997	0.23552
y = 7	0.22258	0.22297	0.22556	0.23400	0.24118
y = 6	0.21245	0.21558	0.22606	0.24193	0.24830
y = 5	0.20823	0.20970	0.22538	0.24823	0.25172
y = 4	0.20784	0.20980	0.22558	0.24705	0.25128
y = 3	0.20545	0.21325	0.22703	0.23894	0.24275
y = 2	0.20110	0.21662	0.22921	0.23451	0.23513
y = 1	0.19700	0.21803	0.23050	0.23418	0.23445

Table A-9

INITIAL WATER SATURATION

Waskada Lower Amaranth Pool

time: 0.000 days

plane z= 1

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.64832	0.64785	0.64452	0.63736	0.63010	0.62687	0.62776	0.62866	0.62773	0.62589
y = 14	0.64806	0.64715	0.64261	0.63511	0.62856	0.62452	0.62524	0.62686	0.62517	0.62304
y = 13	0.64705	0.64455	0.63920	0.63396	0.62942	0.62213	0.61575	0.61324	0.61409	0.61708
y = 12	0.64691	0.64334	0.64024	0.63847	0.63479	0.62344	0.60637	0.60063	0.60441	0.61314
y = 11	0.65115	0.64844	0.64712	0.64605	0.64196	0.62757	0.60658	0.60018	0.60497	0.61731
y = 10	0.66117	0.65589	0.65204	0.65012	0.64748	0.63810	0.62376	0.61769	0.62200	0.63429
y = 9	0.67335	0.66192	0.65353	0.64948	0.64856	0.64701	0.64572	0.64739	0.64594	0.65026
y = 8	0.68530	0.67012	0.65509	0.64904	0.64865	0.65069	0.65116	0.65133	0.65170	0.65606
y = 7	0.70680	0.68984	0.66711	0.65487	0.65369	0.65757	0.65706	0.65506	0.65804	0.66103
y = 6	0.72231	0.71197	0.68867	0.67812	0.67625	0.67570	0.68003	0.68285	0.67943	0.67321
y = 5	0.73098	0.72504	0.69770	0.68656	0.68614	0.68668	0.69382	0.69643	0.69263	0.68002
y = 4	0.72925	0.72193	0.69756	0.68714	0.68661	0.68944	0.69528	0.69665	0.69452	0.68264
y = 3	0.69702	0.69471	0.69025	0.68797	0.68830	0.69247	0.69835	0.70004	0.69815	0.68876
y = 2	0.66190	0.66772	0.68105	0.68698	0.68813	0.69390	0.70630	0.71047	0.70834	0.69901
y = 1	0.65592	0.66032	0.67808	0.68713	0.68762	0.69372	0.70910	0.71266	0.71110	0.70400

x =	11	12	13	14	15
y = 15	0.62509	0.62505	0.62753	0.62997	0.63256
y = 14	0.62299	0.62522	0.62851	0.63223	0.63635
y = 13	0.62131	0.62613	0.63168	0.63685	0.64094
y = 12	0.62234	0.63128	0.63835	0.64295	0.64624
y = 11	0.63153	0.64184	0.64674	0.64935	0.65194
y = 10	0.64735	0.65232	0.65381	0.65518	0.65706
y = 9	0.65649	0.65729	0.65754	0.65849	0.65961
y = 8	0.65794	0.65805	0.65908	0.66054	0.66145
y = 7	0.66001	0.66023	0.66208	0.66293	0.66286
y = 6	0.67110	0.67003	0.66713	0.66400	0.66290
y = 5	0.67591	0.67527	0.66966	0.66336	0.66241
y = 4	0.67630	0.67544	0.66980	0.66345	0.66242
y = 3	0.67880	0.67436	0.66796	0.66287	0.66139
y = 2	0.68435	0.67289	0.66409	0.65905	0.65776
y = 1	0.68876	0.67204	0.66167	0.65759	0.65688

plane z= 2

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.65138	0.65114	0.64926	0.64502	0.63981	0.63635	0.63539	0.63528	0.63535	0.63573
y = 14	0.65132	0.65087	0.64856	0.64429	0.63976	0.63627	0.63520	0.63521	0.63519	0.63576
y = 13	0.65142	0.65012	0.64770	0.64454	0.64129	0.63713	0.63426	0.63331	0.63384	0.63613
y = 12	0.65370	0.65192	0.65051	0.64904	0.64564	0.63934	0.63225	0.62985	0.63188	0.63758
y = 11	0.66162	0.66011	0.65927	0.65777	0.65320	0.64373	0.63334	0.62979	0.63334	0.64280
y = 10	0.67471	0.67016	0.66646	0.66436	0.66220	0.65593	0.64717	0.64332	0.64723	0.65797
y = 9	0.68877	0.67803	0.67001	0.66623	0.66556	0.66613	0.66822	0.67066	0.66925	0.67270
y = 8	0.70567	0.68724	0.67255	0.66596	0.66550	0.66991	0.67384	0.67436	0.67463	0.67748
y = 7	0.72625	0.70879	0.68583	0.67317	0.67209	0.67791	0.67940	0.67783	0.68047	0.68236
y = 6	0.74028	0.73192	0.71252	0.70407	0.70220	0.69957	0.70225	0.70487	0.70081	0.69470
y = 5	0.74777	0.74336	0.72540	0.71942	0.71924	0.71588	0.71807	0.72028	0.71593	0.70195
y = 4	0.74631	0.74085	0.72541	0.72000	0.71985	0.71910	0.71966	0.72048	0.71780	0.70480
y = 3	0.71738	0.71641	0.71610	0.71768	0.71861	0.72007	0.72133	0.72157	0.71928	0.70999
y = 2	0.68194	0.68824	0.70525	0.71535	0.71679	0.71959	0.72435	0.72571	0.72442	0.71787
y = 1	0.67616	0.68091	0.70189	0.71594	0.71664	0.71914	0.72530	0.72663	0.72582	0.72099

x =	11	12	13	14	15
y = 15	0.63699	0.63861	0.64216	0.64552	0.64894
y = 14	0.63763	0.64091	0.64492	0.64912	0.65413
y = 13	0.63993	0.64454	0.64987	0.65577	0.66047
y = 12	0.64419	0.65170	0.65886	0.66367	0.66718
y = 11	0.65418	0.66376	0.66841	0.67102	0.67350
y = 10	0.66964	0.67389	0.67518	0.67650	0.67825
y = 9	0.67721	0.67784	0.67830	0.67942	0.68057
y = 8	0.67824	0.67836	0.67973	0.68146	0.68249
y = 7	0.68063	0.68082	0.68290	0.68388	0.68331
y = 6	0.69279	0.69167	0.68847	0.68503	0.68377
y = 5	0.69824	0.69754	0.69126	0.68426	0.68320
y = 4	0.69858	0.69763	0.69130	0.68440	0.68323
y = 3	0.70019	0.69605	0.68942	0.68414	0.68261
y = 2	0.70431	0.69376	0.68551	0.68074	0.67954
y = 1	0.70737	0.69723	0.68309	0.67940	0.67876

plane z= 3

Table A-9

INITIAL WATER SATURATION (continued)

Waskada Lower Amaranth Pool

y	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.67000	0.67023	0.67110	0.67122	0.66561	0.66485	0.66221	0.66126	0.66214	0.66440
y = 14	0.67032	0.67085	0.67271	0.67347	0.67097	0.66703	0.66394	0.66255	0.66385	0.66670
y = 13	0.67253	0.67401	0.67715	0.67754	0.67510	0.67150	0.66966	0.66935	0.66972	0.67210
y = 12	0.67890	0.68142	0.68443	0.68431	0.68059	0.67562	0.67273	0.67192	0.67317	0.67802
y = 11	0.69140	0.69309	0.69435	0.69334	0.68891	0.68112	0.67474	0.67215	0.67567	0.68546
y = 10	0.70920	0.70555	0.70217	0.70003	0.69842	0.69464	0.68946	0.68634	0.69095	0.70156
y = 9	0.72791	0.71581	0.70643	0.70194	0.70141	0.70498	0.71207	0.71619	0.71447	0.71789
y = 8	0.74757	0.72701	0.70946	0.70124	0.70069	0.70878	0.71913	0.72066	0.72067	0.72298
y = 7	0.77800	0.75138	0.72559	0.71029	0.70923	0.71856	0.72470	0.72396	0.72633	0.72739
y = 6	0.79920	0.78686	0.75888	0.74830	0.74676	0.74461	0.74814	0.75115	0.74656	0.73774
y = 5	0.81471	0.80584	0.77968	0.77283	0.77267	0.76681	0.76912	0.77231	0.76499	0.74289
y = 4	0.81163	0.80071	0.77995	0.77378	0.77367	0.77127	0.77055	0.77231	0.76661	0.74671
y = 3	0.76443	0.76389	0.76618	0.77079	0.77215	0.77089	0.76776	0.76596	0.76158	0.74798
y = 2	0.72060	0.72868	0.75061	0.77011	0.77230	0.76905	0.76179	0.75916	0.75865	0.75246
y = 1	0.71356	0.71967	0.74744	0.77223	0.77347	0.76859	0.76001	0.75823	0.75826	0.75426

y	x = 11	12	13	14	15
y = 15	0.66761	0.67101	0.67618	0.68097	0.68595
y = 14	0.67060	0.67552	0.68104	0.68645	0.69176
y = 13	0.67658	0.68225	0.68865	0.69455	0.69897
y = 12	0.68452	0.69243	0.69920	0.70419	0.70739
y = 11	0.69674	0.70665	0.71132	0.71323	0.71496
y = 10	0.71423	0.71864	0.71931	0.71964	0.72009
y = 9	0.72279	0.72331	0.72299	0.72243	0.72131
y = 8	0.72398	0.72402	0.72402	0.72291	0.72113
y = 7	0.72560	0.72537	0.72510	0.72222	0.71945
y = 6	0.73368	0.73184	0.72676	0.71957	0.71675
y = 5	0.73667	0.73584	0.72789	0.71694	0.71492
y = 4	0.73696	0.73585	0.72777	0.71735	0.71516
y = 3	0.73871	0.73401	0.72621	0.71967	0.71766
y = 2	0.74134	0.73158	0.72332	0.71910	0.71825
y = 1	0.74298	0.73008	0.72154	0.71845	0.71802

plane z= 4

y	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.68537	0.68606	0.68992	0.69622	0.70054	0.70279	0.70354	0.70339	0.70390	0.70354
y = 14	0.68604	0.68741	0.69315	0.69950	0.70209	0.70328	0.70415	0.70407	0.70499	0.70729
y = 13	0.68996	0.69359	0.70146	0.70561	0.70474	0.70491	0.70699	0.70793	0.70870	0.71156
y = 12	0.69967	0.70639	0.71333	0.71377	0.70949	0.70741	0.70919	0.70906	0.71073	0.71686
y = 11	0.72014	0.72470	0.72691	0.72492	0.71958	0.71384	0.71135	0.70925	0.71328	0.72485
y = 10	0.74459	0.74304	0.74032	0.73756	0.73573	0.73254	0.72768	0.72446	0.72997	0.74280
y = 9	0.77541	0.76134	0.75130	0.74819	0.74763	0.74768	0.75042	0.75465	0.75350	0.76335
y = 8	0.80692	0.78006	0.75857	0.74941	0.74897	0.75481	0.75976	0.76031	0.76155	0.77134
y = 7	0.84256	0.81542	0.78138	0.76181	0.76012	0.76930	0.76956	0.76639	0.77139	0.77750
y = 6	0.87075	0.85347	0.83027	0.82330	0.87049	0.81142	0.81098	0.81417	0.80562	0.79261
y = 5	0.88856	0.88077	0.85931	0.86251	0.86280	0.84648	0.84067	0.84359	0.83407	0.80067
y = 4	0.88521	0.87555	0.86027	0.86416	0.86490	0.85422	0.84337	0.84374	0.83664	0.80470
y = 3	0.82584	0.82874	0.84141	0.85764	0.86247	0.85534	0.84249	0.83836	0.83715	0.81222
y = 2	0.76830	0.78095	0.82547	0.86321	0.86877	0.85570	0.83722	0.83230	0.83105	0.82159
y = 1	0.75852	0.76815	0.82119	0.87016	0.87321	0.85630	0.83474	0.83111	0.83112	0.82506

y	x = 11	12	13	14	15
y = 15	0.70850	0.71179	0.71743	0.72235	0.72744
y = 14	0.71105	0.71637	0.72232	0.72802	0.73371
y = 13	0.71670	0.72322	0.73029	0.73681	0.74149
y = 12	0.72474	0.73411	0.74193	0.74660	0.74910
y = 11	0.73843	0.74899	0.75535	0.75752	0.75921
y = 10	0.75962	0.76679	0.76738	0.76697	0.76626
y = 9	0.77357	0.77452	0.77327	0.77080	0.76677
y = 8	0.77588	0.77592	0.77451	0.77003	0.76448
y = 7	0.77742	0.77703	0.77444	0.76600	0.75882
y = 6	0.78755	0.78442	0.77374	0.75807	0.75170
y = 5	0.79177	0.79030	0.77462	0.75177	0.74828
y = 4	0.79216	0.79020	0.77442	0.75295	0.74822
y = 3	0.79455	0.78675	0.77297	0.76106	0.75725
y = 2	0.79890	0.78338	0.77079	0.76547	0.76487
y = 1	0.80300	0.78197	0.76950	0.76582	0.76555

Table A-10

PVT FUNCTIONS

Waskada Lower Amaranth Pool

PVT FUNCTIONS						
pressure kPa	sol'n gas m 3/m 3	oil fvf m 3/m 3	gas fvf m 3/m 3	gas exp m 3/m 3	oil visc cP	gas visc cP
0.000	0.000	1.02500	1.00000	1.000	2.904	0.01020
958.000	29.350	1.11900	0.10343	9.650	2.000	0.01060
1413.000	34.940	1.13500	0.07179	13.930	1.548	0.01080
2082.000	39.940	1.14700	0.04924	20.290	1.432	0.01100
2813.000	44.290	1.15600	0.03658	27.340	1.367	0.01130
3482.000	47.490	1.16300	0.02963	33.750	1.319	0.01150
4220.000	51.040	1.17000	0.02498	40.200	1.285	0.01180
6895.000	66.500	1.18900	0.01543	64.800	1.200	0.01280
10342.000	81.500	1.20800	0.01046	95.630	1.140	0.01400

Table A-11

SEQUENTIAL DEVELOPMENT

Waskada Lower Amaranth Pool

Date	Total Number of Wells on Production	Well Names
80-06-02	1	11-30
80-12-02	0	---
81-01-02	1	11-30
82-02-15	2	Previous well plus: 9-25.
82-03-04	4	Previous wells plus: 9-30, 3-31.
82-08-13	5	Previous wells plus: 4-31.
82-08-27	6	Previous wells plus: 13-30.
82-09-11	7	Previous wells plus: 14-30.
82-09-14	8	Previous wells plus: 6-31.
82-09-16	10	Previous wells plus: 15-30, 16-30.
82-10-15	11	Previous wells plus: 2-31.
82-10-25	12	Previous wells plus: 16-25.
82-12-18	13	Previous wells plus: 11-31.
83-10-02	20	Previous wells plus: 1-31, 5-31, 7-31, 8-31 9-31, 10-31, 12-31.
84-10-02	24	Previous wells plus: 10-30, 12-30, 1-36, 8-36.

Table A-12

TEN-YEAR RECOVERY BY WELLS

Waskada Lower Amaranth Pool

Well No.	Well Name	Recovery, m3 Primary	Gas Inj.	Water Inj.	Well Type
1	9-30	486.9	1 341.2	1.341.2	1/4
2	10-30	2 119.3	4 961.6	4 995.2	1/2
3	11-30	857.8	1 759.6	1 759.6	1/2
4	12-30	2 002.1	3 270.4	4 761.7	1/2
5	13-30	3 062.9	661.6*	661.6**	1
6	14-30	6 521.1	13 164.4	11 394.4	1
7	15-30	4 731.6	1 382.6*	1 382.6**	1
8	16-30	3 889.6	5 979.6	5 985.3	1/2
9	1-31	2 466.7	5 516.6	5 528.4	1/2
10	2-31	10 988.8	21 398.4	19 268.3	1
11	3-31	5 274.5	8 904.2	8 904.2	1
12	4-31	8 933.4	16 207.3	14 596.8	1
13	5-31	4 950.1	-- *	-- **	1
14	6-31	12 315.7	19 613.4	20 039.8	1
15	7-31	7 256.8	-- *	-- **	1
16	8-31	3 139.0	5 459.5	5 514.9	1/2
17	9-31	1 848.0	7 057.2	7 177.7	1/4
18	10-31	3 311.5	8 009.7	7 834.5	1/2
19	11-31	5 931.2	14 767.9	12 588.4	1/2
20	12-31	2 503.0	5 125.0	5 173.8	1/2
21	9-25	2 600.3	7 292.3	7 183.8	1/4
22	16-25	3 859.2	6 691.5	6 756.9	1/2
23	1-36	1 552.7	5 427.2	4 358.1	1/2
24	8-36	1 523.4	4 303.8	4 287.3	1/2
	TOTAL	102 125.6	168 295.0	161 494.5	

*Converted to gas injectors
**Converted to water injectors

Table A-13

PRIMARY DEPLETION - RUN TIME SUMMARY

Waskada Lower Amaranth Pool

RATE INJECTION/PRODUCTION SUMMARY:

		INJECTION					PRODUCTION			
TIME days	PRESSURE kPa	GAS m 3/day	WATER m 3/day	OIL m 3/day	POLYMER kg/day	AQUIFER m 3/day	GAS m 3/day	WATER m 3/day	OIL m 3/day	POLYMER kg/day
0.250	8694.356	0.0000D+00	0.00	0.00	0.00	0.00	-2.4624D+01	-1.27	-0.48	0.00
1.319	8693.921	0.0000D+00	0.00	0.00	0.00	0.00	-2.4622D+01	-1.27	-0.48	0.00
5.525	8692.209	0.0000D+00	0.00	0.00	0.00	0.00	-2.4622D+01	-1.27	-0.48	0.00
21.796	8685.175	0.0000D+00	0.00	0.00	0.00	0.00	-2.4624D+01	-1.27	-0.48	0.00
80.216	8660.087	0.0000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
91.250	8655.682	0.0000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.49	0.00
137.125	8636.066	0.0000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
182.500	8618.072	0.0000D+00	0.00	0.00	0.00	0.00	-2.4620D+01	-1.27	-0.48	0.00
183.000	8617.921	0.0000D+00	0.00	0.00	0.00	0.00	-2.4523D+01	-1.27	-0.48	0.00
188.000	8617.967	0.0000D+00	0.00	0.00	0.00	0.00	0.0000D+00	0.00	0.00	0.00
201.000	8618.063	0.0000D+00	0.00	0.00	0.00	0.00	0.0000D+00	0.00	0.00	0.00
214.000	8618.174	0.0000D+00	0.00	0.00	0.00	0.00	0.0000D+00	0.00	0.00	0.00
219.000	8613.067	0.0000D+00	0.00	0.00	0.00	0.00	-5.6424D+01	-3.03	-1.10	0.00
228.960	8602.952	0.0000D+00	0.00	0.00	0.00	0.00	-5.6424D+01	-3.02	-1.10	0.00
258.384	8573.319	0.0000D+00	0.00	0.00	0.00	0.00	-5.6421D+01	-3.01	-1.10	0.00
273.750	8557.892	0.0000D+00	0.00	0.00	0.00	0.00	-5.6424D+01	-3.00	-1.10	0.00
332.408	8499.514	0.0000D+00	0.00	0.00	0.00	0.00	-5.6419D+01	-2.99	-1.10	0.00
365.000	8467.202	0.0000D+00	0.00	0.00	0.00	0.00	-5.6422D+01	-2.98	-1.10	0.00
456.250	8377.310	0.0000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.96	-1.10	0.00
547.500	8288.028	0.0000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.94	-1.10	0.00
579.000	8257.323	0.0000D+00	0.00	0.00	0.00	0.00	-5.6421D+01	-2.93	-1.10	0.00
584.000	8257.011	0.0000D+00	0.00	0.00	0.00	0.00	-6.1557D+00	-0.23	-0.12	0.00
594.572	8256.311	0.0000D+00	0.00	0.00	0.00	0.00	-6.1557D+00	-0.24	-0.12	0.00
624.000	8254.221	0.0000D+00	0.00	0.00	0.00	0.00	-6.1559D+00	-0.24	-0.12	0.00
629.000	8250.342	0.0000D+00	0.00	0.00	0.00	0.00	-8.7624D+01	-1.45	-1.71	0.00
638.750	8242.695	0.0000D+00	0.00	0.00	0.00	0.00	-8.7624D+01	-1.46	-1.71	0.00
641.000	8241.067	0.0000D+00	0.00	0.00	0.00	0.00	-8.7624D+01	-1.46	-1.71	0.00
646.000	8218.873	0.0000D+00	0.00	0.00	0.00	0.00	-4.8834D+02	-7.94	-9.53	0.00
652.103	8191.805	0.0000D+00	0.00	0.00	0.00	0.00	-4.8833D+02	-7.92	-9.53	0.00
663.485	8140.846	0.0000D+00	0.00	0.00	0.00	0.00	-4.8834D+02	-7.91	-9.53	0.00
682.321	8056.600	0.0000D+00	0.00	0.00	0.00	0.00	-4.8833D+02	-7.90	-9.53	0.00
706.161	7949.993	0.0000D+00	0.00	0.00	0.00	0.00	-4.8832D+02	-7.90	-9.53	0.00
730.000	7843.321	0.0000D+00	0.00	0.00	0.00	0.00	-4.8832D+02	-7.90	-9.53	0.00
735.000	7829.394	0.0000D+00	0.00	0.00	0.00	0.00	-3.1217D+02	-5.04	-6.09	0.00
747.534	7794.644	0.0000D+00	0.00	0.00	0.00	0.00	-3.1211D+02	-5.05	-6.09	0.00
775.267	7717.969	0.0000D+00	0.00	0.00	0.00	0.00	-3.1208D+02	-5.08	-6.09	0.00
803.000	7641.330	0.0000D+00	0.00	0.00	0.00	0.00	-3.1206D+02	-5.10	-6.09	0.00
808.000	7615.813	0.0000D+00	0.00	0.00	0.00	0.00	-5.9072D+02	-8.50	-11.53	0.00
812.500	7592.850	0.0000D+00	0.00	0.00	0.00	0.00	-5.9071D+02	-8.50	-11.53	0.00
817.000	7569.884	0.0000D+00	0.00	0.00	0.00	0.00	-5.9071D+02	-8.50	-11.53	0.00
821.250	7542.666	0.0000D+00	0.00	0.00	0.00	0.00	-6.7530D+02	-12.01	-13.18	0.00
822.000	7538.412	0.0000D+00	0.00	0.00	0.00	0.00	-6.7529D+02	-12.01	-13.18	0.00
827.000	7512.727	0.0000D+00	0.00	0.00	0.00	0.00	-5.3386D+02	-9.70	-10.42	0.00
832.000	7487.093	0.0000D+00	0.00	0.00	0.00	0.00	-5.3386D+02	-9.71	-10.42	0.00
835.000	7461.592	0.0000D+00	0.00	0.00	0.00	0.00	-7.6461D+02	-18.50	-14.92	0.00
837.000	7440.512	0.0000D+00	0.00	0.00	0.00	0.00	-1.0914D+03	-20.18	-21.31	0.00
842.000	7374.282	0.0000D+00	0.00	0.00	0.00	0.00	-1.3875D+03	-25.11	-27.09	0.00
847.000	7308.207	0.0000D+00	0.00	0.00	0.00	0.00	-1.3875D+03	-25.07	-27.09	0.00
852.000	7242.301	0.0000D+00	0.00	0.00	0.00	0.00	-1.3875D+03	-25.05	-27.09	0.00
857.000	7176.724	0.0000D+00	0.00	0.00	0.00	0.00	-1.3823D+03	-24.93	-26.99	0.00
866.000	7058.933	0.0000D+00	0.00	0.00	0.00	0.00	-1.3822D+03	-24.90	-26.99	0.00
871.000	6971.667	0.0000D+00	0.00	0.00	0.00	0.00	-1.8440D+03	-32.11	-36.00	0.00
876.000	6885.935	0.0000D+00	0.00	0.00	0.00	0.00	-1.8438D+03	-32.06	-36.00	0.00
878.500	6828.650	0.0000D+00	0.00	0.00	0.00	0.00	-2.0287D+03	-50.48	-39.60	0.00
880.393	6786.247	0.0000D+00	0.00	0.00	0.00	0.00	-2.0287D+03	-50.07	-39.60	0.00
884.267	6698.752	0.0000D+00	0.00	0.00	0.00	0.00	-2.0287D+03	-49.40	-39.60	0.00
891.810	6533.753	0.0000D+00	0.00	0.00	0.00	0.00	-2.0354D+03	-48.13	-39.60	0.00
906.340	6223.151	0.0000D+00	0.00	0.00	0.00	0.00	-2.1027D+03	-46.57	-39.59	0.00
912.500	6096.421	0.0000D+00	0.00	0.00	0.00	0.00	-2.1283D+03	-46.17	-39.59	0.00
929.000	5787.493	0.0000D+00	0.00	0.00	0.00	0.00	-2.1279D+03	-45.16	-39.53	0.00
934.000	5692.065	0.0000D+00	0.00	0.00	0.00	0.00	-2.3475D+03	-46.34	-43.72	0.00
940.650	5576.327	0.0000D+00	0.00	0.00	0.00	0.00	-2.3585D+03	-45.95	-43.71	0.00
954.711	5369.726	0.0000D+00	0.00	0.00	0.00	0.00	-2.4033D+03	-45.36	-43.71	0.00

Table A-13

PRIMARY DEPLETION - RUN TIME SUMMARY (continued)

Waskada Lower Amaranth Pool

980.410	5046.006	0.0000D+00	0.00	0.00	0.00	0.00	-2.5745D+03	-44.55	-43.70	0.00
986.245	4981.024	0.0000D+00	0.00	0.00	0.00	0.00	-2.6213D+03	-44.41	-43.70	0.00
990.621	4933.360	0.0000D+00	0.00	0.00	0.00	0.00	-2.6532D+03	-44.29	-43.70	0.00
993.903	4899.501	0.0000D+00	0.00	0.00	0.00	0.00	-2.6749D+03	-44.21	-43.69	0.00
998.326	4856.170	0.0000D+00	0.00	0.00	0.00	0.00	-2.6997D+03	-44.11	-43.69	0.00
1001.038	4830.493	0.0000D+00	0.00	0.00	0.00	0.00	-2.7139D+03	-44.05	-43.69	0.00
1002.394	4818.033	0.0000D+00	0.00	0.00	0.00	0.00	-2.7209D+03	-44.02	-43.69	0.00
1003.750	4805.915	0.0000D+00	0.00	0.00	0.00	0.00	-2.7276D+03	-43.98	-43.69	0.00
1005.298	4792.507	0.0000D+00	0.00	0.00	0.00	0.00	-2.7350D+03	-43.94	-43.69	0.00
1007.049	4777.857	0.0000D+00	0.00	0.00	0.00	0.00	-2.7431D+03	-43.90	-43.69	0.00
1007.539	4773.759	0.0000D+00	0.00	0.00	0.00	0.00	-2.7454D+03	-43.89	-43.68	0.00
1008.117	4769.170	0.0000D+00	0.00	0.00	0.00	0.00	-2.7481D+03	-43.88	-43.68	0.00
1010.541	4753.378	0.0000D+00	0.00	0.00	0.00	0.00	-2.7587D+03	-43.85	-43.68	0.00
1021.343	4680.296	0.0000D+00	0.00	0.00	0.00	0.00	-2.8020D+03	-43.67	-43.67	0.00
1038.121	4586.154	0.0000D+00	0.00	0.00	0.00	0.00	-2.8451D+03	-43.27	-43.49	0.00
1081.732	4414.638	0.0000D+00	0.00	0.00	0.00	0.00	-2.9331D+03	-42.51	-43.23	0.00
1095.000	4369.376	0.0000D+00	0.00	0.00	0.00	0.00	-2.9645D+03	-42.32	-43.17	0.00
1136.768	4244.249	0.0000D+00	0.00	0.00	0.00	0.00	-3.0964D+03	-41.81	-43.06	0.00
1186.250	4115.973	0.0000D+00	0.00	0.00	0.00	0.00	-3.2960D+03	-41.33	-42.96	0.00
1218.000	4045.577	0.0000D+00	0.00	0.00	0.00	0.00	-3.4404D+03	-41.07	-42.89	0.00
1223.000	4017.776	0.0000D+00	0.00	0.00	0.00	0.00	-4.3458D+03	-48.77	-59.88	0.00
1233.199	3979.297	0.0000D+00	0.00	0.00	0.00	0.00	-4.4321D+03	-48.74	-59.86	0.00
1256.285	3931.857	0.0000D+00	0.00	0.00	0.00	0.00	-4.6418D+03	-48.63	-59.80	0.00
1277.500	3897.703	0.0000D+00	0.00	0.00	0.00	0.00	-4.8129D+03	-48.54	-59.75	0.00
1306.029	3851.828	0.0000D+00	0.00	0.00	0.00	0.00	-5.0014D+03	-48.42	-59.67	0.00
1332.698	3808.591	0.0000D+00	0.00	0.00	0.00	0.00	-5.1319D+03	-48.12	-59.37	0.00
1368.750	3749.794	0.0000D+00	0.00	0.00	0.00	0.00	-5.2874D+03	-47.59	-58.82	0.00
1450.513	3612.376	0.0000D+00	0.00	0.00	0.00	0.00	-5.7129D+03	-46.61	-57.76	0.00
1460.000	3596.730	0.0000D+00	0.00	0.00	0.00	0.00	-5.7633D+03	-46.53	-57.63	0.00
1496.845	3534.904	0.0000D+00	0.00	0.00	0.00	0.00	-5.9830D+03	-46.15	-57.20	0.00
1551.250	3441.647	0.0000D+00	0.00	0.00	0.00	0.00	-6.3290D+03	-45.64	-56.58	0.00
1567.125	3414.656	0.0000D+00	0.00	0.00	0.00	0.00	-6.4352D+03	-45.53	-56.40	0.00
1583.000	3387.602	0.0000D+00	0.00	0.00	0.00	0.00	-6.5267D+03	-45.28	-56.15	0.00
1588.000	3377.894	0.0000D+00	0.00	0.00	0.00	0.00	-7.3167D+03	-53.07	-64.06	0.00
1602.934	3348.408	0.0000D+00	0.00	0.00	0.00	0.00	-7.5230D+03	-52.83	-63.81	0.00
1635.230	3283.682	0.0000D+00	0.00	0.00	0.00	0.00	-7.7975D+03	-52.30	-63.30	0.00
1642.500	3269.210	0.0000D+00	0.00	0.00	0.00	0.00	-7.8522D+03	-52.20	-63.16	0.00
1670.374	3213.404	0.0000D+00	0.00	0.00	0.00	0.00	-8.0383D+03	-51.67	-62.56	0.00
1733.750	3085.358	0.0000D+00	0.00	0.00	0.00	0.00	-8.4221D+03	-50.56	-61.22	0.00
1825.000	2901.487	0.0000D+00	0.00	0.00	0.00	0.00	-9.0061D+03	-48.50	-58.50	0.00
2034.442	2490.049	0.0000D+00	0.00	0.00	0.00	0.00	-9.7275D+03	-43.76	-51.58	0.00
2190.000	2219.772	0.0000D+00	0.00	0.00	0.00	0.00	-9.9691D+03	-40.56	-46.68	0.00
2510.199	1785.527	0.0000D+00	0.00	0.00	0.00	0.00	-8.7924D+03	-31.44	-34.13	0.00
2555.000	1732.479	0.0000D+00	0.00	0.00	0.00	0.00	-8.5739D+03	-30.23	-32.41	0.00
2720.424	1565.100	0.0000D+00	0.00	0.00	0.00	0.00	-7.7161D+03	-26.16	-26.64	0.00
2920.000	1400.157	0.0000D+00	0.00	0.00	0.00	0.00	-6.8384D+03	-22.42	-21.16	0.00
3285.000	1192.425	0.0000D+00	0.00	0.00	0.00	0.00	-5.5487D+03	-17.53	-14.55	0.00
3650.000	1052.631	0.0000D+00	0.00	0.00	0.00	0.00	-4.6082D+03	-14.00	-10.45	0.00

Table A-14

PRIMARY DEPLETION - CUMULATIVE INJECTION/PRODUCTION SUMMARY

Waskada Lower Amaranth Pool

CUMULATIVE INJECTION/PRODUCTION SUMMARY:

		INJECTION					PRODUCTION			
TIME days	PRESSURE kPa	GAS m 3	WATER m 3	OIL m 3	POLYMER kg	AQUIFER m 3	GAS m 3	WATER m 3	OIL m 3	POLYMER kg
0.250	8694.356	0.0000D+00	0.00	0.00	0.00	0.00	-6.1559D+00	-0.32	-0.12	0.00
1.319	8693.921	0.0000D+00	0.00	0.00	0.00	0.00	-3.2480D+01	-1.67	-0.63	0.00
5.525	8692.209	0.0000D+00	0.00	0.00	0.00	0.00	-1.3605D+02	-6.99	-2.65	0.00
21.796	8685.175	0.0000D+00	0.00	0.00	0.00	0.00	-5.3668D+02	-27.58	-10.46	0.00
80.216	8660.087	0.0000D+00	0.00	0.00	0.00	0.00	-1.9752D+03	-101.63	-38.50	0.00
91.250	8655.682	0.0000D+00	0.00	0.00	0.00	0.00	-2.2468D+03	-115.62	-43.80	0.00
137.125	8636.066	0.0000D+00	0.00	0.00	0.00	0.00	-3.3764D+03	-173.89	-65.82	0.00
182.500	8618.072	0.0000D+00	0.00	0.00	0.00	0.00	-4.4936D+03	-231.61	-87.59	0.00
183.000	8617.921	0.0000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
188.000	8617.967	0.0000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
201.000	8618.063	0.0000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
214.000	8618.174	0.0000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
219.000	8613.067	0.0000D+00	0.00	0.00	0.00	0.00	-4.7880D+03	-247.41	-93.33	0.00
228.960	8602.952	0.0000D+00	0.00	0.00	0.00	0.00	-5.3500D+03	-277.53	-104.29	0.00
258.384	8573.319	0.0000D+00	0.00	0.00	0.00	0.00	-7.0101D+03	-366.07	-136.65	0.00
273.750	8557.892	0.0000D+00	0.00	0.00	0.00	0.00	-7.8771D+03	-412.22	-153.55	0.00
332.408	8499.514	0.0000D+00	0.00	0.00	0.00	0.00	-1.1187D+04	-587.36	-218.07	0.00
365.000	8467.202	0.0000D+00	0.00	0.00	0.00	0.00	-1.3025D+04	-684.40	-253.92	0.00
456.250	8377.310	0.0000D+00	0.00	0.00	0.00	0.00	-1.8174D+04	-954.24	-354.28	0.00
547.500	8288.028	0.0000D+00	0.00	0.00	0.00	0.00	-2.3322D+04	-1222.38	-454.64	0.00
579.000	8257.373	0.0000D+00	0.00	0.00	0.00	0.00	-2.5099D+04	-1314.76	-489.29	0.00
584.000	8257.011	0.0000D+00	0.00	0.00	0.00	0.00	-2.5130D+04	-1315.93	-489.89	0.00
594.572	8256.311	0.0000D+00	0.00	0.00	0.00	0.00	-2.5195D+04	-1318.45	-491.16	0.00
624.000	8254.221	0.0000D+00	0.00	0.00	0.00	0.00	-2.5376D+04	-1325.54	-494.69	0.00
629.000	8250.342	0.0000D+00	0.00	0.00	0.00	0.00	-2.5814D+04	-1332.77	-503.24	0.00
638.750	8242.695	0.0000D+00	0.00	0.00	0.00	0.00	-2.6668D+04	-1346.98	-519.91	0.00
641.000	8241.067	0.0000D+00	0.00	0.00	0.00	0.00	-2.6865D+04	-1350.27	-523.76	0.00
646.000	8218.873	0.0000D+00	0.00	0.00	0.00	0.00	-2.9307D+04	-1389.96	-571.41	0.00
652.103	8191.805	0.0000D+00	0.00	0.00	0.00	0.00	-3.2288D+04	-1438.32	-629.57	0.00
663.485	8140.846	0.0000D+00	0.00	0.00	0.00	0.00	-3.7846D+04	-1528.34	-738.02	0.00
682.321	8056.600	0.0000D+00	0.00	0.00	0.00	0.00	-4.7044D+04	-1677.16	-917.52	0.00
706.161	7949.993	0.0000D+00	0.00	0.00	0.00	0.00	-5.8685D+04	-1865.46	-1144.70	0.00
730.000	7843.321	0.0000D+00	0.00	0.00	0.00	0.00	-7.0326D+04	-2053.84	-1371.87	0.00
735.000	7829.394	0.0000D+00	0.00	0.00	0.00	0.00	-7.1887D+04	-2079.02	-1402.33	0.00
747.534	7794.644	0.0000D+00	0.00	0.00	0.00	0.00	-7.5799D+04	-2142.36	-1478.67	0.00
775.267	7717.969	0.0000D+00	0.00	0.00	0.00	0.00	-8.4454D+04	-2283.16	-1647.56	0.00
803.000	7641.330	0.0000D+00	0.00	0.00	0.00	0.00	-9.3108D+04	-2424.49	-1816.44	0.00
808.000	7615.813	0.0000D+00	0.00	0.00	0.00	0.00	-9.6962D+04	-2466.98	-1874.09	0.00
812.500	7592.850	0.0000D+00	0.00	0.00	0.00	0.00	-9.8720D+04	-2505.21	-1925.97	0.00
817.000	7569.884	0.0000D+00	0.00	0.00	0.00	0.00	-1.0138D+05	-2543.47	-1977.86	0.00
821.250	7542.666	0.0000D+00	0.00	0.00	0.00	0.00	-1.0425D+05	-2594.52	-2033.87	0.00
822.000	7538.412	0.0000D+00	0.00	0.00	0.00	0.00	-1.0475D+05	-2603.52	-2043.75	0.00
827.000	7512.727	0.0000D+00	0.00	0.00	0.00	0.00	-1.0742D+05	-2652.02	-2095.85	0.00
832.000	7487.093	0.0000D+00	0.00	0.00	0.00	0.00	-1.1009D+05	-2700.54	-2147.95	0.00
835.000	7461.592	0.0000D+00	0.00	0.00	0.00	0.00	-1.1239D+05	-2756.05	-2192.71	0.00
837.000	7440.512	0.0000D+00	0.00	0.00	0.00	0.00	-1.1457D+05	-2796.42	-2235.33	0.00
842.000	7374.282	0.0000D+00	0.00	0.00	0.00	0.00	-1.2151D+05	-2921.96	-2370.76	0.00
847.000	7308.207	0.0000D+00	0.00	0.00	0.00	0.00	-1.2844D+05	-3047.32	-2506.20	0.00
852.000	7242.301	0.0000D+00	0.00	0.00	0.00	0.00	-1.3538D+05	-3172.55	-2641.64	0.00
857.000	7176.724	0.0000D+00	0.00	0.00	0.00	0.00	-1.4229D+05	-3297.21	-2776.58	0.00
866.000	7058.933	0.0000D+00	0.00	0.00	0.00	0.00	-1.5473D+05	-3521.33	-3019.46	0.00
871.000	6971.667	0.0000D+00	0.00	0.00	0.00	0.00	-1.6395D+05	-3681.86	-3199.45	0.00
876.000	6885.935	0.0000D+00	0.00	0.00	0.00	0.00	-1.7317D+05	-3842.14	-3379.44	0.00
878.500	6828.650	0.0000D+00	0.00	0.00	0.00	0.00	-1.7824D+05	-3968.34	-3478.43	0.00
880.393	6786.747	0.0000D+00	0.00	0.00	0.00	0.00	-1.8208D+05	-4063.12	-3553.40	0.00
884.267	6698.752	0.0000D+00	0.00	0.00	0.00	0.00	-1.8794D+05	-4254.46	-3706.78	0.00
891.810	6537.753	0.0000D+00	0.00	0.00	0.00	0.00	-2.0530D+05	-4617.51	-4005.48	0.00
906.340	6223.151	0.0000D+00	0.00	0.00	0.00	0.00	-2.3585D+05	-5294.08	-4580.78	0.00
912.500	6096.421	0.0000D+00	0.00	0.00	0.00	0.00	-2.4896D+05	-5578.51	-4824.69	0.00
929.000	5787.493	0.0000D+00	0.00	0.00	0.00	0.00	-2.8407D+05	-6323.60	-5476.88	0.00
934.000	5697.065	0.0000D+00	0.00	0.00	0.00	0.00	-2.9581D+05	-6555.28	-5695.48	0.00
940.650	5576.327	0.0000D+00	0.00	0.00	0.00	0.00	-3.1149D+05	-6860.86	-5986.12	0.00
954.711	5369.726	0.0000D+00	0.00	0.00	0.00	0.00	-3.4528D+05	-7498.64	-6600.65	0.00
980.410	5046.006	0.0000D+00	0.00	0.00	0.00	0.00	-4.1145D+05	-8543.65	-7723.72	0.00
986.245	4981.024	0.0000D+00	0.00	0.00	0.00	0.00	-4.2674D+05	-8902.77	-7979.69	0.00
990.621	4937.360	0.0000D+00	0.00	0.00	0.00	0.00	-4.3335D+05	-9096.61	-8169.91	0.00

Table A-14

PRIMARY DEPLETION - CUMULATIVE INJECTION/PRODUCTION SUMMARY (continued)

Waskada Lower Amaranth Pool

993.903	4899.501	0.00000D+00	0.00	0.00	0.00	0.00	-4.4713D+05	-9241.72	-8313.32	0.00
998.326	4856.170	0.00000D+00	0.00	0.00	0.00	0.00	-4.5907D+05	-9436.83	-8506.57	0.00
1001.038	4830.493	0.00000D+00	0.00	0.00	0.00	0.00	-4.6643D+05	-9556.29	-8625.04	0.00
1002.394	4818.033	0.00000D+00	0.00	0.00	0.00	0.00	-4.7012D+05	-9615.99	-8684.28	0.00
1003.750	4805.915	0.00000D+00	0.00	0.00	0.00	0.00	-4.7382D+05	-9675.62	-8743.52	0.00
1005.298	4792.507	0.00000D+00	0.00	0.00	0.00	0.00	-4.7805D+05	-9743.65	-8811.14	0.00
1007.049	4777.857	0.00000D+00	0.00	0.00	0.00	0.00	-4.8286D+05	-9820.51	-8887.62	0.00
1007.539	4773.759	0.00000D+00	0.00	0.00	0.00	0.00	-4.8420D+05	-9842.02	-8909.03	0.00
1008.117	4769.170	0.00000D+00	0.00	0.00	0.00	0.00	-4.8579D+05	-9867.40	-8934.30	0.00
1010.541	4753.378	0.00000D+00	0.00	0.00	0.00	0.00	-4.9248D+05	-9973.66	-9040.19	0.00
1021.343	4680.296	0.00000D+00	0.00	0.00	0.00	0.00	-5.2274D+05	-10445.32	-9511.94	0.00
1038.121	4586.154	0.00000D+00	0.00	0.00	0.00	0.00	-5.7948D+05	-11171.36	-10241.67	0.00
1081.732	4414.638	0.00000D+00	0.00	0.00	0.00	0.00	-6.9839D+05	-13025.19	-12126.86	0.00
1095.000	4369.376	0.00000D+00	0.00	0.00	0.00	0.00	-7.3773D+05	-13586.73	-12699.62	0.00
1136.768	4244.249	0.00000D+00	0.00	0.00	0.00	0.00	-8.6705D+05	-15333.09	-14498.25	0.00
1186.250	4115.973	0.00000D+00	0.00	0.00	0.00	0.00	-1.0301D+06	-17378.10	-16623.93	0.00
1218.000	4045.577	0.00000D+00	0.00	0.00	0.00	0.00	-1.1394D+06	-18682.09	-17985.68	0.00
1223.000	4017.776	0.00000D+00	0.00	0.00	0.00	0.00	-1.1611D+06	-18925.93	-18285.07	0.00
1233.199	3979.297	0.00000D+00	0.00	0.00	0.00	0.00	-1.2063D+06	-19423.01	-18895.55	0.00
1256.285	3931.857	0.00000D+00	0.00	0.00	0.00	0.00	-1.3135D+06	-20545.74	-20276.10	0.00
1277.500	3897.703	0.00000D+00	0.00	0.00	0.00	0.00	-1.4156D+06	-21575.56	-21543.62	0.00
1306.029	3851.828	0.00000D+00	0.00	0.00	0.00	0.00	-1.5583D+06	-22956.79	-23245.91	0.00
1332.698	3808.591	0.00000D+00	0.00	0.00	0.00	0.00	-1.6951D+06	-24240.05	-24829.25	0.00
1368.750	3749.794	0.00000D+00	0.00	0.00	0.00	0.00	-1.8857D+06	-25955.91	-26949.79	0.00
1450.513	3612.376	0.00000D+00	0.00	0.00	0.00	0.00	-2.3528D+06	-29767.13	-31672.07	0.00
1460.000	3596.730	0.00000D+00	0.00	0.00	0.00	0.00	-2.4075D+06	-30208.63	-32218.83	0.00
1496.845	3534.904	0.00000D+00	0.00	0.00	0.00	0.00	-2.6280D+06	-31909.07	-34326.30	0.00
1551.250	3441.647	0.00000D+00	0.00	0.00	0.00	0.00	-2.9723D+06	-34392.09	-37404.53	0.00
1567.125	3414.656	0.00000D+00	0.00	0.00	0.00	0.00	-3.0745D+06	-35114.83	-38299.83	0.00
1583.000	3397.602	0.00000D+00	0.00	0.00	0.00	0.00	-3.1781D+06	-35833.57	-39191.23	0.00
1588.000	3377.894	0.00000D+00	0.00	0.00	0.00	0.00	-3.2146D+06	-36098.92	-39511.53	0.00
1602.934	3348.408	0.00000D+00	0.00	0.00	0.00	0.00	-3.3270D+06	-36887.85	-40464.50	0.00
1635.230	3283.682	0.00000D+00	0.00	0.00	0.00	0.00	-3.5788D+06	-38577.04	-42508.67	0.00
1642.500	3269.210	0.00000D+00	0.00	0.00	0.00	0.00	-3.6359D+06	-38956.48	-42967.84	0.00
1670.374	3213.404	0.00000D+00	0.00	0.00	0.00	0.00	-3.8600D+06	-40396.85	-44711.54	0.00
1733.750	3085.358	0.00000D+00	0.00	0.00	0.00	0.00	-4.3982D+06	-43601.18	-48591.20	0.00

1825.000	2901.487	0.00000D+00	0.00	0.00	0.00	0.00	-5.2200D+06	-48026.57	-53929.59	0.00
2034.442	2490.049	0.00000D+00	0.00	0.00	0.00	0.00	-7.2573D+06	-57191.45	-64732.11	0.00
2190.000	2219.772	0.00000D+00	0.00	0.00	0.00	0.00	-8.8081D+06	-63500.82	-71993.42	0.00
2510.199	1785.527	0.00000D+00	0.00	0.00	0.00	0.00	-1.1623D+07	-73566.81	-82921.23	0.00
2555.000	1732.479	0.00000D+00	0.00	0.00	0.00	0.00	-1.2008D+07	-74921.20	-84373.06	0.00
2720.424	1565.100	0.00000D+00	0.00	0.00	0.00	0.00	-1.3284D+07	-79248.22	-88780.74	0.00
2920.000	1400.157	0.00000D+00	0.00	0.00	0.00	0.00	-1.4649D+07	-83723.15	-93003.08	0.00
3285.000	1192.425	0.00000D+00	0.00	0.00	0.00	0.00	-1.6674D+07	-90121.34	-98313.03	0.00
3650.000	1057.631	0.00000D+00	0.00	0.00	0.00	0.00	-1.8356D+07	-95230.68	-102125.67	0.00

Table A-15

PRIMARY DEPLETION - OIL SATURATION AT THE END OF THE FORECAST

Waskada Lower Amaranth Pool

time: 3650.000 days

plane z= 1

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.35168	0.19635	0.19989	0.21009	0.21866	0.21873	0.21639	0.21783	0.21730	0.22073
y = 14	0.19292	0.19925	0.20205	0.21128	0.21975	0.22544	0.22108	0.21963	0.22213	0.25887
y = 13	0.19574	0.19996	0.20735	0.21360	0.21973	0.23061	0.23818	0.24271	0.26153	0.25957
y = 12	0.20532	0.20687	0.20898	0.21166	0.21902	0.23047	0.25981	0.26103	0.26131	0.24848
y = 11	0.21047	0.21139	0.20706	0.20931	0.21589	0.22941	0.26072	0.26527	0.26158	0.26474
y = 10	0.21382	0.21573	0.21605	0.21304	0.21785	0.22752	0.23903	0.24402	0.24045	0.23114
y = 9	0.21323	0.21700	0.22021	0.22208	0.22301	0.22297	0.21970	0.21427	0.21943	0.21913
y = 8	0.20971	0.21478	0.21858	0.22116	0.22240	0.22092	0.20933	0.34867	0.20887	0.21420
y = 7	0.20134	0.20715	0.21031	0.22049	0.22232	0.22046	0.21194	0.20657	0.21013	0.21274
y = 6	0.19513	0.19860	0.21174	0.22055	0.22540	0.22439	0.21286	0.20978	0.21002	0.21067
y = 5	0.19135	0.19726	0.21183	0.22527	0.22648	0.22305	0.21291	0.20972	0.20876	0.20823
y = 4	0.19828	0.20005	0.21037	0.22056	0.22443	0.21942	0.20946	0.20753	0.20720	0.20704
y = 3	0.20592	0.20769	0.21136	0.21629	0.21652	0.21383	0.20584	0.20348	0.20486	0.20631
y = 2	0.21855	0.21645	0.21283	0.21126	0.21103	0.20869	0.20117	0.19881	0.20146	0.20400
y = 1	0.21842	0.21909	0.21342	0.21061	0.21072	0.20762	0.19941	0.19480	0.20011	0.20346

	x = 11	12	13	14	15
y = 15	0.22610	0.22648	0.22895	0.22891	0.22882
y = 14	0.23093	0.23099	0.23032	0.22914	0.22787
y = 13	0.23640	0.23320	0.23011	0.22778	0.22636
y = 12	0.23793	0.23098	0.22771	0.22549	0.22501
y = 11	0.23273	0.22837	0.22296	0.22185	0.22143
y = 10	0.22248	0.21848	0.21814	0.21858	0.21827
y = 9	0.21671	0.21620	0.21631	0.21709	0.21789
y = 8	0.21611	0.21568	0.21535	0.21690	0.21741
y = 7	0.21253	0.21420	0.21583	0.21854	0.22096
y = 6	0.21037	0.21094	0.21467	0.22241	0.22610
y = 5	0.20797	0.21023	0.21518	0.22730	0.22879
y = 4	0.20912	0.21308	0.21689	0.22891	0.23028
y = 3	0.20903	0.21311	0.22037	0.22851	0.23016
y = 2	0.21023	0.21893	0.22496	0.22987	0.23032
y = 1	0.20985	0.22039	0.22670	0.23015	0.22452

plane z= 2

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.24934	0.24604	0.24172	0.24666	0.24778	0.24274	0.23921	0.23816	0.24010	0.24281
y = 14	0.24389	0.24547	0.24383	0.24778	0.24941	0.24898	0.24246	0.23889	0.24336	0.24933
y = 13	0.23950	0.24203	0.24626	0.24919	0.25162	0.25813	0.26286	0.26777	0.26739	0.26544
y = 12	0.24182	0.24322	0.24606	0.24820	0.24985	0.25910	0.28139	0.28282	0.28743	0.27863
y = 11	0.24183	0.24375	0.24480	0.24573	0.24850	0.25950	0.28307	0.29226	0.29018	0.27996
y = 10	0.23866	0.24074	0.24089	0.24049	0.24580	0.25796	0.26736	0.27204	0.27063	0.26890
y = 9	0.23737	0.23806	0.24216	0.24814	0.25189	0.24744	0.24633	0.24706	0.24757	0.25343
y = 8	0.23195	0.23628	0.24160	0.24573	0.25210	0.24327	0.24236	0.23931	0.24256	0.24665
y = 7	0.22884	0.23298	0.24222	0.24490	0.25226	0.24403	0.23958	0.23919	0.23968	0.24337
y = 6	0.21008	0.21876	0.24070	0.24772	0.25025	0.25039	0.24115	0.23813	0.24002	0.24991
y = 5	0.21227	0.21576	0.23092	0.24029	0.24313	0.24754	0.24662	0.24731	0.24972	0.25328
y = 4	0.21577	0.21963	0.22917	0.23512	0.23854	0.24432	0.24338	0.24259	0.24728	0.25284
y = 3	0.21838	0.22364	0.23180	0.23765	0.23986	0.24609	0.24377	0.24223	0.24561	0.25305
y = 2	0.22057	0.22363	0.23504	0.23910	0.24037	0.24731	0.24637	0.24377	0.24800	0.25284
y = 1	0.21891	0.22127	0.23470	0.23561	0.23929	0.24681	0.24588	0.23854	0.24756	0.25287

	x = 11	12	13	14	15
y = 15	0.24937	0.25184	0.25208	0.25416	0.25427
y = 14	0.25241	0.25348	0.25566	0.25609	0.25670
y = 13	0.26105	0.26093	0.25968	0.25964	0.26125
y = 12	0.26451	0.25996	0.26034	0.26067	0.25958
y = 11	0.26678	0.26114	0.26128	0.25992	0.25832
y = 10	0.26282	0.25829	0.25846	0.25944	0.26014
y = 9	0.26176	0.25905	0.25673	0.25751	0.25921
y = 8	0.25768	0.25536	0.25302	0.25701	0.25477
y = 7	0.25638	0.25341	0.25210	0.26055	0.25945
y = 6	0.25292	0.25292	0.25732	0.26219	0.26281
y = 5	0.25562	0.25842	0.26139	0.26382	0.26270
y = 4	0.25537	0.25818	0.26209	0.26579	0.26414
y = 3	0.25664	0.26021	0.26510	0.26865	0.26844
y = 2	0.25770	0.26373	0.26733	0.27071	0.27044
y = 1	0.25643	0.26267	0.26764	0.27047	0.26225

plane z= 3

Table A-15

PRIMARY DEPLETION - OIL SATURATION AT THE END OF THE FORECAST (continued)

Waskada Lower Amaranth Pool

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.30290	0.30189	0.29674	0.29150	0.28893	0.28667	0.28154	0.27831	0.28179	0.28332
y = 14	0.30169	0.30059	0.29486	0.29027	0.28758	0.28729	0.28266	0.28036	0.28270	0.28434
y = 13	0.29552	0.29360	0.28766	0.28464	0.28465	0.28665	0.28579	0.28590	0.28574	0.28458
y = 12	0.28493	0.28387	0.27936	0.27826	0.28025	0.28385	0.28584	0.28053	0.28299	0.28175
y = 11	0.27506	0.27363	0.27177	0.27226	0.27517	0.28039	0.28169	0.28199	0.28057	0.27732
y = 10	0.26260	0.26375	0.26480	0.26563	0.26843	0.27283	0.27470	0.27641	0.27404	0.26902
y = 9	0.25431	0.25620	0.26011	0.26301	0.26535	0.26426	0.25864	0.25741	0.25785	0.25986
y = 8	0.24381	0.24825	0.25504	0.25568	0.26153	0.26009	0.25308	0.24923	0.25229	0.25382
y = 7	0.22812	0.23573	0.24654	0.25153	0.25507	0.25416	0.24818	0.24729	0.24790	0.25066
y = 6	0.20446	0.21400	0.22801	0.23426	0.23603	0.23870	0.23766	0.23638	0.24019	0.24760
y = 5	0.20541	0.20977	0.21726	0.21788	0.21992	0.22483	0.22382	0.22464	0.23138	0.24116
y = 4	0.21793	0.21919	0.21484	0.21363	0.21497	0.21953	0.21835	0.22052	0.22655	0.23858
y = 3	0.23135	0.22893	0.22089	0.21393	0.21493	0.21903	0.21967	0.22072	0.22686	0.23886
y = 2	0.23657	0.23760	0.22872	0.21529	0.21313	0.21952	0.22303	0.22409	0.22780	0.23961
y = 1	0.23538	0.23649	0.22945	0.21483	0.21185	0.21944	0.22361	0.22001	0.22680	0.23167

x =	11	12	13	14	15
y = 15	0.28080	0.27729	0.27687	0.27431	0.27192
y = 14	0.28060	0.27821	0.27644	0.27354	0.27203
y = 13	0.27886	0.27557	0.27273	0.26949	0.26759
y = 12	0.27483	0.26906	0.26758	0.26433	0.26303
y = 11	0.26950	0.26398	0.26044	0.25877	0.25825
y = 10	0.26179	0.25721	0.25837	0.25587	0.25540
y = 9	0.25691	0.25717	0.25621	0.25452	0.25496
y = 8	0.25529	0.25115	0.25307	0.25411	0.25319
y = 7	0.25079	0.25197	0.25308	0.25569	0.25672
y = 6	0.24796	0.24945	0.25307	0.25787	0.25858
y = 5	0.24873	0.24874	0.25210	0.25845	0.25892
y = 4	0.24541	0.24847	0.25161	0.25719	0.25701
y = 3	0.24384	0.24800	0.25194	0.25570	0.25409
y = 2	0.24201	0.24960	0.25251	0.25443	0.25448
y = 1	0.24108	0.24864	0.25274	0.25420	0.24864

plane z= 4

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.32713	0.32114	0.31092	0.28819	0.27795	0.27505	0.27453	0.27167	0.27238	0.27085
y = 14	0.32140	0.31865	0.30503	0.28954	0.28147	0.27687	0.27421	0.27255	0.27174	0.27088
y = 13	0.31581	0.30784	0.29380	0.28794	0.28509	0.27939	0.27465	0.27132	0.27047	0.26931
y = 12	0.29638	0.28986	0.28393	0.28487	0.28682	0.28094	0.27330	0.26854	0.26867	0.26675
y = 11	0.27256	0.27008	0.27032	0.27502	0.27894	0.27577	0.27005	0.26860	0.26539	0.26141
y = 10	0.24963	0.25146	0.25594	0.25820	0.25971	0.26028	0.26214	0.26393	0.25958	0.25094
y = 9	0.22801	0.23393	0.24337	0.24571	0.24668	0.24687	0.24728	0.24652	0.24548	0.23813
y = 8	0.20836	0.21699	0.23473	0.23600	0.23907	0.23921	0.23978	0.23763	0.23863	0.23030
y = 7	0.18197	0.18863	0.21613	0.22650	0.22684	0.22830	0.22943	0.23146	0.22821	0.22296
y = 6	0.19233	0.16985	0.17505	0.18778	0.19133	0.19708	0.19985	0.19899	0.20377	0.20621
y = 5	0.21222	0.20738	0.14784	0.15964	0.16395	0.17141	0.17268	0.17572	0.18506	0.19501
y = 4	0.22645	0.21301	0.14800	0.16013	0.15580	0.16176	0.16094	0.16779	0.17402	0.19046
y = 3	0.19506	0.18329	0.16306	0.15596	0.15151	0.15913	0.16161	0.16452	0.17429	0.18716
y = 2	0.22560	0.21610	0.18165	0.14917	0.14262	0.15743	0.16805	0.17173	0.17676	0.18459
y = 1	0.22623	0.22286	0.18672	0.13214	0.13820	0.15687	0.17214	0.17229	0.17773	0.18289

x =	11	12	13	14	15
y = 15	0.26775	0.26481	0.26291	0.25872	0.25656
y = 14	0.26757	0.26440	0.26091	0.25718	0.25496
y = 13	0.26458	0.25921	0.25588	0.25140	0.24851
y = 12	0.26147	0.25490	0.25065	0.24640	0.24528
y = 11	0.25283	0.24531	0.23968	0.23755	0.23719
y = 10	0.24051	0.23364	0.23197	0.23159	0.23200
y = 9	0.23297	0.22984	0.22854	0.22986	0.23211
y = 8	0.22713	0.22611	0.22608	0.22963	0.23218
y = 7	0.22109	0.22198	0.22492	0.23283	0.23802
y = 6	0.20658	0.20966	0.22188	0.23852	0.24424
y = 5	0.20033	0.20409	0.21977	0.24244	0.24562
y = 4	0.19933	0.20630	0.21977	0.23860	0.24122
y = 3	0.19941	0.20845	0.22282	0.23453	0.23653
y = 2	0.19986	0.21654	0.22770	0.23349	0.23422
y = 1	0.20078	0.21985	0.23038	0.23377	0.22940

Table A-16

GAS INJECTION - RUN TIME SUMMARY

Waskada Lower Amaranth Pool

RATE INJECTION/PRODUCTION SUMMARY:

TIME days	PRESSURE kPa	INJECTION GAS m 3/day	INJECTION WATER m 3/day	INJECTION OIL m 3/day	INJECTION POLYMER kg/day	INJECTION AQUIFER m 3/day	PRODUCTION GAS m 3/day	PRODUCTION WATER m 3/day	PRODUCTION OIL m 3/day	PRODUCTION POLYMER kg/day
0.250	8694.356	0.00000D+00	0.00	0.00	0.00	0.00	-2.4624D+01	-1.27	-0.48	0.00
1.319	8693.921	0.00000D+00	0.00	0.00	0.00	0.00	-2.4622D+01	-1.27	-0.48	0.00
5.525	8692.209	0.00000D+00	0.00	0.00	0.00	0.00	-2.4622D+01	-1.27	-0.48	0.00
21.796	8685.175	0.00000D+00	0.00	0.00	0.00	0.00	-2.4624D+01	-1.27	-0.48	0.00
80.216	8660.087	0.00000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
91.250	8655.682	0.00000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
137.125	8636.066	0.00000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
182.500	8618.072	0.00000D+00	0.00	0.00	0.00	0.00	-2.4620D+01	-1.27	-0.48	0.00
183.000	8617.921	0.00000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
188.000	8617.967	0.00000D+00	0.00	0.00	0.00	0.00	0.00000D+00	0.00	0.00	0.00
201.000	8618.063	0.00000D+00	0.00	0.00	0.00	0.00	0.00000D+00	0.00	0.00	0.00
214.000	8618.174	0.00000D+00	0.00	0.00	0.00	0.00	0.00000D+00	0.00	0.00	0.00
219.000	8613.067	0.00000D+00	0.00	0.00	0.00	0.00	-5.6424D+01	-3.03	-1.10	0.00
228.960	8602.952	0.00000D+00	0.00	0.00	0.00	0.00	-5.6424D+01	-3.02	-1.10	0.00
258.384	8573.319	0.00000D+00	0.00	0.00	0.00	0.00	-5.6421D+01	-3.01	-1.10	0.00
273.750	8557.892	0.00000D+00	0.00	0.00	0.00	0.00	-5.6424D+01	-3.00	-1.10	0.00
332.408	8499.514	0.00000D+00	0.00	0.00	0.00	0.00	-5.6419D+01	-2.99	-1.10	0.00
365.000	8467.202	0.00000D+00	0.00	0.00	0.00	0.00	-5.6422D+01	-2.98	-1.10	0.00
456.250	8377.310	0.00000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.96	-1.10	0.00
547.500	8288.028	0.00000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.94	-1.10	0.00
579.000	8257.323	0.00000D+00	0.00	0.00	0.00	0.00	-5.6421D+01	-2.93	-1.10	0.00
584.000	8257.011	0.00000D+00	0.00	0.00	0.00	0.00	-6.1557D+00	-0.23	-0.12	0.00
594.572	8256.311	0.00000D+00	0.00	0.00	0.00	0.00	-6.1557D+00	-0.24	-0.12	0.00
624.000	8254.221	0.00000D+00	0.00	0.00	0.00	0.00	-6.1559D+00	-0.24	-0.12	0.00
629.000	8250.342	0.00000D+00	0.00	0.00	0.00	0.00	-8.7624D+01	-1.45	-1.71	0.00
638.750	8242.695	0.00000D+00	0.00	0.00	0.00	0.00	-8.7624D+01	-1.46	-1.71	0.00
641.000	8241.067	0.00000D+00	0.00	0.00	0.00	0.00	-8.7624D+01	-1.46	-1.71	0.00
646.000	8218.873	0.00000D+00	0.00	0.00	0.00	0.00	-4.8834D+02	-7.94	-9.53	0.00
652.103	8191.805	0.00000D+00	0.00	0.00	0.00	0.00	-4.8833D+02	-7.92	-9.53	0.00
663.485	8140.846	0.00000D+00	0.00	0.00	0.00	0.00	-4.8834D+02	-7.91	-9.53	0.00
682.321	8056.600	0.00000D+00	0.00	0.00	0.00	0.00	-4.8833D+02	-7.90	-9.53	0.00
706.161	7949.993	0.00000D+00	0.00	0.00	0.00	0.00	-4.8832D+02	-7.90	-9.53	0.00
730.000	7843.321	0.00000D+00	0.00	0.00	0.00	0.00	-4.8832D+02	-7.90	-9.53	0.00
735.000	7829.394	0.00000D+00	0.00	0.00	0.00	0.00	-3.1212D+02	-5.04	-6.09	0.00
747.534	7794.644	0.00000D+00	0.00	0.00	0.00	0.00	-3.1211D+02	-5.05	-6.09	0.00
775.267	7717.969	0.00000D+00	0.00	0.00	0.00	0.00	-3.1208D+02	-5.08	-6.09	0.00
803.000	7641.330	0.00000D+00	0.00	0.00	0.00	0.00	-3.1206D+02	-5.10	-6.09	0.00
808.000	7615.813	0.00000D+00	0.00	0.00	0.00	0.00	-5.9077D+02	-8.50	-11.53	0.00
812.500	7592.850	0.00000D+00	0.00	0.00	0.00	0.00	-5.9071D+02	-8.50	-11.53	0.00
817.000	7569.884	0.00000D+00	0.00	0.00	0.00	0.00	-5.9071D+02	-8.50	-11.53	0.00
821.250	7542.666	0.00000D+00	0.00	0.00	0.00	0.00	-6.7530D+02	-12.01	-13.18	0.00
822.000	7538.412	0.00000D+00	0.00	0.00	0.00	0.00	-6.7529D+02	-12.01	-13.18	0.00
827.000	7512.727	0.00000D+00	0.00	0.00	0.00	0.00	-5.3386D+02	-9.70	-10.42	0.00
832.000	7487.093	0.00000D+00	0.00	0.00	0.00	0.00	-5.3386D+02	-9.71	-10.42	0.00
835.000	7461.592	0.00000D+00	0.00	0.00	0.00	0.00	-7.6461D+02	-13.50	-14.92	0.00
837.000	7440.512	0.00000D+00	0.00	0.00	0.00	0.00	-1.0914D+03	-20.18	-21.31	0.00
842.000	7374.282	0.00000D+00	0.00	0.00	0.00	0.00	-1.3875D+03	-25.11	-27.09	0.00
847.000	7308.207	0.00000D+00	0.00	0.00	0.00	0.00	-1.3875D+03	-25.07	-27.09	0.00
852.000	7242.301	0.00000D+00	0.00	0.00	0.00	0.00	-1.3875D+03	-25.05	-27.09	0.00
857.000	7176.724	0.00000D+00	0.00	0.00	0.00	0.00	-1.3823D+03	-24.93	-26.99	0.00
866.000	7058.933	0.00000D+00	0.00	0.00	0.00	0.00	-1.3822D+03	-24.90	-26.99	0.00
871.000	6971.667	0.00000D+00	0.00	0.00	0.00	0.00	-1.8440D+03	-32.11	-36.00	0.00
876.000	6885.935	0.00000D+00	0.00	0.00	0.00	0.00	-1.8438D+03	-32.06	-36.00	0.00
878.500	6828.650	0.00000D+00	0.00	0.00	0.00	0.00	-2.0287D+03	-50.48	-39.60	0.00
880.393	6786.247	0.00000D+00	0.00	0.00	0.00	0.00	-2.0287D+03	-50.07	-39.60	0.00
884.267	6698.752	0.00000D+00	0.00	0.00	0.00	0.00	-2.0287D+03	-49.40	-39.60	0.00
891.810	6533.753	0.00000D+00	0.00	0.00	0.00	0.00	-2.0354D+03	-48.13	-39.60	0.00
906.340	6223.151	0.00000D+00	0.00	0.00	0.00	0.00	-2.1027D+03	-46.57	-39.59	0.00
912.500	6096.421	0.00000D+00	0.00	0.00	0.00	0.00	-2.1283D+03	-46.17	-39.59	0.00
929.000	5787.493	0.00000D+00	0.00	0.00	0.00	0.00	-2.1279D+03	-45.16	-39.53	0.00
934.000	5692.065	0.00000D+00	0.00	0.00	0.00	0.00	-2.3475D+03	-46.34	-43.72	0.00
940.650	5576.327	0.00000D+00	0.00	0.00	0.00	0.00	-2.3585D+03	-45.95	-43.71	0.00
954.711	5369.726	0.00000D+00	0.00	0.00	0.00	0.00	-2.4033D+03	-45.36	-43.71	0.00

Table A-16

GAS INJECTION - RUN TIME SUMMARY (continued)

Waskada Lower Amaranth Pool

980.410	5046.006	0.0000D+00	0.00	0.00	0.00	0.00	-2.5745D+03	-44.55	-43.70	0.00
986.245	4981.024	0.0000D+00	0.00	0.00	0.00	0.00	-2.6213D+03	-44.41	-43.70	0.00
990.621	4933.360	0.0000D+00	0.00	0.00	0.00	0.00	-2.6532D+03	-44.29	-43.70	0.00
993.903	4899.501	0.0000D+00	0.00	0.00	0.00	0.00	-2.6749D+03	-44.21	-43.69	0.00
998.326	4856.170	0.0000D+00	0.00	0.00	0.00	0.00	-2.6997D+03	-44.11	-43.69	0.00
1001.038	4830.493	0.0000D+00	0.00	0.00	0.00	0.00	-2.7139D+03	-44.05	-43.69	0.00
1002.394	4818.033	0.0000D+00	0.00	0.00	0.00	0.00	-2.7209D+03	-44.02	-43.69	0.00
1003.750	4805.915	0.0000D+00	0.00	0.00	0.00	0.00	-2.7276D+03	-43.98	-43.69	0.00
1005.298	4792.507	0.0000D+00	0.00	0.00	0.00	0.00	-2.7350D+03	-43.94	-43.69	0.00
1007.049	4777.857	0.0000D+00	0.00	0.00	0.00	0.00	-2.7431D+03	-43.90	-43.69	0.00
1007.539	4773.759	0.0000D+00	0.00	0.00	0.00	0.00	-2.7454D+03	-43.89	-43.68	0.00
1008.117	4769.170	0.0000D+00	0.00	0.00	0.00	0.00	-2.7481D+03	-43.88	-43.68	0.00
1010.541	4753.378	0.0000D+00	0.00	0.00	0.00	0.00	-2.7587D+03	-43.83	-43.68	0.00
1021.363	4680.296	0.0000D+00	0.00	0.00	0.00	0.00	-2.8020D+03	-43.67	-43.67	0.00
1038.121	4586.154	0.0000D+00	0.00	0.00	0.00	0.00	-2.8451D+03	-43.27	-43.49	0.00
1081.732	4414.638	0.0000D+00	0.00	0.00	0.00	0.00	-2.9331D+03	-42.51	-43.23	0.00
1095.000	4369.376	0.0000D+00	0.00	0.00	0.00	0.00	-2.9645D+03	-42.32	-43.17	0.00
1136.768	4244.249	0.0000D+00	0.00	0.00	0.00	0.00	-3.0964D+03	-41.81	-43.06	0.00
1186.250	4115.973	0.0000D+00	0.00	0.00	0.00	0.00	-3.2960D+03	-41.33	-42.96	0.00
1218.000	4045.577	0.0000D+00	0.00	0.00	0.00	0.00	-3.4404D+03	-41.07	-42.89	0.00
1218.250	4044.444	1.6348D-14	0.00	0.00	0.00	0.00	-3.5310D+03	-39.18	-46.97	0.00
1219.071	4042.708	7.3109D+03	0.00	0.00	0.00	0.00	-3.5357D+03	-39.17	-46.97	0.00
1221.640	4038.896	7.3159D+03	0.00	0.00	0.00	0.00	-3.5510D+03	-39.14	-46.96	0.00
1226.855	4037.821	7.3335D+03	0.00	0.00	0.00	0.00	-3.5842D+03	-39.12	-46.96	0.00
1233.966	4046.930	7.3808D+03	0.00	0.00	0.00	0.00	-3.6317D+03	-39.09	-46.95	0.00
1244.029	4065.723	7.4592D+03	0.00	0.00	0.00	0.00	-3.6952D+03	-39.08	-46.95	0.00
1259.813	4086.053	7.5709D+03	0.00	0.00	0.00	0.00	-3.7803D+03	-39.11	-46.98	0.00
1277.000	4091.773	7.7193D+03	0.00	0.00	0.00	0.00	-3.8685D+03	-39.20	-47.03	0.00
1277.500	4092.028	7.8624D+03	0.00	0.00	0.00	0.00	-4.7504D+03	-48.35	-59.05	0.00
1279.683	4092.966	9.6590D+03	0.00	0.00	0.00	0.00	-4.8097D+03	-48.31	-58.98	0.00
1288.144	4095.582	9.7473D+03	0.00	0.00	0.00	0.00	-4.9426D+03	-48.22	-58.78	0.00
1309.674	4121.682	9.9452D+03	0.00	0.00	0.00	0.00	-5.0937D+03	-48.17	-58.53	0.00
1340.666	4161.363	1.0201D+04	0.00	0.00	0.00	0.00	-5.2625D+03	-48.16	-58.33	0.00
1397.588	4211.046	1.0501D+04	0.00	0.00	0.00	0.00	-5.6978D+03	-48.11	-58.05	0.00
1443.544	4261.303	1.1195D+04	0.00	0.00	0.00	0.00	-6.1195D+03	-48.06	-57.88	0.00
1489.500	4318.946	1.1899D+04	0.00	0.00	0.00	0.00	-6.6070D+03	-47.88	-57.67	0.00
1508.212	4343.126	1.2686D+04	0.00	0.00	0.00	0.00	-6.8207D+03	-47.75	-57.56	0.00
1545.606	4381.086	1.3026D+04	0.00	0.00	0.00	0.00	-7.2937D+03	-47.51	-57.28	0.00
1583.000	4417.547	1.3765D+04	0.00	0.00	0.00	0.00	-7.8488D+03	-47.37	-57.07	0.00
1588.000	4417.145	1.4630D+04	0.00	0.00	0.00	0.00	-8.8630D+03	-56.78	-67.05	0.00
1593.280	4419.979	1.6725D+04	0.00	0.00	0.00	0.00	-9.0475D+03	-56.86	-67.03	0.00
1605.775	4431.605	1.7011D+04	0.00	0.00	0.00	0.00	-9.4013D+03	-56.90	-66.99	0.00
1636.146	4465.017	1.7560D+04	0.00	0.00	0.00	0.00	-1.0151D+04	-56.81	-66.90	0.00
1642.500	4473.814	1.8725D+04	0.00	0.00	0.00	0.00	-1.0308D+04	-56.80	-66.88	0.00
1657.250	4493.862	1.8970D+04	0.00	0.00	0.00	0.00	-1.0691D+04	-56.75	-66.85	0.00
1672.000	4513.412	1.9568D+04	0.00	0.00	0.00	0.00	-1.1096D+04	-56.67	-66.80	0.00
1715.142	4557.220	2.0197D+04	0.00	0.00	0.00	0.00	-1.2403D+04	-56.47	-66.67	0.00
1784.821	4607.884	2.2204D+04	0.00	0.00	0.00	0.00	-1.4687D+04	-56.34	-66.66	0.00
1854.500	4663.629	2.5688D+04	0.00	0.00	0.00	0.00	-1.7340D+04	-56.44	-66.86	0.00
1921.501	4732.313	2.9749D+04	0.00	0.00	0.00	0.00	-2.0288D+04	-56.74	-67.24	0.00
2007.500	4837.093	3.4284D+04	0.00	0.00	0.00	0.00	-2.4486D+04	-57.30	-67.93	0.00
2037.000	4906.036	4.0762D+04	0.00	0.00	0.00	0.00	-2.6253D+04	-57.62	-68.28	0.00
2056.672	4959.003	4.3530D+04	0.00	0.00	0.00	0.00	-2.7557D+04	-57.89	-68.58	0.00
2110.119	5088.825	4.5578D+04	0.00	0.00	0.00	0.00	-3.1206D+04	-58.69	-69.58	0.00
2164.810	5236.815	5.1292D+04	0.00	0.00	0.00	0.00	-3.5290D+04	-59.58	-70.69	0.00
2219.500	5400.486	5.7698D+04	0.00	0.00	0.00	0.00	-3.9860D+04	-60.51	-71.75	0.00
2266.250	5563.702	6.4863D+04	0.00	0.00	0.00	0.00	-4.4358D+04	-61.38	-72.71	0.00
2313.000	5743.713	7.1924D+04	0.00	0.00	0.00	0.00	-4.9411D+04	-62.32	-73.75	0.00
2313.100	5743.207	0.0000D+00	0.00	0.00	0.00	0.00	-4.9413D+04	-62.32	-73.74	0.00
2313.476	5743.682	5.3238D+04	0.00	0.00	0.00	0.00	-4.9455D+04	-62.33	-73.75	0.00
2314.998	5745.157	5.3281D+04	0.00	0.00	0.00	0.00	-4.9603D+04	-62.37	-73.79	0.00
2320.188	5747.965	5.3433D+04	0.00	0.00	0.00	0.00	-4.9983D+04	-62.43	-73.86	0.00
2336.277	5747.539	5.3820D+04	0.00	0.00	0.00	0.00	-5.0813D+04	-62.45	-73.95	0.00
2379.943	5721.137	5.4650D+04	0.00	0.00	0.00	0.00	-5.2745D+04	-62.20	-73.93	0.00
2476.458	5594.664	5.6542D+04	0.00	0.00	0.00	0.00	-5.7239D+04	-61.56	-73.22	0.00
2555.000	5501.224	6.0872D+04	0.00	0.00	0.00	0.00	-6.1714D+04	-61.20	-72.28	0.00
2637.365	5396.993	6.5233D+04	0.00	0.00	0.00	0.00	-6.6995D+04	-61.03	-70.84	0.00
2681.342	5358.769	7.0400D+04	0.00	0.00	0.00	0.00	-7.0306D+04	-61.12	-70.06	0.00
2749.547	5353.147	7.3677D+04	0.00	0.00	0.00	0.00	-6.9254D+04	-57.90	-67.82	0.00
2804.640	5290.221	7.2446D+04	0.00	0.00	0.00	0.00	-7.4337D+04	-58.32	-66.81	0.00
2862.320	5227.659	7.7491D+04	0.00	0.00	0.00	0.00	-7.9756D+04	-58.45	-65.42	0.00
2891.160	5208.034	8.2357D+04	0.00	0.00	0.00	0.00	-8.1940D+04	-58.57	-64.73	0.00
2920.000	5245.269	8.5028D+04	0.00	0.00	0.00	0.00	-7.2770D+04	-52.45	-61.95	0.00
2942.517	5233.716	7.5571D+04	0.00	0.00	0.00	0.00	-7.4654D+04	-52.66	-61.64	0.00
2994.796	5187.319	7.7456D+04	0.00	0.00	0.00	0.00	-7.8444D+04	-52.95	-60.66	0.00
3100.647	5054.084	8.1227D+04	0.00	0.00	0.00	0.00	-8.5192D+04	-53.28	-58.45	0.00
3183.346	4972.561	8.7874D+04	0.00	0.00	0.00	0.00	-9.0643D+04	-53.58	-56.72	0.00
3285.000	4863.074	9.3273D+04	0.00	0.00	0.00	0.00	-9.7003D+04	-53.90	-54.52	0.00
3307.813	4854.543	9.9560D+04	0.00	0.00	0.00	0.00	-9.8564D+04	-53.95	-54.00	0.00
3318.479	4851.937	1.0112D+05	0.00	0.00	0.00	0.00	-9.9372D+04	-54.00	-53.78	0.00

Table A-16

GAS INJECTION - RUN TIME SUMMARY (continued)

Waskada Lower Amaranth Pool

3324.297	4850.794	1.0193D+05	0.00	0.00	0.00	0.00	-9.9850D+04	-54.02	-53.67	0.00
3331.057	4864.872	1.0240D+05	0.00	0.00	0.00	0.00	-8.5002D+04	-49.39	-50.46	0.00
3336.369	4807.068	1.3698D-11	0.00	0.00	0.00	0.00	-8.4585D+04	-48.29	-50.23	0.00
3342.502	4803.470	8.6834D+04	0.00	0.00	0.00	0.00	-8.4230D+04	-48.18	-49.98	0.00
3354.690	4800.423	8.6472D+04	0.00	0.00	0.00	0.00	-8.4025D+04	-48.06	-49.58	0.00
3388.845	4795.951	8.6259D+04	0.00	0.00	0.00	0.00	-8.4073D+04	-47.78	-48.47	0.00
3453.864	4785.934	8.6292D+04	0.00	0.00	0.00	0.00	-8.5011D+04	-47.48	-46.57	0.00
3478.381	4514.103	0.0000D+00	0.00	0.00	0.00	0.00	-7.9068D+04	-45.92	-44.31	0.00
3497.052	4505.523	8.1013D+04	0.00	0.00	0.00	0.00	-7.7408D+04	-45.21	-43.21	0.00
3522.877	4500.664	7.9317D+04	0.00	0.00	0.00	0.00	-7.7113D+04	-44.77	-42.26	0.00
3586.438	4489.776	7.9002D+04	0.00	0.00	0.00	0.00	-7.8278D+04	-44.30	-40.57	0.00
3618.219	4504.865	8.0144D+04	0.00	0.00	0.00	0.00	-7.4889D+04	-43.15	-38.92	0.00
3634.110	4504.451	7.6717D+04	0.00	0.00	0.00	0.00	-7.5273D+04	-43.03	-38.53	0.00
3650.000	4344.303	1.0073D-11	0.00	0.00	0.00	0.00	-7.2337D+04	-42.10	-37.36	0.00

Table A-17

GAS INJECTION - CUMULATIVE INJECTION/PRODUCTION SUMMARY

Waskada Lower Amaranth Pool

		INJECTION					PRODUCTION			
TIME days	PRESSURE kPa	GAS m 3	WATER m 3	OIL m 3	POLYMER kg	AQUIFER m 3	GAS m 3	WATER m 3	OIL m 3	POLYMER kg
0.250	8694.356	0.00000D+00	0.00	0.00	0.00	0.00	-6.1559D+00	-0.32	-0.12	0.00
1.319	8693.921	0.00000D+00	0.00	0.00	0.00	0.00	-3.2480D+01	-1.67	-0.63	0.00
5.525	8692.209	0.00000D+00	0.00	0.00	0.00	0.00	-1.3605D+02	-6.99	-2.65	0.00
21.796	8685.175	0.00000D+00	0.00	0.00	0.00	0.00	-5.3668D+02	-27.58	-10.46	0.00
80.216	8660.087	0.00000D+00	0.00	0.00	0.00	0.00	-1.9757D+03	-101.63	-38.50	0.00
91.250	8655.682	0.00000D+00	0.00	0.00	0.00	0.00	-2.2468D+03	-115.62	-43.80	0.00
137.125	8636.066	0.00000D+00	0.00	0.00	0.00	0.00	-3.3764D+03	-173.89	-65.82	0.00
182.500	8618.072	0.00000D+00	0.00	0.00	0.00	0.00	-4.4936D+03	-231.61	-87.59	0.00
183.000	8617.921	0.00000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
188.000	8617.967	0.00000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
201.000	8618.063	0.00000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
214.000	8618.174	0.00000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
219.000	8613.067	0.00000D+00	0.00	0.00	0.00	0.00	-4.7880D+03	-247.41	-93.33	0.00
228.960	8602.952	0.00000D+00	0.00	0.00	0.00	0.00	-5.3500D+03	-277.53	-104.29	0.00
258.384	8573.319	0.00000D+00	0.00	0.00	0.00	0.00	-7.0101D+03	-366.07	-136.65	0.00
273.750	8557.892	0.00000D+00	0.00	0.00	0.00	0.00	-7.8771D+03	-412.22	-153.55	0.00
332.408	8499.514	0.00000D+00	0.00	0.00	0.00	0.00	-1.1187D+04	-587.36	-218.07	0.00
365.000	8467.202	0.00000D+00	0.00	0.00	0.00	0.00	-1.3025D+04	-684.40	-253.92	0.00
456.250	8377.310	0.00000D+00	0.00	0.00	0.00	0.00	-1.8174D+04	-954.24	-354.28	0.00
547.500	8288.028	0.00000D+00	0.00	0.00	0.00	0.00	-2.3322D+04	-1222.38	-454.64	0.00
579.000	8257.323	0.00000D+00	0.00	0.00	0.00	0.00	-2.5099D+04	-1314.76	-489.29	0.00
584.000	8257.011	0.00000D+00	0.00	0.00	0.00	0.00	-2.5130D+04	-1315.93	-489.89	0.00
594.572	8256.311	0.00000D+00	0.00	0.00	0.00	0.00	-2.5195D+04	-1318.45	-491.16	0.00
624.000	8254.221	0.00000D+00	0.00	0.00	0.00	0.00	-2.5376D+04	-1325.54	-494.69	0.00
629.000	8250.342	0.00000D+00	0.00	0.00	0.00	0.00	-2.5814D+04	-1332.77	-503.24	0.00
638.750	8242.695	0.00000D+00	0.00	0.00	0.00	0.00	-2.6668D+04	-1346.98	-519.91	0.00
641.000	8241.067	0.00000D+00	0.00	0.00	0.00	0.00	-2.6865D+04	-1350.27	-523.76	0.00
646.000	8218.873	0.00000D+00	0.00	0.00	0.00	0.00	-2.9307D+04	-1389.96	-571.41	0.00
652.103	8191.805	0.00000D+00	0.00	0.00	0.00	0.00	-3.2288D+04	-1438.32	-629.57	0.00
663.485	8140.846	0.00000D+00	0.00	0.00	0.00	0.00	-3.7846D+04	-1528.34	-738.02	0.00
682.321	8056.600	0.00000D+00	0.00	0.00	0.00	0.00	-4.7044D+04	-1677.16	-917.52	0.00
706.161	7949.993	0.00000D+00	0.00	0.00	0.00	0.00	-5.8685D+04	-1865.46	-1144.70	0.00
730.000	7843.321	0.00000D+00	0.00	0.00	0.00	0.00	-7.0326D+04	-2053.84	-1371.87	0.00
735.000	7829.394	0.00000D+00	0.00	0.00	0.00	0.00	-7.1887D+04	-2079.02	-1402.33	0.00
747.534	7794.644	0.00000D+00	0.00	0.00	0.00	0.00	-7.5799D+04	-2142.36	-1478.67	0.00
775.267	7717.969	0.00000D+00	0.00	0.00	0.00	0.00	-8.4454D+04	-2283.16	-1647.56	0.00
803.000	7641.330	0.00000D+00	0.00	0.00	0.00	0.00	-9.3108D+04	-2424.49	-1816.44	0.00
808.000	7615.813	0.00000D+00	0.00	0.00	0.00	0.00	-9.6062D+04	-2466.98	-1874.09	0.00
812.500	7592.850	0.00000D+00	0.00	0.00	0.00	0.00	-9.8720D+04	-2505.21	-1925.97	0.00
817.000	7569.884	0.00000D+00	0.00	0.00	0.00	0.00	-1.0138D+05	-2543.47	-1977.86	0.00
821.250	7542.666	0.00000D+00	0.00	0.00	0.00	0.00	-1.0425D+05	-2594.52	-2033.87	0.00
822.000	7538.412	0.00000D+00	0.00	0.00	0.00	0.00	-1.0475D+05	-2603.52	-2043.75	0.00
827.000	7512.727	0.00000D+00	0.00	0.00	0.00	0.00	-1.0742D+05	-2652.02	-2095.85	0.00
832.000	7487.093	0.00000D+00	0.00	0.00	0.00	0.00	-1.1009D+05	-2700.54	-2147.95	0.00
835.000	7461.592	0.00000D+00	0.00	0.00	0.00	0.00	-1.1239D+05	-2756.05	-2192.71	0.00
837.000	7440.512	0.00000D+00	0.00	0.00	0.00	0.00	-1.1457D+05	-2796.42	-2235.33	0.00
842.000	7374.282	0.00000D+00	0.00	0.00	0.00	0.00	-1.2151D+05	-2921.96	-2370.76	0.00
847.000	7308.207	0.00000D+00	0.00	0.00	0.00	0.00	-1.2844D+05	-3047.32	-2506.20	0.00
852.000	7242.301	0.00000D+00	0.00	0.00	0.00	0.00	-1.3538D+05	-3172.55	-2641.64	0.00
857.000	7176.724	0.00000D+00	0.00	0.00	0.00	0.00	-1.4229D+05	-3297.21	-2776.58	0.00
866.000	7058.933	0.00000D+00	0.00	0.00	0.00	0.00	-1.5473D+05	-3521.33	-3019.46	0.00
871.000	6971.667	0.00000D+00	0.00	0.00	0.00	0.00	-1.6395D+05	-3681.86	-3199.45	0.00
876.000	6885.935	0.00000D+00	0.00	0.00	0.00	0.00	-1.7317D+05	-3842.14	-3379.44	0.00
878.500	6828.650	0.00000D+00	0.00	0.00	0.00	0.00	-1.7824D+05	-3968.34	-3478.43	0.00
880.393	6786.247	0.00000D+00	0.00	0.00	0.00	0.00	-1.8208D+05	-4063.12	-3553.40	0.00
884.267	6698.752	0.00000D+00	0.00	0.00	0.00	0.00	-1.8294D+05	-4254.46	-3706.78	0.00

Table A-17

GAS INJECTION - CUMULATIVE INJECTION/PRODUCTION SUMMARY (continued)

Waskada Lower Amaranth Pool

891.810	6533.753	0.0000D+00	0.00	0.00	0.00	0.00	-2.0530D+05	-4617.51	-4005.48	0.00
906.340	6223.151	0.0000D+00	0.00	0.00	0.00	0.00	-2.3585D+05	-5294.08	-4580.78	0.00
912.500	6096.421	0.0000D+00	0.00	0.00	0.00	0.00	-2.4896D+05	-5578.51	-4824.69	0.00
929.000	5787.493	0.0000D+00	0.00	0.00	0.00	0.00	-2.8407D+05	-6323.60	-5476.88	0.00
934.000	5692.065	0.0000D+00	0.00	0.00	0.00	0.00	-2.9581D+05	-6555.28	-5695.48	0.00
940.650	5576.327	0.0000D+00	0.00	0.00	0.00	0.00	-3.1149D+05	-6860.86	-5986.12	0.00
954.711	5369.726	0.0000D+00	0.00	0.00	0.00	0.00	-3.4528D+05	-7498.64	-6600.65	0.00
980.410	5046.006	0.0000D+00	0.00	0.00	0.00	0.00	-4.1145D+05	-8643.65	-7723.72	0.00
986.265	4981.024	0.0000D+00	0.00	0.00	0.00	0.00	-4.2674D+05	-8902.77	-7978.69	0.00
990.621	4933.360	0.0000D+00	0.00	0.00	0.00	0.00	-4.3935D+05	-9096.61	-8169.91	0.00
993.903	4899.501	0.0000D+00	0.00	0.00	0.00	0.00	-4.4713D+05	-9241.72	-8313.32	0.00
998.326	4856.170	0.0000D+00	0.00	0.00	0.00	0.00	-4.5907D+05	-9436.83	-8506.57	0.00
1001.038	4830.493	0.0000D+00	0.00	0.00	0.00	0.00	-4.6643D+05	-9556.29	-8625.04	0.00
1002.394	4818.033	0.0000D+00	0.00	0.00	0.00	0.00	-4.7012D+05	-9615.99	-8684.28	0.00
1003.750	4805.915	0.0000D+00	0.00	0.00	0.00	0.00	-4.7382D+05	-9675.62	-8743.52	0.00
1005.298	4792.507	0.0000D+00	0.00	0.00	0.00	0.00	-4.7905D+05	-9743.65	-8811.14	0.00
1007.049	4777.857	0.0000D+00	0.00	0.00	0.00	0.00	-4.8286D+05	-9820.51	-8887.62	0.00
1007.539	4773.759	0.0000D+00	0.00	0.00	0.00	0.00	-4.8420D+05	-9842.02	-8909.03	0.00
1008.117	4769.170	0.0000D+00	0.00	0.00	0.00	0.00	-4.8579D+05	-9867.40	-8934.30	0.00
1010.541	4753.378	0.0000D+00	0.00	0.00	0.00	0.00	-4.9248D+05	-9973.66	-9040.19	0.00
1021.343	4680.296	0.0000D+00	0.00	0.00	0.00	0.00	-5.2274D+05	-10445.37	-9511.94	0.00
1038.121	4586.154	0.0000D+00	0.00	0.00	0.00	0.00	-5.7048D+05	-11171.36	-10241.67	0.00
1081.732	4414.638	0.0000D+00	0.00	0.00	0.00	0.00	-6.9839D+05	-13025.19	-12126.86	0.00
1095.000	4369.376	0.0000D+00	0.00	0.00	0.00	0.00	-7.3773D+05	-13586.73	-12699.62	0.00
1136.768	4244.249	0.0000D+00	0.00	0.00	0.00	0.00	-8.6705D+05	-15333.09	-14498.25	0.00
1186.250	4115.973	0.0000D+00	0.00	0.00	0.00	0.00	-1.0301D+06	-17378.10	-16623.93	0.00
1218.000	4045.577	0.0000D+00	0.00	0.00	0.00	0.00	-1.1394D+06	-18682.09	-17985.68	0.00
1218.250	4044.444	4.0870D-15	0.00	0.00	0.00	0.00	-1.1403D+06	-18691.88	-17997.42	0.00
1219.071	4042.708	6.0058D+03	0.00	0.00	0.00	0.00	-1.1432D+06	-18724.06	-18036.00	0.00
1221.640	4038.896	2.4798D+04	0.00	0.00	0.00	0.00	-1.1523D+06	-18824.61	-18156.64	0.00
1226.855	4037.821	6.3041D+04	0.00	0.00	0.00	0.00	-1.1710D+06	-19028.60	-18401.53	0.00
1233.966	4046.930	1.1553D+05	0.00	0.00	0.00	0.00	-1.1768D+06	-19306.60	-18735.42	0.00
1244.029	4065.723	1.9058D+05	0.00	0.00	0.00	0.00	-1.2340D+06	-19699.81	-19207.91	0.00
1259.813	4086.053	3.1009D+05	0.00	0.00	0.00	0.00	-1.2937D+06	-20317.07	-19949.43	0.00
1277.000	4091.773	4.4276D+05	0.00	0.00	0.00	0.00	-1.3601D+06	-20990.81	-20757.78	0.00
1277.500	4092.028	4.4669D+05	0.00	0.00	0.00	0.00	-1.3625D+06	-21014.99	-20787.31	0.00
1279.683	4092.966	4.6777D+05	0.00	0.00	0.00	0.00	-1.3730D+06	-21120.44	-20916.03	0.00
1288.144	4095.582	5.5025D+05	0.00	0.00	0.00	0.00	-1.4168D+06	-21528.42	-21413.37	0.00
1309.674	4121.682	7.6436D+05	0.00	0.00	0.00	0.00	-1.5245D+06	-22565.41	-22673.43	0.00
1340.666	4161.363	1.0805D+06	0.00	0.00	0.00	0.00	-1.6876D+06	-24058.14	-24481.10	0.00
1397.588	4211.046	1.6783D+06	0.00	0.00	0.00	0.00	-2.0114D+06	-26796.66	-27785.61	0.00
1443.544	4261.303	2.1928D+06	0.00	0.00	0.00	0.00	-2.2926D+06	-29005.45	-30445.35	0.00
1489.500	4318.946	2.7396D+06	0.00	0.00	0.00	0.00	-2.5962D+06	-31205.76	-33095.72	0.00
1508.212	4343.126	2.9770D+06	0.00	0.00	0.00	0.00	-2.7239D+06	-32099.19	-34172.80	0.00
1545.606	4381.086	3.4641D+06	0.00	0.00	0.00	0.00	-2.9966D+06	-33875.89	-36314.85	0.00
1583.000	4417.547	3.9788D+06	0.00	0.00	0.00	0.00	-3.2701D+06	-35647.23	-38449.12	0.00
1588.000	4417.145	4.0519D+06	0.00	0.00	0.00	0.00	-3.3344D+06	-35931.13	-38784.37	0.00
1593.280	4419.979	4.1402D+06	0.00	0.00	0.00	0.00	-3.3822D+06	-36231.38	-39138.31	0.00
1605.775	4431.605	4.3528D+06	0.00	0.00	0.00	0.00	-3.4996D+06	-36942.29	-39975.31	0.00
1636.146	4465.017	4.8861D+06	0.00	0.00	0.00	0.00	-3.8080D+06	-38667.78	-42007.08	0.00
1642.500	4473.814	5.0051D+06	0.00	0.00	0.00	0.00	-3.8735D+06	-39028.71	-42432.08	0.00
1657.250	4493.862	5.2849D+06	0.00	0.00	0.00	0.00	-4.0311D+06	-39865.71	-43418.17	0.00
1672.000	4513.412	5.5735D+06	0.00	0.00	0.00	0.00	-4.1948D+06	-40701.55	-44403.40	0.00
1715.142	4557.220	6.4448D+06	0.00	0.00	0.00	0.00	-4.7299D+06	-43137.96	-47279.77	0.00
1784.821	4602.884	7.9920D+06	0.00	0.00	0.00	0.00	-5.7533D+06	-47063.47	-51924.56	0.00
1854.500	4663.629	9.7819D+06	0.00	0.00	0.00	0.00	-6.9615D+06	-50995.91	-56583.03	0.00
1921.501	4732.313	1.1775D+07	0.00	0.00	0.00	0.00	-8.3208D+06	-54797.67	-61088.21	0.00
2007.500	4837.093	1.4724D+07	0.00	0.00	0.00	0.00	-1.0427D+07	-59725.21	-66929.74	0.00
2037.000	4906.036	1.5926D+07	0.00	0.00	0.00	0.00	-1.1201D+07	-61424.99	-68944.14	0.00
2056.672	4959.003	1.6782D+07	0.00	0.00	0.00	0.00	-1.1743D+07	-62563.78	-70293.27	0.00
2110.119	5088.875	1.9218D+07	0.00	0.00	0.00	0.00	-1.3411D+07	-65700.42	-74012.10	0.00
2164.810	5236.815	2.2024D+07	0.00	0.00	0.00	0.00	-1.5341D+07	-68958.94	-77877.96	0.00
2219.500	5400.486	2.5179D+07	0.00	0.00	0.00	0.00	-1.7521D+07	-72267.99	-81801.84	0.00
2266.250	5563.702	2.8211D+07	0.00	0.00	0.00	0.00	-1.9595D+07	-75137.39	-85201.07	0.00
2313.000	5743.713	3.1574D+07	0.00	0.00	0.00	0.00	-2.1905D+07	-78050.91	-88648.73	0.00
2313.100	5743.207	3.1574D+07	0.00	0.00	0.00	0.00	-2.1910D+07	-78057.14	-88656.10	0.00
2313.476	5743.692	3.1594D+07	0.00	0.00	0.00	0.00	-2.1928D+07	-78090.56	-88683.81	0.00
2314.998	5745.157	3.1675D+07	0.00	0.00	0.00	0.00	-2.2004D+07	-78175.52	-88796.15	0.00
2320.188	5747.965	3.1952D+07	0.00	0.00	0.00	0.00	-2.2263D+07	-78499.50	-89179.41	0.00
2336.277	5747.539	3.2818D+07	0.00	0.00	0.00	0.00	-2.3081D+07	-79504.27	-90369.26	0.00
2379.943	5721.137	3.5205D+07	0.00	0.00	0.00	0.00	-2.5384D+07	-82220.29	-93597.53	0.00
2476.458	5594.664	4.0662D+07	0.00	0.00	0.00	0.00	-3.0908D+07	-88161.38	-100664.39	0.00
2555.000	5501.224	4.5443D+07	0.00	0.00	0.00	0.00	-3.5756D+07	-92967.89	-106341.35	0.00
2637.365	5396.993	5.0816D+07	0.00	0.00	0.00	0.00	-4.1274D+07	-97994.20	-112176.14	0.00
2681.342	5358.769	5.3912D+07	0.00	0.00	0.00	0.00	-4.4365D+07	-100682.12	-115257.07	0.00
2749.547	5353.147	5.8937D+07	0.00	0.00	0.00	0.00	-4.9089D+07	-104631.48	-119882.62	0.00
2804.640	5290.221	6.2928D+07	0.00	0.00	0.00	0.00	-5.3184D+07	-107844.58	-123563.18	0.00
2862.320	5227.652	6.7398D+07	0.00	0.00	0.00	0.00	-5.7756D+07	-111216.03	-127336.47	0.00
2891.160	5208.034	6.9773D+07	0.00	0.00	0.00	0.00	-6.0112D+07	-112905.10	-129203.37	0.00
2920.000	5245.369	7.2225D+07	0.00	0.00	0.00	0.00	-6.2219D+07	-114412.72	-133990.10	0.00

Table A-17

GAS INJECTION - CUMULATIVE INJECTION/PRODUCTION SUMMARY (continued)

Waskada Lower Amaranth Pool

2942.517	5233.716	7.3927D+07	0.00	0.00	0.00	0.00	-6.3899D+07	-115603.35	-132377.93	0.00
2994.796	5187.319	7.7976D+07	0.00	0.00	0.00	0.00	-6.8200D+07	-118371.60	-135549.37	0.00
3100.642	5054.064	8.6571D+07	0.00	0.00	0.00	0.00	-7.7117D+07	-124011.42	-141736.03	0.00
3183.346	4972.561	9.3841D+07	0.00	0.00	0.00	0.00	-8.4513D+07	-128442.52	-146427.14	0.00
3285.000	4863.074	1.0332D+08	0.00	0.00	0.00	0.00	-9.4374D+07	-133921.75	-151968.86	0.00
3307.813	4854.543	1.0559D+08	0.00	0.00	0.00	0.00	-9.6623D+07	-135152.53	-153200.66	0.00
3318.479	4851.897	1.0667D+08	0.00	0.00	0.00	0.00	-9.7683D+07	-135728.49	-153774.30	0.00
3324.297	4850.794	1.0727D+08	0.00	0.00	0.00	0.00	-9.8764D+07	-136042.81	-154086.57	0.00
3331.057	4864.872	1.0796D+08	0.00	0.00	0.00	0.00	-9.8838D+07	-136369.91	-154427.69	0.00
3336.369	4807.068	1.0796D+08	0.00	0.00	0.00	0.00	-9.9288D+07	-136626.42	-154694.50	0.00
3342.502	4803.470	1.0849D+08	0.00	0.00	0.00	0.00	-9.9804D+07	-136921.91	-155000.99	0.00
3354.690	4800.423	1.0954D+08	0.00	0.00	0.00	0.00	-1.0083D+08	-137507.65	-155605.33	0.00
3388.845	4795.951	1.1249D+08	0.00	0.00	0.00	0.00	-1.0370D+08	-139139.68	-157260.86	0.00
3453.864	4785.934	1.1810D+08	0.00	0.00	0.00	0.00	-1.0923D+08	-142226.56	-160288.98	0.00
3478.381	4514.103	1.1810D+08	0.00	0.00	0.00	0.00	-1.1117D+08	-143352.48	-161375.44	0.00
3497.052	4505.523	1.1961D+08	0.00	0.00	0.00	0.00	-1.1261D+08	-144196.66	-162182.77	0.00
3527.877	4500.664	1.2166D+08	0.00	0.00	0.00	0.00	-1.1460D+08	-145352.71	-163273.63	0.00
3586.438	4489.726	1.2668D+08	0.00	0.00	0.00	0.00	-1.1958D+08	-148168.60	-165852.14	0.00
3618.219	4504.865	1.2923D+08	0.00	0.00	0.00	0.00	-1.2196D+08	-149539.85	-167089.17	0.00
3634.110	4504.451	1.3045D+08	0.00	0.00	0.00	0.00	-1.2315D+08	-150223.58	-167701.39	0.00
3650.000	4344.303	1.3045D+08	0.00	0.00	0.00	0.00	-1.2430D+08	-150892.59	-168295.03	0.00

Table A-18

GAS INJECTION - OIL SATURATION AT THE END OF THE FORECAST

Waskada Lower Amaranth Pool

time: 3650.000 days

plane z= 1

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.35168	0.24735	0.20305	0.21708	0.22160	0.22251	0.22306	0.22740	0.22244	0.22741
y = 14	0.20213	0.21132	0.20897	0.22028	0.22329	0.22596	0.22844	0.22730	0.22638	0.22757
y = 13	0.20546	0.20803	0.21657	0.22270	0.22438	0.23095	0.23631	0.24011	0.23813	0.23480
y = 12	0.21357	0.21611	0.21859	0.22080	0.22136	0.23162	0.24796	0.25149	0.24870	0.23403
y = 11	0.21233	0.21335	0.21584	0.21505	0.21407	0.23016	0.25610	0.25803	0.24967	0.23346
y = 10	0.21564	0.21750	0.22015	0.22061	0.22216	0.22771	0.25812	0.24118	0.23559	0.22806
y = 9	0.21603	0.21975	0.22457	0.22823	0.22678	0.22331	0.22895	0.22881	0.22819	0.22504
y = 8	0.21478	0.21440	0.22127	0.22919	0.22984	0.21889	0.22129	0.24867	0.21656	0.21851
y = 7	0.20179	0.20439	0.21485	0.22092	0.22375	0.21836	0.21976	0.21654	0.21816	0.21636
y = 6	0.19460	0.20004	0.21150	0.21638	0.22345	0.22383	0.21354	0.20935	0.21144	0.21102
y = 5	0.20999	0.21799	0.21321	0.21597	0.21791	0.21899	0.21846	0.21826	0.21136	0.20841
y = 4	0.22214	0.21351	0.21223	0.21851	0.21583	0.21230	0.21145	0.22144	0.21511	0.20761
y = 3	0.21490	0.21461	0.21366	0.21505	0.21290	0.21016	0.20830	0.20881	0.20964	0.20513
y = 2	0.22007	0.21771	0.21468	0.21811	0.21207	0.20824	0.20444	0.20035	0.20210	0.20157
y = 1	0.22782	0.22001	0.21533	0.21826	0.21191	0.20839	0.20401	0.19848	0.19817	0.19917

	x = 11	12	13	14	15
y = 15	0.22684	0.22924	0.22691	0.22632	0.22686
y = 14	0.22982	0.22962	0.22731	0.22599	0.22518
y = 13	0.23180	0.23067	0.22714	0.22452	0.22250
y = 12	0.23215	0.23354	0.22642	0.22282	0.22588
y = 11	0.22598	0.23317	0.21979	0.21746	0.21584
y = 10	0.22371	0.23008	0.21703	0.21464	0.21408
y = 9	0.21794	0.22140	0.21713	0.21361	0.21336
y = 8	0.21723	0.22241	0.21480	0.21124	0.21342
y = 7	0.21733	0.22609	0.22071	0.21172	0.21729
y = 6	0.21182	0.21276	0.21363	0.21491	0.21901
y = 5	0.20835	0.21171	0.21134	0.21375	0.21353
y = 4	0.21081	0.21843	0.21410	0.21910	0.22144
y = 3	0.20703	0.21183	0.21187	0.21921	0.22396
y = 2	0.20578	0.21873	0.21447	0.24269	0.25670
y = 1	0.20372	0.22379	0.22231	0.25345	0.25378

plane z= 2

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.34614	0.34638	0.23419	0.23344	0.22610	0.23315	0.23485	0.23932	0.24203	0.24369
y = 14	0.34635	0.34701	0.23140	0.22972	0.22602	0.23261	0.23447	0.23758	0.24214	0.24116
y = 13	0.23161	0.22970	0.22577	0.22487	0.22444	0.22984	0.23675	0.24706	0.24661	0.23857
y = 12	0.23316	0.22741	0.22338	0.22777	0.22423	0.22632	0.23832	0.25128	0.24892	0.23191
y = 11	0.21972	0.21935	0.21837	0.22059	0.22008	0.22608	0.24551	0.26313	0.25989	0.23897
y = 10	0.22703	0.22290	0.21792	0.21756	0.21911	0.23531	0.26026	0.29115	0.27913	0.25754
y = 9	0.22828	0.22702	0.22139	0.22456	0.22649	0.24014	0.25565	0.27235	0.27420	0.26475
y = 8	0.22833	0.23352	0.22902	0.23522	0.24257	0.26651	0.26579	0.26454	0.26863	0.26756
y = 7	0.21724	0.22160	0.22247	0.22302	0.24561	0.27913	0.27946	0.26305	0.24768	0.23801
y = 6	0.20387	0.20979	0.21293	0.20878	0.23170	0.26064	0.27079	0.25608	0.22712	0.21978
y = 5	0.20210	0.20130	0.20044	0.20654	0.21264	0.22905	0.24216	0.23748	0.21506	0.20327
y = 4	0.20749	0.20596	0.20276	0.20896	0.20450	0.20320	0.21874	0.22512	0.21903	0.20181
y = 3	0.20430	0.20228	0.20064	0.20437	0.20046	0.21477	0.22845	0.24080	0.22183	0.21018
y = 2	0.20893	0.20677	0.20191	0.20002	0.20805	0.23102	0.24237	0.26272	0.25498	0.24238
y = 1	0.21564	0.21009	0.20585	0.20448	0.21794	0.23629	0.24559	0.25956	0.26670	0.26072

	x = 11	12	13	14	15
y = 15	0.23106	0.23614	0.23601	0.24964	0.25156
y = 14	0.22970	0.22848	0.23211	0.24644	0.25068
y = 13	0.22566	0.22539	0.22277	0.23499	0.24580
y = 12	0.22400	0.22529	0.21790	0.22059	0.23048
y = 11	0.21957	0.21599	0.21408	0.22380	0.22782
y = 10	0.22148	0.21242	0.22076	0.24678	0.26459
y = 9	0.23148	0.22697	0.22965	0.25682	0.26650
y = 8	0.22652	0.23117	0.23258	0.26820	0.26644
y = 7	0.21567	0.21912	0.22384	0.26265	0.26823
y = 6	0.20378	0.20319	0.21320	0.24913	0.26787
y = 5	0.20028	0.20278	0.20430	0.21488	0.22026
y = 4	0.20269	0.20937	0.20579	0.21864	0.22756
y = 3	0.20212	0.20465	0.21469	0.24732	0.26569
y = 2	0.21070	0.21638	0.24748	0.29659	0.30629
y = 1	0.21363	0.22643	0.26572	0.30569	0.30300

plane z= 3

Table A-18

GAS INJECTION - OIL SATURATION AT THE END OF THE FORECAST (continued)

Waskada Lower Amaranth Pool

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.32885	0.32862	0.27890	0.23920	0.23847	0.26833	0.25954	0.27016	0.28570	0.28718
y = 14	0.32859	0.32817	0.26788	0.22656	0.22737	0.25533	0.25801	0.27316	0.28221	0.27503
y = 13	0.29757	0.26997	0.23724	0.21116	0.21158	0.25160	0.24474	0.26645	0.26531	0.25099
y = 12	0.23854	0.22388	0.20927	0.21378	0.20899	0.21214	0.22991	0.24598	0.24734	0.22383
y = 11	0.23163	0.22099	0.20593	0.20561	0.20508	0.21937	0.23636	0.25763	0.25834	0.23906
y = 10	0.23393	0.24207	0.21638	0.20355	0.21133	0.24941	0.27104	0.28070	0.28401	0.26708
y = 9	0.23263	0.24922	0.22685	0.22015	0.22383	0.26443	0.27225	0.28028	0.28233	0.27107
y = 8	0.24514	0.25170	0.24234	0.22875	0.24670	0.27948	0.27428	0.27402	0.28115	0.27201
y = 7	0.23254	0.23407	0.23567	0.22832	0.24974	0.27757	0.27455	0.27373	0.26825	0.26326
y = 6	0.21883	0.21805	0.22279	0.21026	0.23240	0.25523	0.26287	0.25867	0.25804	0.22040
y = 5	0.21833	0.20909	0.19294	0.18868	0.20665	0.22493	0.22758	0.23390	0.23290	0.22017
y = 4	0.20958	0.19080	0.18684	0.19172	0.19063	0.20225	0.21362	0.22282	0.22453	0.19650
y = 3	0.21338	0.20084	0.18857	0.18969	0.19638	0.21847	0.22684	0.23402	0.24237	0.22808
y = 2	0.21037	0.21057	0.20981	0.19408	0.21631	0.23650	0.24296	0.24978	0.25389	0.24851
y = 1	0.21252	0.21317	0.22390	0.21222	0.22856	0.24524	0.25121	0.25262	0.26046	0.25416

x =	11	12	13	14	15
y = 15	0.24492	0.23358	0.28117	0.27825	0.27476
y = 14	0.23704	0.22869	0.25057	0.27057	0.27476
y = 13	0.21950	0.20850	0.22396	0.25201	0.26190
y = 12	0.20839	0.21072	0.20426	0.21721	0.22752
y = 11	0.21243	0.20781	0.20964	0.23206	0.24028
y = 10	0.22750	0.20418	0.23060	0.25380	0.26511
y = 9	0.24001	0.23383	0.24717	0.26022	0.26555
y = 8	0.24253	0.23332	0.25106	0.26555	0.26632
y = 7	0.23719	0.22876	0.24908	0.26609	0.26896
y = 6	0.22313	0.20014	0.23790	0.26042	0.26775
y = 5	0.19813	0.19231	0.20996	0.23545	0.24267
y = 4	0.19182	0.19792	0.19431	0.21886	0.23068
y = 3	0.20432	0.19639	0.22369	0.25188	0.26133
y = 2	0.21838	0.21570	0.23094	0.27774	0.28611
y = 1	0.23438	0.22700	0.25990	0.28613	0.28223

plane z= 4

x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.31448	0.31380	0.32323	0.26812	0.28188	0.29338	0.28929	0.28837	0.28119	0.28098
y = 14	0.31370	0.31286	0.31956	0.25543	0.27389	0.28938	0.28872	0.28035	0.28059	0.27451
y = 13	0.32579	0.32195	0.28660	0.21310	0.24188	0.27478	0.28094	0.27035	0.27036	0.26071
y = 12	0.30183	0.27111	0.21150	0.20404	0.20096	0.23851	0.26486	0.26603	0.25339	0.25341
y = 11	0.28627	0.27317	0.23726	0.19731	0.22493	0.26565	0.27509	0.27017	0.26389	0.25219
y = 10	0.27938	0.27865	0.26478	0.22143	0.23735	0.27481	0.27582	0.27316	0.26879	0.25096
y = 9	0.24133	0.26802	0.26783	0.23793	0.26455	0.26814	0.27095	0.26455	0.26507	0.24265
y = 8	0.23982	0.26044	0.25912	0.23918	0.24855	0.25496	0.26095	0.25047	0.25501	0.23916
y = 7	0.20530	0.21048	0.23437	0.21567	0.21817	0.23320	0.23557	0.23016	0.23815	0.23105
y = 6	0.20971	0.19125	0.19164	0.18701	0.19219	0.20284	0.20384	0.20670	0.21926	0.21987
y = 5	0.23292	0.25884	0.15137	0.14466	0.16131	0.17531	0.17051	0.19036	0.21184	0.20718
y = 4	0.26099	0.26773	0.14412	0.14469	0.15105	0.16982	0.16325	0.17762	0.19681	0.19387
y = 3	0.22435	0.21160	0.18701	0.14805	0.15986	0.17420	0.16734	0.17524	0.19973	0.20771
y = 2	0.24198	0.23762	0.20128	0.16094	0.16227	0.18181	0.18379	0.18662	0.20319	0.21226
y = 1	0.24170	0.24162	0.21792	0.17771	0.16431	0.18929	0.19175	0.18929	0.20241	0.20998

x =	11	12	13	14	15
y = 15	0.28118	0.24168	0.26643	0.27125	0.26961
y = 14	0.25433	0.22874	0.25843	0.26747	0.26985
y = 13	0.23086	0.20012	0.23579	0.25515	0.26013
y = 12	0.19889	0.19908	0.19625	0.22472	0.23417
y = 11	0.22496	0.19194	0.22141	0.23967	0.24693
y = 10	0.24438	0.21564	0.23943	0.24602	0.24733
y = 9	0.24728	0.23217	0.24207	0.24632	0.24829
y = 8	0.24187	0.23265	0.24041	0.24540	0.24569
y = 7	0.23919	0.22287	0.23566	0.24792	0.25153
y = 6	0.21250	0.20224	0.22868	0.25067	0.25574
y = 5	0.19950	0.18342	0.21311	0.24063	0.24815
y = 4	0.18252	0.18364	0.19115	0.22403	0.23258
y = 3	0.20293	0.18664	0.22109	0.24082	0.24655
y = 2	0.21749	0.21196	0.23576	0.24681	0.24458
y = 1	0.22227	0.21965	0.24149	0.24402	0.24019

Table A-19

WATER INJECTION - RUN TIME SUMMARY

Waskada Lower Amaranth Pool

RATE INJECTION/PRODUCTION SUMMARY:

		INJECTION					PRODUCTION			
TIME days	PRESSURE kPa	GAS m 3/day	WATER m 3/day	OIL m 3/day	POLYMER kg/day	AQUIFER m 3/day	GAS m 3/day	WATER m 3/day	OIL m 3/day	POLYMER kg/day
0.250	8694.356	0.0000D+00	0.00	0.00	0.00	0.00	-2.4624D+01	-1.27	-0.48	0.00
1.319	8693.921	0.0000D+00	0.00	0.00	0.00	0.00	-2.4622D+01	-1.27	-0.48	0.00
5.525	8692.209	0.0000D+00	0.00	0.00	0.00	0.00	-2.4622D+01	-1.27	-0.48	0.00
21.796	8685.175	0.0000D+00	0.00	0.00	0.00	0.00	-2.4624D+01	-1.27	-0.48	0.00
80.216	8660.087	0.0000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
91.250	8655.682	0.0000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
137.125	8636.066	0.0000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
182.500	8618.072	0.0000D+00	0.00	0.00	0.00	0.00	-2.4620D+01	-1.27	-0.48	0.00
183.000	8617.921	0.0000D+00	0.00	0.00	0.00	0.00	-2.4623D+01	-1.27	-0.48	0.00
188.000	8617.967	0.0000D+00	0.00	0.00	0.00	0.00	0.0000D+00	0.00	0.00	0.00
201.000	8618.063	0.0000D+00	0.00	0.00	0.00	0.00	0.0000D+00	0.00	0.00	0.00
214.000	8618.174	0.0000D+00	0.00	0.00	0.00	0.00	0.0000D+00	0.00	0.00	0.00
219.000	8613.067	0.0000D+00	0.00	0.00	0.00	0.00	-5.6424D+01	-3.03	-1.10	0.00
228.960	8602.952	0.0000D+00	0.00	0.00	0.00	0.00	-5.6424D+01	-3.02	-1.10	0.00
258.384	8573.319	0.0000D+00	0.00	0.00	0.00	0.00	-5.6421D+01	-3.01	-1.10	0.00
273.750	8557.892	0.0000D+00	0.00	0.00	0.00	0.00	-5.6424D+01	-3.00	-1.10	0.00
332.408	8499.514	0.0000D+00	0.00	0.00	0.00	0.00	-5.6419D+01	-2.99	-1.10	0.00
365.000	8467.202	0.0000D+00	0.00	0.00	0.00	0.00	-5.6422D+01	-2.98	-1.10	0.00
456.250	8377.310	0.0000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.96	-1.10	0.00
547.500	8288.028	0.0000D+00	0.00	0.00	0.00	0.00	-5.6417D+01	-2.94	-1.10	0.00
579.000	8257.323	0.0000D+00	0.00	0.00	0.00	0.00	-5.6421D+01	-2.93	-1.10	0.00
584.000	8257.011	0.0000D+00	0.00	0.00	0.00	0.00	-6.1557D+00	-0.23	-0.12	0.00
594.572	8256.311	0.0000D+00	0.00	0.00	0.00	0.00	-6.1557D+00	-0.24	-0.12	0.00
624.000	8254.221	0.0000D+00	0.00	0.00	0.00	0.00	-6.1559D+00	-0.24	-0.12	0.00
629.000	8250.342	0.0000D+00	0.00	0.00	0.00	0.00	-8.7624D+01	-1.45	-1.71	0.00
638.750	8242.695	0.0000D+00	0.00	0.00	0.00	0.00	-8.7624D+01	-1.46	-1.71	0.00
641.000	8241.067	0.0000D+00	0.00	0.00	0.00	0.00	-8.7624D+01	-1.46	-1.71	0.00
646.000	8218.873	0.0000D+00	0.00	0.00	0.00	0.00	-4.8934D+02	-7.94	-9.53	0.00
652.103	8191.805	0.0000D+00	0.00	0.00	0.00	0.00	-4.8933D+02	-7.92	-9.53	0.00
663.485	8140.846	0.0000D+00	0.00	0.00	0.00	0.00	-4.8934D+02	-7.91	-9.53	0.00
682.321	8056.600	0.0000D+00	0.00	0.00	0.00	0.00	-4.8833D+02	-7.90	-9.53	0.00
706.161	7949.993	0.0000D+00	0.00	0.00	0.00	0.00	-4.8832D+02	-7.90	-9.53	0.00
730.000	7843.321	0.0000D+00	0.00	0.00	0.00	0.00	-4.8832D+02	-7.90	-9.53	0.00
735.000	7829.394	0.0000D+00	0.00	0.00	0.00	0.00	-3.1212D+02	-5.04	-6.09	0.00
747.534	7794.644	0.0000D+00	0.00	0.00	0.00	0.00	-3.1211D+02	-5.05	-6.09	0.00
775.267	7717.969	0.0000D+00	0.00	0.00	0.00	0.00	-3.1208D+02	-5.08	-6.09	0.00
803.000	7641.330	0.0000D+00	0.00	0.00	0.00	0.00	-3.1206D+02	-5.10	-6.09	0.00
808.000	7615.813	0.0000D+00	0.00	0.00	0.00	0.00	-5.9072D+02	-8.50	-11.53	0.00
812.500	7592.850	0.0000D+00	0.00	0.00	0.00	0.00	-5.9071D+02	-8.50	-11.53	0.00
817.000	7569.884	0.0000D+00	0.00	0.00	0.00	0.00	-5.9071D+02	-8.50	-11.53	0.00
821.250	7542.666	0.0000D+00	0.00	0.00	0.00	0.00	-6.7530D+02	-12.01	-13.18	0.00
822.000	7538.412	0.0000D+00	0.00	0.00	0.00	0.00	-6.7529D+02	-12.01	-13.18	0.00
827.000	7512.727	0.0000D+00	0.00	0.00	0.00	0.00	-5.3386D+02	-9.70	-10.42	0.00
832.000	7487.093	0.0000D+00	0.00	0.00	0.00	0.00	-5.3386D+02	-9.71	-10.42	0.00
835.000	7461.592	0.0000D+00	0.00	0.00	0.00	0.00	-7.6461D+02	-18.50	-14.92	0.00
837.000	7440.512	0.0000D+00	0.00	0.00	0.00	0.00	-1.0914D+03	-20.18	-21.31	0.00
842.000	7374.282	0.0000D+00	0.00	0.00	0.00	0.00	-1.3875D+03	-25.11	-27.09	0.00
847.000	7309.207	0.0000D+00	0.00	0.00	0.00	0.00	-1.3875D+03	-25.07	-27.09	0.00
852.000	7247.301	0.0000D+00	0.00	0.00	0.00	0.00	-1.3875D+03	-25.05	-27.09	0.00
857.000	7176.724	0.0000D+00	0.00	0.00	0.00	0.00	-1.3823D+03	-24.93	-26.99	0.00
866.000	7058.933	0.0000D+00	0.00	0.00	0.00	0.00	-1.3822D+03	-24.90	-26.99	0.00
871.000	6971.667	0.0000D+00	0.00	0.00	0.00	0.00	-1.8440D+03	-32.11	-36.00	0.00
876.000	6885.935	0.0000D+00	0.00	0.00	0.00	0.00	-1.8438D+03	-32.06	-36.00	0.00
878.500	6828.650	0.0000D+00	0.00	0.00	0.00	0.00	-2.0287D+03	-50.48	-39.60	0.00
880.393	6786.247	0.0000D+00	0.00	0.00	0.00	0.00	-2.0287D+03	-50.07	-39.60	0.00
884.267	6698.752	0.0000D+00	0.00	0.00	0.00	0.00	-2.0287D+03	-49.40	-39.60	0.00
891.810	6533.753	0.0000D+00	0.00	0.00	0.00	0.00	-2.0354D+03	-48.13	-39.60	0.00
906.340	6223.151	0.0000D+00	0.00	0.00	0.00	0.00	-2.1127D+03	-46.57	-39.59	0.00
912.500	6096.421	0.0000D+00	0.00	0.00	0.00	0.00	-2.1283D+03	-46.17	-39.59	0.00
929.000	5787.493	0.0000D+00	0.00	0.00	0.00	0.00	-2.1279D+03	-45.16	-39.53	0.00
934.000	5692.065	0.0000D+00	0.00	0.00	0.00	0.00	-2.1425D+03	-44.34	-43.72	0.00
940.650	5576.327	0.0000D+00	0.00	0.00	0.00	0.00	-2.3585D+03	-45.95	-43.71	0.00
954.711	5369.726	0.0000D+00	0.00	0.00	0.00	0.00	-2.4077D+03	-45.36	-43.71	0.00

Table A-19

WATER INJECTION - RUN TIME SUMMARY (continued)

Waskada Lower Amaranth Pool

980.410	5046.006	0.00000D+00	0.00	0.00	0.00	0.00	-2.5745D+03	-44.55	-43.70	0.00
986.245	4981.024	0.00000D+00	0.00	0.00	0.00	0.00	-2.6213D+03	-44.41	-43.70	0.00
990.621	4933.360	0.00000D+00	0.00	0.00	0.00	0.00	-2.6532D+03	-44.29	-43.70	0.00
993.903	4899.501	0.00000D+00	0.00	0.00	0.00	0.00	-2.6749D+03	-44.21	-43.69	0.00
998.326	4856.170	0.00000D+00	0.00	0.00	0.00	0.00	-2.6997D+03	-44.11	-43.69	0.00
1001.038	4830.493	0.00000D+00	0.00	0.00	0.00	0.00	-2.7139D+03	-44.05	-43.69	0.00
1002.394	4818.033	0.00000D+00	0.00	0.00	0.00	0.00	-2.7209D+03	-44.02	-43.69	0.00
1003.750	4805.915	0.00000D+00	0.00	0.00	0.00	0.00	-2.7276D+03	-43.98	-43.69	0.00
1005.298	4792.507	0.00000D+00	0.00	0.00	0.00	0.00	-2.7350D+03	-43.94	-43.69	0.00
1007.049	4777.857	0.00000D+00	0.00	0.00	0.00	0.00	-2.7431D+03	-43.90	-43.69	0.00
1007.539	4773.759	0.00000D+00	0.00	0.00	0.00	0.00	-2.7454D+03	-43.89	-43.68	0.00
1008.117	4769.170	0.00000D+00	0.00	0.00	0.00	0.00	-2.7481D+03	-43.88	-43.68	0.00
1010.541	4753.378	0.00000D+00	0.00	0.00	0.00	0.00	-2.7587D+03	-43.83	-43.68	0.00
1021.343	4680.296	0.00000D+00	0.00	0.00	0.00	0.00	-2.8020D+03	-43.67	-43.67	0.00
1038.121	4586.154	0.00000D+00	0.00	0.00	0.00	0.00	-2.8451D+03	-43.27	-43.49	0.00
1061.732	4414.638	0.00000D+00	0.00	0.00	0.00	0.00	-2.9331D+03	-42.51	-43.23	0.00
1095.000	4369.376	0.00000D+00	0.00	0.00	0.00	0.00	-2.9645D+03	-42.32	-43.17	0.00
1136.768	4244.249	0.00000D+00	0.00	0.00	0.00	0.00	-3.0964D+03	-41.81	-43.06	0.00
1186.250	4115.973	0.00000D+00	0.00	0.00	0.00	0.00	-3.2960D+03	-41.33	-42.96	0.00
1218.000	4045.577	0.00000D+00	0.00	0.00	0.00	0.00	-3.4404D+03	-41.07	-42.89	0.00
1218.250	4044.469	0.00000D+00	0.00	0.00	0.00	0.00	-3.5310D+03	-39.18	-46.97	0.00
1219.071	4055.608	0.00000D+00	181.44	0.00	0.00	0.00	-3.5357D+03	-39.17	-46.97	0.00
1219.630	4063.172	0.00000D+00	181.41	0.00	0.00	0.00	-3.5390D+03	-39.17	-46.97	0.00
1220.302	4072.218	0.00000D+00	181.39	0.00	0.00	0.00	-3.5430D+03	-39.16	-46.97	0.00
1221.184	4084.007	0.00000D+00	181.36	0.00	0.00	0.00	-3.5484D+03	-39.15	-46.97	0.00
1221.785	4094.152	0.00000D+00	181.34	0.00	0.00	0.00	-3.5521D+03	-39.14	-46.96	0.00
1222.239	4104.946	0.00000D+00	181.29	0.00	0.00	0.00	-3.5549D+03	-39.14	-46.96	0.00
1222.634	4116.218	0.00000D+00	181.20	0.00	0.00	0.00	-3.5574D+03	-39.14	-46.96	0.00
1223.074	4126.937	0.00000D+00	181.10	0.00	0.00	0.00	-3.5602D+03	-39.14	-46.96	0.00
1223.593	4137.866	0.00000D+00	181.01	0.00	0.00	0.00	-3.5635D+03	-39.13	-46.96	0.00
1224.227	4149.478	0.00000D+00	180.94	0.00	0.00	0.00	-3.5676D+03	-39.13	-46.96	0.00
1225.029	4162.441	0.00000D+00	180.89	0.00	0.00	0.00	-3.5727D+03	-39.13	-46.96	0.00
1226.096	4178.371	0.00000D+00	180.85	0.00	0.00	0.00	-3.5796D+03	-39.12	-46.96	0.00
1227.619	4198.977	0.00000D+00	180.82	0.00	0.00	0.00	-3.5894D+03	-39.11	-46.96	0.00
1230.024	4228.604	0.00000D+00	180.81	0.00	0.00	0.00	-3.6043D+03	-39.10	-46.96	0.00
1234.246	4277.690	0.00000D+00	180.82	0.00	0.00	0.00	-3.6286D+03	-39.08	-46.95	0.00
1240.105	4359.122	0.00000D+00	180.73	0.00	0.00	0.00	-3.6595D+03	-39.06	-46.95	0.00
1244.405	4423.319	0.00000D+00	180.26	0.00	0.00	0.00	-3.6811D+03	-39.05	-46.95	0.00
1249.238	4487.182	0.00000D+00	179.83	0.00	0.00	0.00	-3.7026D+03	-39.05	-46.94	0.00
1253.139	4547.405	0.00000D+00	179.42	0.00	0.00	0.00	-3.7181D+03	-39.05	-46.94	0.00
1256.310	4596.180	0.00000D+00	178.89	0.00	0.00	0.00	-3.7295D+03	-39.05	-46.94	0.00
1258.464	4630.977	0.00000D+00	178.44	0.00	0.00	0.00	-3.7368D+03	-39.06	-46.94	0.00
1261.961	4685.279	0.00000D+00	178.10	0.00	0.00	0.00	-3.7470D+03	-39.07	-46.94	0.00
1267.862	4766.164	0.00000D+00	177.55	0.00	0.00	0.00	-3.7593D+03	-39.10	-46.95	0.00
1277.000	4873.033	0.00000D+00	176.68	0.00	0.00	0.00	-3.7680D+03	-39.19	-46.97	0.00
1277.500	4878.511	0.00000D+00	175.41	0.00	0.00	0.00	-4.6402D+03	-48.38	-59.03	0.00
1278.854	4905.244	0.00000D+00	216.08	0.00	0.00	0.00	-4.6685D+03	-48.35	-58.98	0.00
1280.772	4940.294	0.00000D+00	216.42	0.00	0.00	0.00	-4.6984D+03	-48.33	-58.92	0.00
1283.848	4991.556	0.00000D+00	216.65	0.00	0.00	0.00	-4.7279D+03	-48.30	-58.84	0.00
1289.171	5073.815	0.00000D+00	216.57	0.00	0.00	0.00	-4.7452D+03	-48.30	-58.73	0.00
1291.423	5106.943	0.00000D+00	215.61	0.00	0.00	0.00	-4.7479D+03	-48.32	-58.69	0.00
1293.810	5139.904	0.00000D+00	215.12	0.00	0.00	0.00	-4.7466D+03	-48.34	-58.66	0.00
1294.000	5132.552	0.00000D+00	0.00	0.00	0.00	0.00	-4.7465D+03	-48.34	-58.66	0.00
1295.000	5147.113	0.00000D+00	214.66	0.00	0.00	0.00	-4.7451D+03	-48.35	-58.65	0.00
1297.212	5177.860	0.00000D+00	214.39	0.00	0.00	0.00	-4.7397D+03	-48.39	-58.62	0.00
1302.127	5247.085	0.00000D+00	213.74	0.00	0.00	0.00	-4.7185D+03	-48.48	-58.59	0.00
1309.163	5345.651	0.00000D+00	212.10	0.00	0.00	0.00	-4.6803D+03	-48.67	-58.57	0.00
1309.623	5328.461	0.00000D+00	0.00	0.00	0.00	0.00	-4.6782D+03	-48.68	-58.57	0.00
1309.972	5333.793	0.00000D+00	209.92	0.00	0.00	0.00	-4.6765D+03	-48.69	-58.57	0.00
1310.486	5341.642	0.00000D+00	209.90	0.00	0.00	0.00	-4.6740D+03	-48.71	-58.56	0.00
1311.000	5349.297	0.00000D+00	209.64	0.00	0.00	0.00	-4.6715D+03	-48.74	-58.56	0.00
1312.000	5364.908	0.00000D+00	209.48	0.00	0.00	0.00	-4.6666D+03	-48.80	-58.56	0.00
1313.325	5364.471	0.00000D+00	139.47	0.00	0.00	0.00	-4.6600D+03	-48.82	-58.56	0.00
1314.523	5365.247	0.00000D+00	139.36	0.00	0.00	0.00	-4.6541D+03	-48.82	-58.56	0.00
1316.188	5368.309	0.00000D+00	139.24	0.00	0.00	0.00	-4.6459D+03	-48.86	-58.56	0.00
1318.806	5375.335	0.00000D+00	139.09	0.00	0.00	0.00	-4.6330D+03	-48.93	-58.55	0.00
1323.773	5391.203	0.00000D+00	138.85	0.00	0.00	0.00	-4.6120D+03	-49.03	-58.55	0.00
1331.464	5423.522	0.00000D+00	138.39	0.00	0.00	0.00	-4.5763D+03	-49.17	-58.54	0.00
1347.568	5484.389	0.00000D+00	137.54	0.00	0.00	0.00	-4.5124D+03	-49.37	-58.51	0.00
1369.048	5556.667	0.00000D+00	135.95	0.00	0.00	0.00	-4.4338D+03	-49.56	-58.45	0.00
1395.205	5627.104	0.00000D+00	134.94	0.00	0.00	0.00	-4.3428D+03	-49.78	-58.38	0.00
1427.584	5686.891	0.00000D+00	131.98	0.00	0.00	0.00	-4.2361D+03	-50.03	-58.30	0.00
1460.000	5724.235	0.00000D+00	129.92	0.00	0.00	0.00	-4.1372D+03	-50.28	-58.23	0.00
1511.873	5754.196	0.00000D+00	128.02	0.00	0.00	0.00	-3.9789D+03	-50.71	-58.14	0.00
1583.000	5759.811	0.00000D+00	125.77	0.00	0.00	0.00	-3.8506D+03	-51.35	-58.00	0.00
1584.000	5728.708	0.00000D+00	-0.00	0.00	0.00	0.00	-3.8493D+03	-51.36	-58.00	0.00
1585.000	5726.665	0.00000D+00	123.93	0.00	0.00	0.00	-4.3626D+03	-61.69	-68.00	0.00
1586.455	5725.923	0.00000D+00	129.69	0.00	0.00	0.00	-4.3643D+03	-61.65	-68.00	0.00
1589.269	5723.542	0.00000D+00	129.70	0.00	0.00	0.00	-4.3700D+03	-61.64	-67.99	0.00
1595.436	5714.475	0.00000D+00	129.73	0.00	0.00	0.00	-4.3847D+03	-61.62	-67.98	0.00

Table A-19

WATER INJECTION - RUN TIME SUMMARY (continued)

Waskada Lower Amaranth Pool

1609.594	5698.736	0.00000D+00	130.10	0.00	0.00	0.00	-4.3742D+03	-61.86	-67.95	0.00
1642.171	5661.116	0.00000D+00	130.54	0.00	0.00	0.00	-4.3561D+03	-62.35	-67.87	0.00
1719.531	5595.100	0.00000D+00	130.63	0.00	0.00	0.00	-4.2860D+03	-63.46	-67.62	0.00
1825.000	5493.598	0.00000D+00	130.99	0.00	0.00	0.00	-4.2333D+03	-64.88	-67.09	0.00
2047.526	5289.023	0.00000D+00	131.99	0.00	0.00	0.00	-4.2300D+03	-69.01	-65.80	0.00
2190.000	5207.758	0.00000D+00	137.10	0.00	0.00	0.00	-4.2511D+03	-72.64	-65.02	0.00
2321.597	5139.225	0.00000D+00	141.34	0.00	0.00	0.00	-4.2703D+03	-76.67	-64.34	0.00
2555.000	4964.001	0.00000D+00	145.86	0.00	0.00	0.00	-4.2093D+03	-84.11	-62.44	0.00
2795.937	4813.246	0.00000D+00	152.95	0.00	0.00	0.00	-4.0391D+03	-92.02	-59.71	0.00
2920.000	4753.304	0.00000D+00	158.28	0.00	0.00	0.00	-3.9474D+03	-96.59	-58.38	0.00
3054.372	4675.010	0.00000D+00	161.22	0.00	0.00	0.00	-3.8338D+03	-100.81	-56.70	0.00
3285.000	4518.751	0.00000D+00	163.58	0.00	0.00	0.00	-3.6423D+03	-106.33	-53.57	0.00
3467.500	4410.299	0.00000D+00	166.34	0.00	0.00	0.00	-3.4796D+03	-110.61	-50.84	0.00
3650.000	4304.497	0.00000D+00	168.06	0.00	0.00	0.00	-3.2948D+03	-114.60	-48.02	0.00

Table A-20

WATER INJECTION - CUMULATIVE INJECTION/PRODUCTION SUMMARY

Waskada Lower Amaranth Pool

CUMULATIVE INJECTION/PRODUCTION SUMMARY:

		INJECTION					PRODUCTION			
TIME days	PRESSURE kPa	GAS m 3	WATER m 3	OIL m 3	POLYMER kg	AQUIFER m 3	GAS m 3	WATER m 3	OIL m 3	POLYMER kg
0.250	8694.356	0.00000D+00	0.00	0.00	0.00	0.00	-6.1559D+00	-0.32	-0.12	0.00
1.319	8693.921	0.00000D+00	0.00	0.00	0.00	0.00	-3.2480D+01	-1.67	-0.63	0.00
5.525	8692.209	0.00000D+00	0.00	0.00	0.00	0.00	-1.3605D+02	-6.99	-2.65	0.00
21.796	8685.175	0.00000D+00	0.00	0.00	0.00	0.00	-5.3668D+02	-27.58	-10.46	0.00
80.216	8660.087	0.00000D+00	0.00	0.00	0.00	0.00	-1.9752D+03	-101.63	-38.50	0.00
91.250	8655.682	0.00000D+00	0.00	0.00	0.00	0.00	-2.2468D+03	-115.62	-43.80	0.00
137.125	8636.066	0.00000D+00	0.00	0.00	0.00	0.00	-3.3764D+03	-173.89	-65.82	0.00
182.500	8618.072	0.00000D+00	0.00	0.00	0.00	0.00	-4.4936D+03	-231.61	-87.59	0.00
183.000	8617.921	0.00000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
188.000	8617.967	0.00000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
201.000	8618.063	0.00000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
214.000	8618.174	0.00000D+00	0.00	0.00	0.00	0.00	-4.5059D+03	-232.24	-87.83	0.00
219.000	8613.067	0.00000D+00	0.00	0.00	0.00	0.00	-4.7880D+03	-247.41	-93.33	0.00
228.960	8602.952	0.00000D+00	0.00	0.00	0.00	0.00	-5.3500D+03	-277.53	-104.29	0.00
258.384	8573.319	0.00000D+00	0.00	0.00	0.00	0.00	-7.0101D+03	-366.07	-136.65	0.00
273.750	8557.892	0.00000D+00	0.00	0.00	0.00	0.00	-7.8771D+03	-412.22	-153.55	0.00
332.408	8499.514	0.00000D+00	0.00	0.00	0.00	0.00	-1.1187D+04	-587.36	-218.07	0.00
365.000	8467.202	0.00000D+00	0.00	0.00	0.00	0.00	-1.3025D+04	-684.40	-253.92	0.00
456.250	8377.310	0.00000D+00	0.00	0.00	0.00	0.00	-1.8174D+04	-954.24	-354.28	0.00
547.500	8288.028	0.00000D+00	0.00	0.00	0.00	0.00	-2.3322D+04	-1222.38	-454.64	0.00
579.000	8257.323	0.00000D+00	0.00	0.00	0.00	0.00	-2.5099D+04	-1314.76	-489.29	0.00
584.000	8257.011	0.00000D+00	0.00	0.00	0.00	0.00	-2.5130D+04	-1315.93	-489.89	0.00
594.572	8256.311	0.00000D+00	0.00	0.00	0.00	0.00	-2.5195D+04	-1318.45	-491.16	0.00
624.000	8254.221	0.00000D+00	0.00	0.00	0.00	0.00	-2.5376D+04	-1325.54	-494.69	0.00
629.000	8250.342	0.00000D+00	0.00	0.00	0.00	0.00	-2.5814D+04	-1332.77	-503.24	0.00
638.750	8242.695	0.00000D+00	0.00	0.00	0.00	0.00	-2.6668D+04	-1346.98	-519.91	0.00
641.000	8241.067	0.00000D+00	0.00	0.00	0.00	0.00	-2.6865D+04	-1350.27	-523.76	0.00
646.000	8218.873	0.00000D+00	0.00	0.00	0.00	0.00	-2.9307D+04	-1389.96	-571.61	0.00
652.103	8191.805	0.00000D+00	0.00	0.00	0.00	0.00	-3.2288D+04	-1438.32	-629.57	0.00
663.485	8140.846	0.00000D+00	0.00	0.00	0.00	0.00	-3.7846D+04	-1528.34	-738.02	0.00
682.321	8056.600	0.00000D+00	0.00	0.00	0.00	0.00	-4.7044D+04	-1677.16	-917.52	0.00
706.161	7949.993	0.00000D+00	0.00	0.00	0.00	0.00	-5.8685D+04	-1865.46	-1144.70	0.00
730.000	7843.321	0.00000D+00	0.00	0.00	0.00	0.00	-7.0326D+04	-2053.84	-1371.87	0.00
735.000	7829.394	0.00000D+00	0.00	0.00	0.00	0.00	-7.1887D+04	-2079.02	-1402.33	0.00
747.534	7794.644	0.00000D+00	0.00	0.00	0.00	0.00	-7.5799D+04	-2142.36	-1478.67	0.00
775.267	7717.969	0.00000D+00	0.00	0.00	0.00	0.00	-8.4454D+04	-2283.16	-1647.56	0.00
803.000	7641.330	0.00000D+00	0.00	0.00	0.00	0.00	-9.3108D+04	-2424.49	-1816.44	0.00
808.000	7615.813	0.00000D+00	0.00	0.00	0.00	0.00	-9.6062D+04	-2466.98	-1874.09	0.00
812.500	7592.850	0.00000D+00	0.00	0.00	0.00	0.00	-9.8720D+04	-2505.21	-1925.97	0.00
817.000	7569.884	0.00000D+00	0.00	0.00	0.00	0.00	-1.0138D+05	-2543.47	-1977.86	0.00
821.250	7542.666	0.00000D+00	0.00	0.00	0.00	0.00	-1.0425D+05	-2594.52	-2033.87	0.00
822.000	7538.412	0.00000D+00	0.00	0.00	0.00	0.00	-1.0475D+05	-2603.52	-2043.75	0.00
827.000	7512.727	0.00000D+00	0.00	0.00	0.00	0.00	-1.0742D+05	-2652.02	-2095.85	0.00
832.000	7487.093	0.00000D+00	0.00	0.00	0.00	0.00	-1.1009D+05	-2700.54	-2147.95	0.00
835.000	7461.592	0.00000D+00	0.00	0.00	0.00	0.00	-1.1239D+05	-2756.05	-2192.71	0.00
837.000	7440.512	0.00000D+00	0.00	0.00	0.00	0.00	-1.1457D+05	-2796.42	-2235.33	0.00
842.000	7374.282	0.00000D+00	0.00	0.00	0.00	0.00	-1.2151D+05	-2921.96	-2370.76	0.00
847.000	7308.207	0.00000D+00	0.00	0.00	0.00	0.00	-1.2844D+05	-3047.32	-2506.20	0.00
852.000	7242.301	0.00000D+00	0.00	0.00	0.00	0.00	-1.3538D+05	-3172.55	-2641.64	0.00
857.000	7176.724	0.00000D+00	0.00	0.00	0.00	0.00	-1.4229D+05	-3297.21	-2776.58	0.00
866.000	7058.933	0.00000D+00	0.00	0.00	0.00	0.00	-1.5473D+05	-3521.33	-3019.46	0.00
871.000	6971.667	0.00000D+00	0.00	0.00	0.00	0.00	-1.6395D+05	-3681.86	-3199.45	0.00
876.000	6885.935	0.00000D+00	0.00	0.00	0.00	0.00	-1.7317D+05	-3842.14	-3379.44	0.00
878.500	6828.650	0.00000D+00	0.00	0.00	0.00	0.00	-1.7824D+05	-3968.34	-3478.43	0.00
880.393	6786.247	0.00000D+00	0.00	0.00	0.00	0.00	-1.8208D+05	-4063.12	-3553.40	0.00
884.267	6698.752	0.00000D+00	0.00	0.00	0.00	0.00	-1.8994D+05	-4254.46	-3706.78	0.00
891.810	6533.753	0.00000D+00	0.00	0.00	0.00	0.00	-2.0530D+05	-4617.51	-4005.48	0.00
906.340	6223.151	0.00000D+00	0.00	0.00	0.00	0.00	-2.3585D+05	-5294.08	-4580.78	0.00
912.500	6096.421	0.00000D+00	0.00	0.00	0.00	0.00	-2.4896D+05	-5578.51	-4824.69	0.00
929.000	5787.493	0.00000D+00	0.00	0.00	0.00	0.00	-2.8407D+05	-6323.60	-5476.88	0.00
934.000	5692.065	0.00000D+00	0.00	0.00	0.00	0.00	-2.9581D+05	-6555.28	-5695.48	0.00
940.650	5576.327	0.00000D+00	0.00	0.00	0.00	0.00	-3.1149D+05	-6960.86	-5986.12	0.00
954.711	5369.226	0.00000D+00	0.00	0.00	0.00	0.00	-3.4528D+05	-7498.64	-6600.65	0.00
980.410	5046.096	0.00000D+00	0.00	0.00	0.00	0.00	-4.1145D+05	-8643.65	-7723.72	0.00
986.245	4981.024	0.00000D+00	0.00	0.00	0.00	0.00	-4.2674D+05	-8902.77	-7978.69	0.00
990.621	4933.360	0.00000D+00	0.00	0.00	0.00	0.00	-4.3835D+05	-9036.61	-8169.91	0.00
993.903	4899.501	0.00000D+00	0.00	0.00	0.00	0.00	-4.4712D+05	-9241.[illegible]	-8313.32	0.00
998.326	4856.170	0.00000D+00	0.00	0.00	0.00	0.00	-4.5[illegible]D+05	-9416.83	-8506.57	0.00
1001.038	4830.493	0.00000D+00	0.00	0.00	0.00	0.00	-4.664[illegible]D+05	-9556.[illegible]	-8625.04	0.00
1002.394	4818.033	0.00000D+00	0.00	0.00	0.00	0.00	[illegible]	-961[illegible]	-8684.[illegible]	0.00

Table A-20

WATER INJECTION - CUMULATIVE INJECTION/PRODUCTION SUMMARY (continued)

Waskada Lower Amaranth Pool

1003.750	4305.915	0.0000D+00	0.00	0.00	0.00	0.00	-4.7382D+05	-9675.62	-8743.52	0.00
1005.298	4792.507	0.0000D+00	0.00	0.00	0.00	0.00	-4.7905D+05	-9743.65	-8811.14	0.00
1007.049	4777.857	0.0000D+00	0.00	0.00	0.00	0.00	-4.8286D+05	-9820.51	-8887.62	0.00
1007.539	4773.759	0.0000D+00	0.00	0.00	0.00	0.00	-4.8420D+05	-9842.02	-8909.03	0.00
1008.117	4769.170	0.0000D+00	0.00	0.00	0.00	0.00	-4.8579D+05	-9867.40	-8934.30	0.00
1010.541	4753.378	0.0000D+00	0.00	0.00	0.00	0.00	-4.9248D+05	-9973.66	-9040.19	0.00
1021.343	4680.296	0.0000D+00	0.00	0.00	0.00	0.00	-5.2274D+05	-10445.32	-9511.94	0.00
1038.121	4586.154	0.0000D+00	0.00	0.00	0.00	0.00	-5.7048D+05	-11171.36	-10241.67	0.00
1081.732	4414.638	0.0000D+00	0.00	0.00	0.00	0.00	-6.9839D+05	-13025.19	-12126.86	0.00
1095.000	4369.376	0.0000D+00	0.00	0.00	0.00	0.00	-7.3773D+05	-13586.73	-12699.62	0.00
1136.768	4244.249	0.0000D+00	0.00	0.00	0.00	0.00	-8.6705D+05	-15333.09	-14498.25	0.00
1186.250	4115.973	0.0000D+00	0.00	0.00	0.00	0.00	-1.0301D+06	-17378.10	-16623.93	0.00
1218.000	4045.577	0.0000D+00	0.00	0.00	0.00	0.00	-1.1394D+06	-18682.09	-17985.68	0.00
1218.250	4044.469	0.0000D+00	0.00	0.00	0.00	0.00	-1.1403D+06	-18691.88	-17997.42	0.00
1219.071	4055.608	0.0000D+00	149.05	0.00	0.00	0.00	-1.1432D+06	-18724.06	-18036.00	0.00
1219.630	4063.172	0.0000D+00	250.43	0.00	0.00	0.00	-1.1451D+06	-18745.95	-18062.25	0.00
1220.302	4072.218	0.0000D+00	372.23	0.00	0.00	0.00	-1.1475D+06	-18772.25	-18093.79	0.00
1221.184	4084.007	0.0000D+00	532.14	0.00	0.00	0.00	-1.1507D+06	-18806.76	-18135.20	0.00
1221.785	4094.152	0.0000D+00	641.15	0.00	0.00	0.00	-1.1528D+06	-18830.29	-18163.43	0.00
1222.239	4104.946	0.0000D+00	723.44	0.00	0.00	0.00	-1.1544D+06	-18848.06	-18184.75	0.00
1222.634	4116.218	0.0000D+00	795.03	0.00	0.00	0.00	-1.1558D+06	-18863.52	-18203.31	0.00
1223.074	4126.937	0.0000D+00	874.73	0.00	0.00	0.00	-1.1574D+06	-18880.74	-18223.97	0.00
1223.593	4137.866	0.0000D+00	968.75	0.00	0.00	0.00	-1.1592D+06	-18901.07	-18248.37	0.00
1224.227	4149.478	0.0000D+00	1083.42	0.00	0.00	0.00	-1.1615D+06	-18925.86	-18278.13	0.00
1225.029	4162.441	0.0000D+00	1228.47	0.00	0.00	0.00	-1.1644D+06	-18957.24	-18315.79	0.00
1226.096	4178.371	0.0000D+00	1421.49	0.00	0.00	0.00	-1.1682D+06	-18998.99	-18365.90	0.00
1227.619	4195.977	0.0000D+00	1696.79	0.00	0.00	0.00	-1.1736D+06	-19058.54	-18437.40	0.00
1230.024	4228.604	0.0000D+00	2131.64	0.00	0.00	0.00	-1.1823D+06	-19152.58	-18550.33	0.00
1234.246	4277.690	0.0000D+00	2895.18	0.00	0.00	0.00	-1.1976D+06	-19317.63	-18748.60	0.00
1240.105	4359.122	0.0000D+00	3954.00	0.00	0.00	0.00	-1.2191D+06	-19546.44	-19023.65	0.00
1244.405	4423.319	0.0000D+00	4729.03	0.00	0.00	0.00	-1.2349D+06	-19714.33	-19225.49	0.00
1249.238	4487.182	0.0000D+00	5598.15	0.00	0.00	0.00	-1.2528D+06	-19903.04	-19452.37	0.00
1253.139	4547.405	0.0000D+00	6298.20	0.00	0.00	0.00	-1.2673D+06	-20055.40	-19635.53	0.00
1256.310	4596.180	0.0000D+00	6865.36	0.00	0.00	0.00	-1.2791D+06	-20179.21	-19784.35	0.00
1258.464	4630.977	0.0000D+00	7249.83	0.00	0.00	0.00	-1.2872D+06	-20263.36	-19885.50	0.00
1261.961	4685.279	0.0000D+00	7872.47	0.00	0.00	0.00	-1.3003D+06	-20399.93	-20049.61	0.00
1267.862	4766.164	0.0000D+00	8920.23	0.00	0.00	0.00	-1.3225D+06	-20630.66	-20326.68	0.00
1277.000	4873.033	0.0000D+00	10534.73	0.00	0.00	0.00	-1.3569D+06	-20988.75	-20755.88	0.00
1277.500	4878.511	0.0000D+00	10622.44	0.00	0.00	0.00	-1.3592D+06	-21012.94	-20785.39	0.00
1278.854	4905.244	0.0000D+00	10915.00	0.00	0.00	0.00	-1.3655D+06	-21078.42	-20865.25	0.00
1280.772	4940.294	0.0000D+00	11330.07	0.00	0.00	0.00	-1.3745D+06	-21171.10	-20978.25	0.00
1283.848	4991.556	0.0000D+00	11996.62	0.00	0.00	0.00	-1.3891D+06	-21319.70	-21159.26	0.00
1289.171	5073.815	0.0000D+00	13149.35	0.00	0.00	0.00	-1.4143D+06	-21576.81	-21471.88	0.00
1291.423	5106.943	0.0000D+00	13634.93	0.00	0.00	0.00	-1.4250D+06	-21685.63	-21604.07	0.00
1293.810	5139.904	0.0000D+00	14148.38	0.00	0.00	0.00	-1.4364D+06	-21801.01	-21744.08	0.00
1294.000	5132.552	0.0000D+00	14148.38	0.00	0.00	0.00	-1.4373D+06	-21810.19	-21755.22	0.00
1295.000	5147.113	0.0000D+00	14363.05	0.00	0.00	0.00	-1.4420D+06	-21858.54	-21813.87	0.00
1297.212	5177.860	0.0000D+00	14837.37	0.00	0.00	0.00	-1.4525D+06	-21965.60	-21943.57	0.00
1302.127	5247.085	0.0000D+00	15887.72	0.00	0.00	0.00	-1.4757D+06	-22203.84	-22231.48	0.00
1309.163	5345.651	0.0000D+00	17380.24	0.00	0.00	0.00	-1.5086D+06	-22546.30	-22643.60	0.00
1309.623	5328.461	0.0000D+00	17380.24	0.00	0.00	0.00	-1.5108D+06	-22568.65	-22670.49	0.00
1309.972	5333.793	0.0000D+00	17453.60	0.00	0.00	0.00	-1.5124D+06	-22585.67	-22690.96	0.00
1310.486	5341.642	0.0000D+00	17561.43	0.00	0.00	0.00	-1.5148D+06	-22610.71	-22721.06	0.00
1311.000	5349.297	0.0000D+00	17669.19	0.00	0.00	0.00	-1.5172D+06	-22635.76	-22751.16	0.00
1312.000	5364.908	0.0000D+00	17878.67	0.00	0.00	0.00	-1.5219D+06	-22684.56	-22809.72	0.00
1313.325	5364.471	0.0000D+00	18063.43	0.00	0.00	0.00	-1.5280D+06	-22749.24	-22887.30	0.00
1314.523	5365.247	0.0000D+00	18230.42	0.00	0.00	0.00	-1.5336D+06	-22807.74	-22957.47	0.00
1316.188	5368.309	0.0000D+00	18462.23	0.00	0.00	0.00	-1.5414D+06	-22889.09	-23054.95	0.00
1318.806	5375.335	0.0000D+00	18826.45	0.00	0.00	0.00	-1.5535D+06	-23017.21	-23208.28	0.00
1323.273	5391.203	0.0000D+00	19446.64	0.00	0.00	0.00	-1.5741D+06	-23236.22	-23469.80	0.00
1331.464	5423.522	0.0000D+00	20580.27	0.00	0.00	0.50	-1.6116D+06	-23639.01	-23949.32	0.00
1347.568	5484.389	0.0000D+00	22795.10	0.00	0.00	0.00	-1.6842D+06	-24433.99	-24891.46	0.00
1369.048	5556.667	0.0000D+00	25715.46	0.00	0.00	0.00	-1.7795D+06	-25498.66	-26146.97	0.00
1395.205	5627.104	0.0000D+00	29221.41	0.00	0.00	0.00	-1.8931D+06	-26800.68	-27673.96	0.00
1427.584	5686.891	0.0000D+00	33494.72	0.00	0.00	0.00	-2.0302D+06	-28420.62	-29561.69	0.00
1460.000	5724.235	0.0000D+00	37703.04	0.00	0.00	0.00	-2.1643D+06	-30050.68	-31449.41	0.00
1511.873	5754.196	0.0000D+00	44343.60	0.00	0.00	0.00	-2.3718D+06	-32681.38	-34465.06	0.00
1583.000	5759.811	0.0000D+00	53289.23	0.00	0.00	0.00	-2.6457D+06	-36333.92	-38590.32	0.00
1584.000	5728.708	0.0000D+00	53289.23	0.00	0.00	0.00	-2.6495D+06	-36385.28	-38648.33	0.00
1585.000	5726.665	0.0000D+00	53413.15	0.00	0.00	0.00	-2.6539D+06	-36446.96	-38716.33	0.00
1586.455	5725.923	0.0000D+00	53601.82	0.00	0.00	0.00	-2.6602D+06	-36536.64	-38815.24	0.00
1589.269	5723.542	0.0000D+00	53966.87	0.00	0.00	0.00	-2.6725D+06	-36710.12	-39006.61	0.00
1595.436	5716.475	0.0000D+00	54767.30	0.00	0.00	0.00	-2.6996D+06	-37090.43	-39425.83	0.00
1609.594	5698.736	0.0000D+00	56609.17	0.00	0.00	0.00	-2.7618D+06	-37966.15	-40387.78	0.00
1642.171	5661.116	0.0000D+00	60861.82	0.00	0.00	0.00	-2.9037D+06	-39997.34	-42598.78	0.00
1719.531	5585.190	0.0000D+00	70967.16	0.00	0.00	0.00	-3.2352D+06	-44906.76	-47830.21	0.00
1825.000	5493.598	0.0000D+00	84782.30	0.00	0.00	0.00	-3.6917D+06	-51749.09	-54905.61	0.00
2047.526	5289.023	0.0000D+00	114154.19	0.00	0.00	0.00	-4.6230D+06	-67106.65	-69547.74	0.00
2190.000	5207.758	0.0000D+00	133687.41	0.00	0.00	0.00	-5.2287D+06	-77455.97	-78813.75	0.00
2321.597	5139.225	0.0000D+00	152287.71	0.00	0.00	0.00	-5.7906D+06	-87545.98	-87277.55	0.00
2555.000	4964.001	0.0000D+00	186331.45	0.00	0.00	0.00	-6.7731D+06	-107178.58	-101850.36	0.00
2795.937	4913.246	0.0000D+00	223182.[illegible]	0.00	0.00	0.00	-7.7463D+06	-129350.36	-116236.19	0.00
2920.000	4753.304	0.0000D+00	242819.63	0.00	0.00	0.00	-8.2360D+06	-141133.41	-123478.88	0.00
3054.372	4675.010	0.0000D+00	264482.41	0.00	0.00	0.00	-8.7511D+06	-154879.03	-131097.90	0.00
3285.000	4518.751	0.0000D+00	302202.09	0.00	0.00	0.00	-9.5212D+06	-179401.61	-143452.38	0.00
3467.500	4410.299	0.0000D+00	332566.[illegible]	[illegible]	[illegible]	[illegible]	-1.0[illegible]D+07	-199593.73	-152730.74	0.00
3650.000	4334.497	0.0000D+00	36[illegible].44	[illegible]	[illegible]	[illegible]	-1.0827D+07	[illegible]	-161494.31	0.00

Table A-21

WATER INJECTION - OIL SATURATION AT THE END OF THE FORECAST

Waskada Lower Amaranth Pool

time: 3650.000 days

plane z= 1

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.35168	0.35092	0.29101	0.25016	0.26263	0.31610	0.20963	0.21493	0.21998	0.33016
y = 14	0.35060	0.35025	0.27268	0.23579	0.22475	0.30591	0.27663	0.21803	0.32573	0.33490
y = 13	0.28831	0.27193	0.23567	0.19718	0.22203	0.28321	0.31562	0.33196	0.33424	0.34135
y = 12	0.24662	0.22983	0.19535	0.16641	0.18846	0.25801	0.28080	0.31484	0.32409	0.29129
y = 11	0.25906	0.24846	0.21537	0.18747	0.20841	0.27440	0.31133	0.36140	0.34191	0.31304
y = 10	0.30578	0.29208	0.26172	0.23239	0.25479	0.32036	0.28028	0.35327	0.30894	0.32881
y = 9	0.29573	0.29572	0.27459	0.25535	0.26865	0.32739	0.32978	0.23022	0.31973	0.22873
y = 8	0.26457	0.28822	0.29185	0.26727	0.28561	0.22131	0.31798	0.34867	0.21137	0.22263
y = 7	0.20833	0.22165	0.26290	0.24256	0.27593	0.32132	0.32029	0.31134	0.22223	0.21314
y = 6	0.18826	0.21927	0.25507	0.23313	0.27783	0.29080	0.31530	0.31003	0.23974	0.20643
y = 5	0.23336	0.22941	0.21625	0.17606	0.24390	0.27158	0.26416	0.25093	0.23828	0.17069
y = 4	0.21724	0.20011	0.16027	0.15031	0.17298	0.23979	0.25367	0.24596	0.22480	0.19068
y = 3	0.23942	0.23017	0.19995	0.14791	0.20759	0.25699	0.25605	0.25801	0.24681	0.22763
y = 2	0.25206	0.25434	0.23760	0.20697	0.23509	0.25628	0.25054	0.26755	0.26802	0.25573
y = 1	0.26356	0.26408	0.25300	0.22743	0.24489	0.24425	0.24234	0.26042	0.27061	0.26579

	x = 11	12	13	14	15
y = 15	0.31694	0.28596	0.33977	0.35617	0.34767
y = 14	0.30586	0.26534	0.31296	0.34649	0.33369
y = 13	0.26691	0.20462	0.23909	0.31029	0.33364
y = 12	0.20101	0.15247	0.19543	0.24642	0.27026
y = 11	0.23374	0.18575	0.22513	0.26471	0.28625
y = 10	0.27973	0.19515	0.26032	0.30716	0.31888
y = 9	0.29133	0.26716	0.28540	0.31253	0.31609
y = 8	0.27960	0.26723	0.28391	0.30967	0.30919
y = 7	0.24972	0.23808	0.26769	0.30400	0.31132
y = 6	0.22593	0.19739	0.26771	0.29367	0.30889
y = 5	0.18526	0.15816	0.20054	0.24709	0.26617
y = 4	0.13760	0.13807	0.17047	0.22114	0.25210
y = 3	0.19018	0.16598	0.21735	0.27309	0.29963
y = 2	0.22901	0.21378	0.27788	0.32364	0.33513
y = 1	0.24234	0.24255	0.30039	0.33469	0.33012

plane z= 2

	x = 1	2	3	4	5	6	7	8	9	10
y = 15	0.34768	0.34780	0.28471	0.23437	0.24580	0.30272	0.32050	0.32276	0.33006	0.34297
y = 14	0.34739	0.34659	0.26436	0.21096	0.22776	0.27943	0.30965	0.33540	0.33103	0.33369
y = 13	0.28281	0.26446	0.21698	0.16410	0.18905	0.24017	0.27334	0.31816	0.32322	0.28728
y = 12	0.23338	0.21134	0.16446	0.13006	0.15721	0.20340	0.24345	0.28135	0.28421	0.23734
y = 11	0.24188	0.22312	0.18784	0.13693	0.18069	0.22589	0.26044	0.30518	0.30369	0.26199
y = 10	0.28168	0.26320	0.22975	0.19397	0.21912	0.28087	0.31666	0.31313	0.32332	0.30731
y = 9	0.28928	0.28203	0.25427	0.23014	0.24884	0.30684	0.30206	0.29471	0.30196	0.31070
y = 8	0.28833	0.29335	0.28108	0.26393	0.27727	0.27471	0.28026	0.27723	0.28326	0.28101
y = 7	0.27340	0.27855	0.28342	0.27556	0.28924	0.27194	0.26467	0.26810	0.28111	0.28488
y = 6	0.25269	0.25992	0.25082	0.23615	0.26106	0.28084	0.26807	0.25726	0.27822	0.23363
y = 5	0.22343	0.21382	0.19381	0.16328	0.21650	0.23510	0.26445	0.24915	0.22893	0.20458
y = 4	0.20402	0.18696	0.16012	0.13003	0.16011	0.22258	0.25444	0.24191	0.21120	0.18222
y = 3	0.22778	0.20863	0.17986	0.15769	0.18307	0.24448	0.26272	0.25544	0.23899	0.21566
y = 2	0.24771	0.23748	0.21416	0.18426	0.20481	0.26507	0.27217	0.26771	0.26183	0.24802
y = 1	0.25005	0.24917	0.23318	0.20070	0.21486	0.27532	0.27551	0.26862	0.26850	0.25968

	x = 11	12	13	14	15
y = 15	0.28786	0.25420	0.30536	0.33137	0.32598
y = 14	0.26304	0.21963	0.27183	0.31331	0.32780
y = 13	0.21380	0.17179	0.21418	0.27038	0.29796
y = 12	0.16749	0.15012	0.16792	0.21004	0.24184
y = 11	0.20245	0.16196	0.19638	0.23770	0.25779
y = 10	0.24737	0.20797	0.24372	0.28248	0.29686
y = 9	0.27494	0.25209	0.27332	0.30072	0.30323
y = 8	0.27029	0.25745	0.28633	0.30466	0.30214
y = 7	0.23366	0.22212	0.23918	0.29245	0.29883
y = 6	0.20608	0.18403	0.21823	0.27116	0.28687
y = 5	0.17481	0.15334	0.18349	0.22025	0.24148
y = 4	0.15522	0.15007	0.16029	0.19764	0.22810
y = 3	0.18034	0.15956	0.19884	0.25111	0.27393
y = 2	0.21198	0.19675	0.25218	0.30092	0.31378
y = 1	0.22887	0.22307	0.27778	0.31322	0.31031

plane z= 3

Table A-21

WATER INJECTION - OIL SATURATION AT THE END OF THE FORECAST (continued)

Waskada Lower Amaranth Pool

y \ x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.33040	0.33009	0.26859	0.21992	0.22496	0.27085	0.28826	0.30530	0.31589	0.30936
y = 14	0.32996	0.32817	0.24900	0.19883	0.20761	0.25027	0.27350	0.30410	0.31092	0.29417
y = 13	0.26713	0.24877	0.20359	0.15960	0.17703	0.21337	0.24081	0.27706	0.28265	0.25474
y = 12	0.21850	0.19845	0.15978	0.15005	0.15407	0.18336	0.21570	0.25266	0.25565	0.21373
y = 11	0.22158	0.20653	0.17663	0.15394	0.17027	0.20024	0.22916	0.26245	0.26431	0.23604
y = 10	0.25478	0.23930	0.20728	0.17983	0.19718	0.24462	0.27303	0.29334	0.28770	0.26776
y = 9	0.26093	0.25362	0.22971	0.20758	0.22291	0.26999	0.27739	0.28042	0.27954	0.27445
y = 8	0.25796	0.26165	0.25044	0.23806	0.24603	0.27610	0.27219	0.26869	0.27016	0.26736
y = 7	0.23814	0.24336	0.25050	0.25077	0.25642	0.26522	0.25966	0.25848	0.25759	0.25715
y = 6	0.20492	0.21617	0.22656	0.21842	0.23405	0.24663	0.24806	0.24740	0.25000	0.24307
y = 5	0.20155	0.19086	0.18593	0.16305	0.20500	0.22542	0.22847	0.23236	0.23895	0.21227
y = 4	0.19355	0.18129	0.15889	0.15010	0.18437	0.20700	0.21838	0.22443	0.21733	0.19262
y = 3	0.21267	0.20162	0.17963	0.16137	0.18794	0.21844	0.22336	0.22989	0.23242	0.22091
y = 2	0.23068	0.22398	0.20759	0.18817	0.20444	0.22725	0.23401	0.23868	0.24259	0.24101
y = 1	0.23321	0.23308	0.22212	0.20145	0.21067	0.23151	0.23724	0.23865	0.24464	0.24582

y \ x =	11	12	13	14	15
y = 15	0.23554	0.23076	0.26804	0.28816	0.28504
y = 14	0.23748	0.20138	0.24595	0.27488	0.28559
y = 13	0.19810	0.16380	0.20071	0.24536	0.26497
y = 12	0.16260	0.15010	0.16497	0.20082	0.22475
y = 11	0.19274	0.16071	0.19147	0.22516	0.24176
y = 10	0.22891	0.20180	0.23122	0.25701	0.26586
y = 9	0.24870	0.23326	0.25013	0.26573	0.26924
y = 8	0.23389	0.24550	0.25810	0.26839	0.26789
y = 7	0.23926	0.22993	0.24749	0.28402	0.26814
y = 6	0.21505	0.19609	0.22865	0.23926	0.26504
y = 5	0.18569	0.16114	0.19524	0.22750	0.24125
y = 4	0.16082	0.15018	0.16966	0.20709	0.22831
y = 3	0.19173	0.16827	0.20894	0.24727	0.26060
y = 2	0.22099	0.20707	0.24781	0.27270	0.27847
y = 1	0.23369	0.22667	0.26182	0.27799	0.27582

plane z= 4

y \ x =	1	2	3	4	5	6	7	8	9	10
y = 15	0.31551	0.31534	0.25811	0.22009	0.24345	0.27596	0.27862	0.27921	0.28010	0.27807
y = 14	0.31532	0.31276	0.24022	0.20370	0.22441	0.26013	0.27171	0.27947	0.27469	0.27062
y = 13	0.24904	0.23554	0.20801	0.16703	0.18911	0.22901	0.24894	0.26590	0.26107	0.24467
y = 12	0.20479	0.19401	0.16365	0.15009	0.15592	0.19850	0.23147	0.24878	0.24358	0.21271
y = 11	0.22268	0.21001	0.18260	0.15543	0.17152	0.21050	0.23793	0.25630	0.24834	0.22751
y = 10	0.25033	0.24082	0.21798	0.19375	0.20815	0.24158	0.25663	0.26812	0.25966	0.24457
y = 9	0.24287	0.24224	0.23418	0.22140	0.23167	0.24941	0.25570	0.25311	0.25104	0.24250
y = 8	0.22878	0.23136	0.23901	0.23037	0.23865	0.24366	0.24516	0.24319	0.24146	0.23173
y = 7	0.18392	0.19123	0.21575	0.21272	0.21297	0.22618	0.22786	0.22894	0.22275	0.21768
y = 6	0.16831	0.16317	0.16931	0.17330	0.17417	0.18892	0.19797	0.19930	0.20298	0.20536
y = 5	0.15710	0.15734	0.14221	0.14246	0.14619	0.15471	0.16178	0.17856	0.19245	0.19786
y = 4	0.15281	0.15200	0.14134	0.14162	0.14779	0.15457	0.15628	0.17121	0.18273	0.18642
y = 3	0.17834	0.17134	0.15451	0.14527	0.14322	0.15318	0.15727	0.16978	0.18492	0.19470
y = 2	0.21200	0.20001	0.17140	0.14306	0.13377	0.15520	0.16590	0.17399	0.18778	0.19932
y = 1	0.21082	0.20485	0.18032	0.15219	0.13039	0.15774	0.17053	0.17683	0.18841	0.19861

y \ x =	11	12	13	14	15
y = 15	0.24866	0.22694	0.23311	0.26178	0.25809
y = 14	0.23481	0.20669	0.23785	0.25404	0.25865
y = 13	0.20126	0.17072	0.20228	0.23400	0.24650
y = 12	0.16542	0.15022	0.16727	0.19887	0.21489
y = 11	0.19340	0.16269	0.19084	0.21490	0.22524
y = 10	0.21784	0.19588	0.21563	0.22978	0.23393
y = 9	0.22746	0.21470	0.22349	0.23076	0.23357
y = 8	0.22330	0.21815	0.22384	0.23133	0.23332
y = 7	0.21381	0.20979	0.21852	0.23392	0.23899
y = 6	0.20247	0.19279	0.21159	0.23287	0.24050
y = 5	0.19061	0.16845	0.19483	0.21629	0.22484
y = 4	0.16806	0.15092	0.17287	0.20196	0.21449
y = 3	0.19199	0.17240	0.20030	0.22331	0.23151
y = 2	0.20612	0.19946	0.21990	0.23340	0.23595
y = 1	0.21024	0.20886	0.22698	0.23508	0.23274

APPENDIX B

APPENDIX B

FLUID DISTRIBUTION CURVES AND HISTORY MATCH RESULTS

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APPENDIX B

Development of Fluid Distribution Curves.

To develop this set of curves the following steps are required:

- Convert the laboratory initial displacement pressure, observed in the laboratory capillary pressure curve, to equivalent reservoir initial displacement pressure. The relevant expression is given by

$$(P_c)_R = (P_c)_L * \frac{(\gamma_{ow})_R}{(\gamma_{ow})_L}$$

where

$(P_c)_R$	is the reservoir capillary pressure
$(P_c)_L$	is the laboratory capillary pressure
$(\gamma_{ow})_R$	is the interfacial tension of the reservoir fluid system, i.e. oil-water (= 28 dynes/cm)
$(\gamma_{ow})_L$	is the interfacial tension of the laboratory fluid system, i.e. air-water (= 72 dynes/cm)

Using the laboratory capillary pressure data, the reservoir capillary pressure for the observed initial laboratory displacement pressure is calculated as follows:

$$(P_c)_R = 4.35 \text{ psi} \times \frac{28}{72} = 1.69 \text{ psi}$$

- Convert the reservoir capillary pressure to height using the following expression:

$$h_{ID} = \frac{144\ (P_c)_R}{(\rho_w - \rho_o)}$$

or

$$h_{ID} = \frac{144 \times 1.69}{(63.5 - 40.8)\ lb/ft^3} = 10.7\ ft = 3.3\ m$$

. Calculate the free water level (FWL) or zero capillary pressure level to have the same initial conditions as in the laboratory.

$$FWL = -IOWC - 3.3$$

where IOWC is the estimated initial field oil-water contact, i.e. -465 m subsea. Therefore,

$$FWL = -465 - 3.3 = -468.3\ m$$

. Determine a relationship between depth and laboratory capillary pressure as shown in Figure B-1. This is done using the following expression:

$$(P_c)_R = \frac{h\ (\rho_w - \rho_o)}{144}\ ,\ h = FWL - \text{Depth subsea}$$

and

$$(P_c)_L = (P_c)_R \times \frac{(\gamma_{aw})_L}{(\gamma_{ow})_R}$$

. Plot the laboratory capillary pressure for different core permeabilities to obtain the fluid distribution curves shown in Figure B-2.

Procedure to Calculate Water Saturation

- Locate the depth of interest in Figure B-1 and read the corresponding laboratory capillary pressure.

- Using the porosity value, determine the expected permeability applying the best available porosity-permeability relationship.

- Identify in Figure B-2 the capillary pressure curve to be used for the required interval in the well. Each individual permeability value should be close to one of the curves shown in Figure B-2.

- Using the laboratory capillary pressure obtained from Figure B-1 for each subsea depth and the corresponding permeability value, the water saturation for each interval is obtained directly from the fluid distribution curves, Figure B-2.

The tabular set up would be as follows:

Subsea Depth, m	$(P_c)_L$, kPa	Curve No. (Figure B-2)	Water Saturation, %
-	-	-	-
-	-	-	-
-	-	-	-

Calculation of Flowing Bottom Hole Pressures

A series of fluid level and well rate tests were conducted on wells 9-30, 13-30, 14-30, 15-30, 16-30, 9-25, 16-25, 2-31, 3-31, 4-31, 6-31, and 11-31 as shown in Table C-1.
B

To calculate flowing bottom hole pressures, the following procedure is used: (Calculations are shown for well 9-30)

- from Table C-1, read fluid level (oil column), i.e. oil column = 940 m = 3080 ft.

- from Table C-1, read oil and water rates
  oil rate = 1.24 m^3/d
  water rate = 0.25 m^3/d

- calculate water cut on 83-01-12

  $$f_w = \frac{0.25}{0.25 + 1.24} = .17 = 17\%.$$ This water cut is very much

  different from the 48.2% corresponding to the 1982 average. This suggests a somewhat erratic production data for this initial period. Similar differences were calculated for the other wells.

- calculate average pressure gradient ρ_{avg}

  $$\rho_{avg} = \frac{1.24 \times 0.28 + 0.25 \times 0.433}{1.24 + 0.25} = .305 \text{ psi/ft}$$

  With a bottom hole depth of 3080 ft, flowing bottom hole pressure
  = 3080 x 0.305
  = 939 psi
  = 6479 kPa

History Match Results

Table B-2 shows the history match of water-cut and flowing bottomhole pressures for twelve wells currently drilled in the model area (no data was taken in the 11-30 well). Considering the somewhat erratic initial production data for the water-cut measurements, which are also required in calculating the average fluid gradient, the match shown in Table B-2 was considered satisfactory.

To get a history match the following procedure was followed:

- all wells in the model were fractured to increase their flow capacity and to provide a reasonable level of flowing bottomhole pressures. This simulated the actual fracturing of the wells in the field. Fracturing in the model was performed by multiplying by a factor of 10 or 30, the permeabilities of the grid blocks containing well elements, and their corresponding adjacent grid blocks.

- the water relative permeability curve was adjusted to bring predicted water cuts more closely in line with the observed distribution of water-cut values.

Figure B-1

DEPTH VS LABORATORY CAPILLARY PRESSURE

Waskada Lower Amaranth Pool

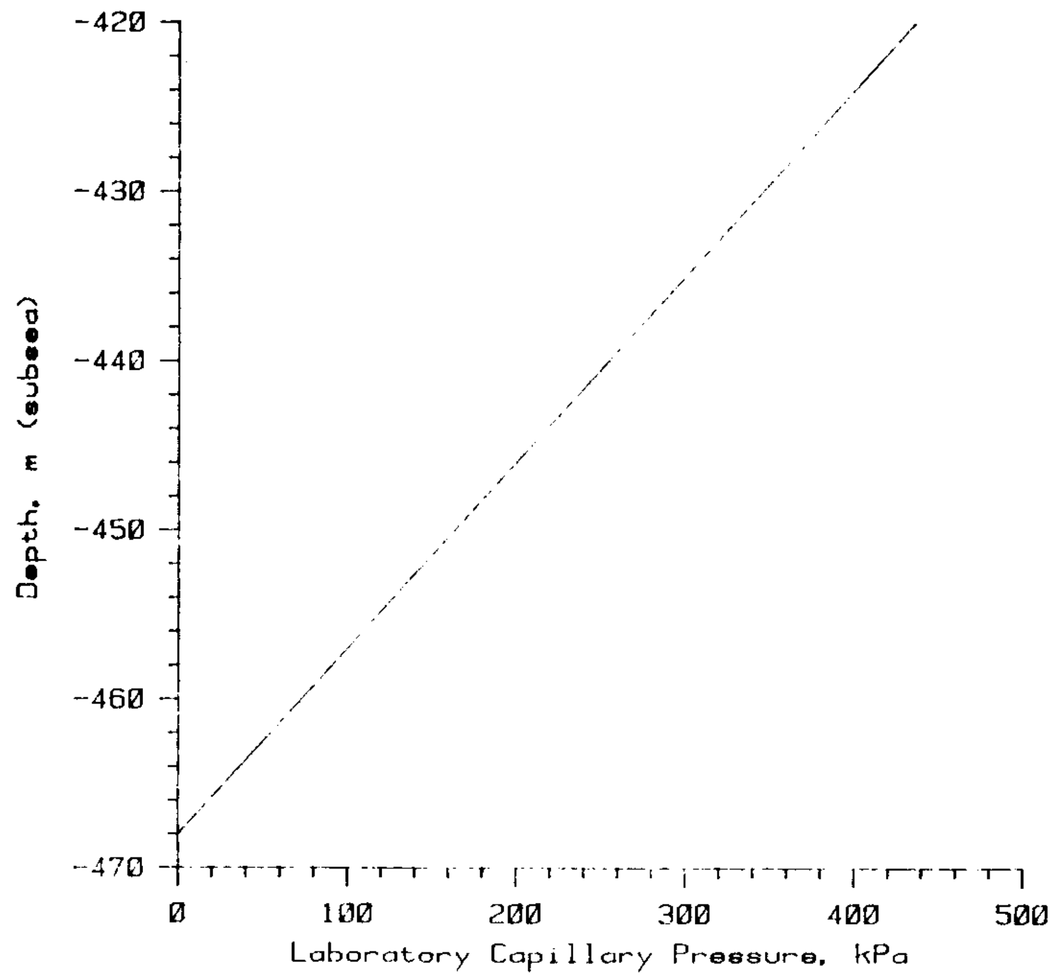

Figure B-2

FLUID DISTRIBUTION CURVES

Waskada Lower Amaranth Pool

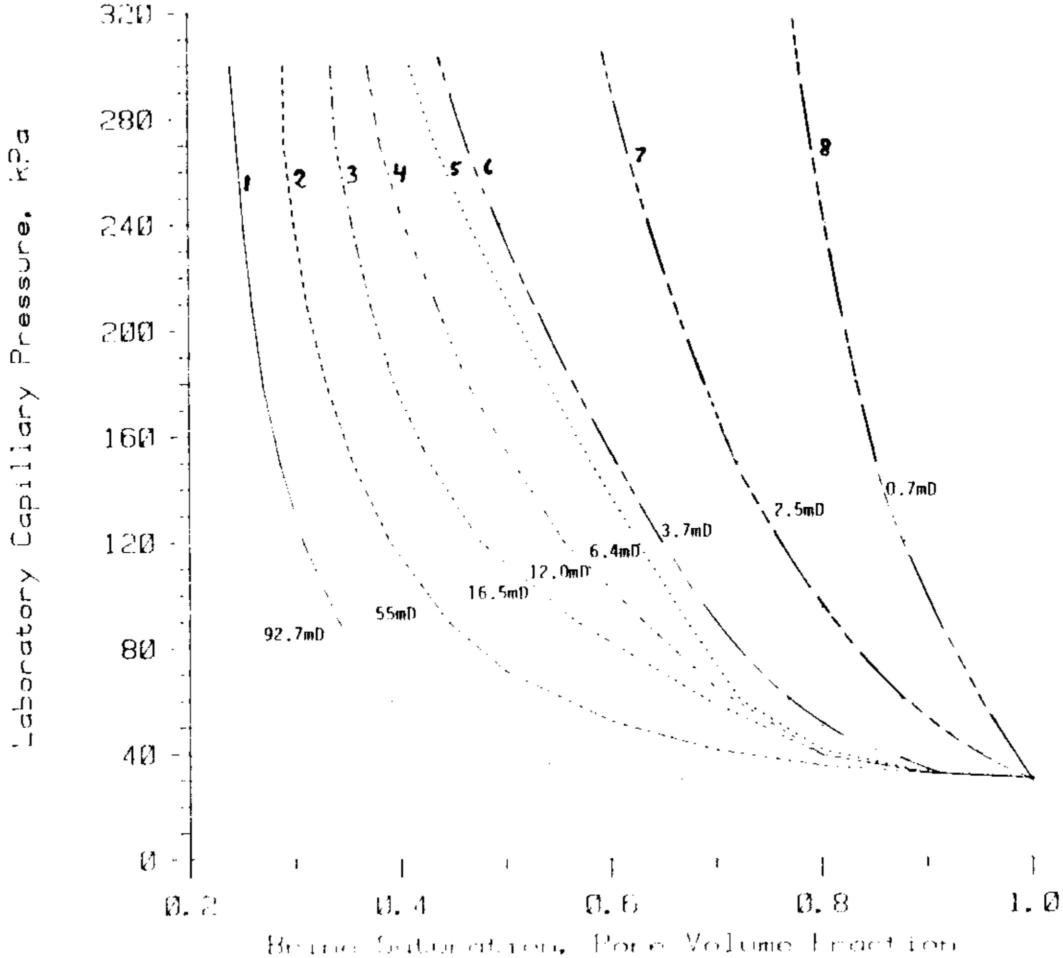

Table B-1

FLUID LEVELS AND WELL TEST RESULTS

Waskada Lower Amaranth Pool

Well Location	Fluid Level (m)	Date	Test Results Oil (m^3)	Water (m^3)	Gas (km^3)	Hours	Date
9-30-1-25 W1M	940	83-01-12	1.24	0.25	N/A	24	83-01-12
13-30	585	83-01-11	7.94	1.98	0.30	24	83-01-02
14-30	350	83-01-11	7.95	2.65	0.30	24	83-01-03
15-30	192	83-01-12	2.50	4.09	0.04	24	83-01-06
16-30	532	83-01-12	4.11	4.11	0.15	23½	83-01-05
9-25-1-26	912	83-01-11	0.38	0.21	0.05	24	81-01-04
16-25	917	83-01-11	0.98	0.05	0.22	24	83-12-22
2-31-1-25	250	83-01-15	N/A	N/A	N/A	N/A	N/A
3-31	922	83-01-15	N/A	N/A	N/A	N/A	N/A
4-31	922	83-01-12	N/A	N/A	N/A	N/A	N/A
6-31	269	83-01-15	N/A	N/A	N/A	N/A	N/A
11-31	355	83-01-15	N/A	N/A	N/A	N/A	N/A

Table B-2

HISTORY MATCH RESULTS

Waskada Lower Amaranth Pool

Well	Field Measurements		Model Predictions	
	Water Cut, % (1982 average)	Flowing Bottom Hole Pressure, kPa (83-01-12)	Water Cut, % (83-01-14)	Flowing Bottom Hole Pressure, kPa (83-01-14)
9-30	48.2	6479	33.1	5414
11-30	50.0	N/A	66.6	4321
13-30	78.0	4106	66.6	3563
14-30	38.0	2520	64.9	2542
15-30	31.0	1630	47.8	1438
16-30	46.0	4350	40.3	3902
2-31	33.0	N/A	44.0	2413
3-31	50.0	N/A	43.4	4646
4-31	30.0	N/A	39.1	3112
6-31	30.0	N/A	21.1	4620
9-25	9.6	7014	46.0	3626
16-25	36.0	5840	78.1	500