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NUMERICAL SIMULATION OF

WESTERN GEOPOWER UNIT 1 PROJECT,

THE GEYSERS GEOTHERMAL FIELD,

CALIFORNIA, USA

for

WESTERN GEOPOWER CORP.

British Columbia, Canada

by

GeothermEx, Inc.

Richmond, California

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This report was prepared by GeothermEx. Inc., based on the information available at the time the underlying investigations were undertaken. GeothermEx is a U.S. corporation, in business since 1973, specializing exclusively in providing consulting, operational and training services in the exploration, development, assessment and valuation of geothermal energy.

I hereby consent to the public filing of this report and to extracts from, or a summary of, this report in the written disclosure of Ram Power, Corp.

I confirm that at the time of this report I did not own any securities in Western GeoPower Corp. or any related company. Since the date of this report, I have not subsequently acquired any securities in Western GeoPower Corp. or a related company, including Ram Power, Corp.

Dated March 25, 2010

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SUMMARY

A reservoir model of The Geysers field in its entirety was developed to study the planned development in the Western GeoPower Unit 1 area. This field-wide model was necessary to build to assess the interference between the WGP Unit 1 project and those of the other operators, who share the same field. Results of this study indicate that if most of the Abril leasehold proves productive upon drilling, a 35 MW(net) development is possible to sustain. However, to support this level of generation, some of the production wells would have to be located on the Abril lease; this would entail some exploration risk.

To minimize exploration risk, modeling efforts focused on developments where production wells are located only within the former Unit 15 area, where proven productive areas are known. Reservoir modeling indicates that a 25 MW(net) development can be supported by 7 production wells without the need for any make-up wells on account of resource degradation over the entire project life. Forecast of steam production indicates the plant would be able to operate at 35 MW(net) for several months and then the generation would decline to about 25 MW(net) over the next 5-6 years.

Finally, it should be noted that forecast from a reservoir model assumes a certain strategy of field and power plant operation. In reality, the operator of the project would improve and optimize the field and plant operations and maintenance strategy throughout the project life. Furthermore, the forecast based on the development model has assumed only the condensed steam (amounting to 25% of the steam production rate, including the water losses in the cooling tower) to be injected. Calpine and NCPA inject over 60% of their produced steam mass when supplemental water from captured winter runoff and treated municipal effluent are included. Through use of supplemental water from these two sources, or ground water, the performance of the WGP Unit 1 can be further improved. As such, we believe the WGP Unit 1 would most likely sustain a capacity higher than 25 MW(net), possibly 27 to 28 MW(net), over its project life even without any make-up well drilling.

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1. INTRODUCTION

1.1 Purpose and Scope

Western GeoPower, Corperation ("WGP") contracted GeothermEx to develop a reservoir simulation model of their Unit 1 area of the Geysers geothermal field. The location of WGP's lease holdings, which include the Unit 1 area, are shown in Figure 1.1.

Due to the high permeabilities throughout the Geysers field, development of a reservoir model covering only the WGP Unit 1 area of the field was determined to be insufficient and thereby ruled out. Instead, a generalized three-dimensional, dual-porosity field-wide model was developed based on published and publicly available data. Once this field-wide model was calibrated to represent the overall field response, a highly refined grid was added to the WGP Unit 1 area to improve the model's ability to match local reservoir conditions. In this way, the field-wide model would be used to describe the pressure boundaries of the WGP Unit 1 area over time.

1.2 Production and Injection Database

The Geysers database of the California Division of Oil, Gas and Geothermal Resources ("CDOGGR") was the primary source of production and injection information used in this analysis. A plot of the historical field-wide production and injection data for The Geysers is shown in Figure 1.2. Historical production and injection data in the old Unit 15 area is shown in Figure 1.3.

Data on approximately 75% of the individual wells at The Geysers is publicly available. The wells within the NCPA area of the field are drilled on Federal land and are not included in the publicly available database. However, production from this area was estimated by taking the difference between the monthly field-wide production data that is public available, and the summation of the production rates in the CDOGGR database.

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2. MODEL DESCRIPTION

2.1 Grid System

The base simulation grid for The Geysers reservoir model covers an area of nearly 80 square miles, and is oriented in the NW-SE direction (Figure 2.1), parallel to the main structural features of the field. The rectangular outline of the grid is approximately 6 miles long in the NE-SW direction and 13 miles long in the NW-SE direction, and it covers all of the active areas of the field. The base grid blocks are all the same size, measuring 2,000 feet on each side.

The model has 6 layers and extends from sea level to 12,000 feet below sea level. Each layer is 2,000 feet thick, and has 15 blocks in the NE-SW direction and 32 blocks in the NW-SE direction, for a total of 2,880 blocks. Based on geological data and historical field response, the reservoir is modeled using a double-porosity formulation based on the Warren and Root method. This is a formulation commonly used to represent reservoirs in which fractures primarily control fluid flow, while storage is primarily contained within the rock matrix.

In the WGP Unit 1 area of the field, the grid system in layers 2 through 5 was refined to improve the model's ability to match individual well performance. In this refined area, as shown in Figure 2.2, the grid blocks are 500 feet in the x and y directions and 500 feet thick.

2.2 Well System

The wells in the reservoir model are assumed to be completed in the fracture blocks, while the matrix blocks provide the bulk of the reservoir storage capacity. Considering the large number of wells drilled in the field (more than 700), and the limited well data outside of WGP's Unit 1 area, production and injection wells were grouped by well pad. Locations of these pads were selected based on the CDOGGR maps. In the base grid, production is derived from layers 1 and 2, and injection occurs in layers 2, 3 and 4. Within the NCPA area, production and injection was distributed within their lease.

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In some areas of the field, injection and production wells are located on the same pad, which would result in having production and injection within the same grid block. This potential problem was resolved by specifying that injection occurs in a deeper layer, and production in a shallower layer. While some injection wells are completed at relatively shallow depths, it is generally accepted that the injection water sinks toward the bottom of the reservoir due to gravitational effects.

Within the WGP Unit 1 area, the old Unit 15 production and injection wells were defined using steam entry data. A map of the old Unit 15 area, containing potential drilling targets, is shown in Figure 2.3. The location of the current WGP wells are likewise based on steam entry data recorded during drilling.

2.3 History Matching

Historical production and injection data as described earlier were input into the model, which was then allowed to run for the period from 1960 through the end of 2010. Reservoir pressures calculated by the model were then compared with observed pressures. The model was then "tuned" to match the observed pressure data as closely as possible. The important parameters that were adjusted during most of the history matching period were the fracture porosity, fracture and matrix permeabilities, and the fracture spacing. In the later phase of the history match (from about 1995 on), the amount of water-in-place (*i.e.*, the matrix porosity and the initial water saturation) and the fracture spacing (which effects heat transfer and boiling of injected water), were varied to obtain a match to observed data. Numerous runs of the model were made, adjusting the above parameters on a trial-and-error basis, until a good match was obtained between observed and calculated pressures.

Static reservoir pressure data used for comparison with model results was derived from the CDOGGR database, which included a useful number of shut-in wells scattered throughout the field with relatively long wellhead pressure histories. A program was developed to convert these wellhead pressures, using information on wellhead elevation and steam density, to absolute

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pressures at mean sea level (the top of the reservoir). This enabled the model results (also interpolated to mean sea level by the simulation program) to be compared directly to the observed shut-in wellhead pressure data.

The location of these observation wells, chosen on the basis of location and availability of shut-in pressure data, are shown in Figure 2.4. The matches to the observed pressure response at these wells are included in Appendix A. These results demonstrate the model's ability to predict the sharp drop in reservoir pressure during the 1980s, the shallower pressure decline rates since the late 1990s, and the nearly zero pressure decline implied by the stabilized field-wide production rates observed since 2002.

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3. FORECAST OF FUTURE FIELD PERFORMANCE

3.1 Forecasting Procedure

Before the model could be used in forecasting field performance, it was necessary to change the way in which production was specified in the model. During the history-matching process, flow rates and injection rates were specified for each well or group of wells (pad), and the model calculated the resulting changes in reservoir pressure.

In forecast mode, the production wells were switched to pressure control and allowed to flow at as high a rate as possible for the given pressure constraint. For the wells (pads) outside of the WGP Unit 1 area this constraint was based on flowing wellhead pressure within the range reported in the CDOGGR database. After switching the well constraints in the model to pressure, forecast runs were made and the productivity indexes for each well or group of wells (pad) were adjusted in an iterative fashion. After many runs, a reasonable match was obtained between the flow rates predicted by the model and reported flow rates (CDOGGR database).

Using these calibrated productivity indexes, the model was used to make base case predictions of field performance through 2030. These results, shown in Figure 3.1, are based on the current field development. Simulation results suggest that the decline rate over the next decade may be closer to 1-2 percent per year.

For the WGP Unit 1 area, the productivity indexes of the individual wells were adjusted to match the projected stabilized flow rates after 6 months assuming a wellhead pressure of 87 psia. Likewise, the productivity indexes of the wells that have not been drill to date (WGP-5 through WGP-7) were adjusted to match the average performance of existing wells (WGP-1, WGP-3, and WGP-4). In the WGP forecasts, it is assumed that well WGP-2 will be converted into an injection well or forked (side-tracked) to increase its productivity.

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3.2 Field Performance Forecast

Several forecasts of the performance in the Unit 1 area were made to optimize field development. The most optimal scenario has well WGP-6 being drilled near the Abril 1-1 location and well WGP-7 being drilled north of the Filley 3 pad for a total of 7 production wells. This scenario includes WGP-2 being forked (side tracked) to improve its productivity and injection going into a reworked well A-17. The results for this scenario, shown in Figure 3.2, indicate that sufficient steam would be available to operate the plant at 35 MW for several months and then the generation would decline to about 25 MW over the next 5-6 years.

Conversion of the forecasted steam rates to net generation rates are based on steam usage values provided by WGP. For the 35 MW(net) case the steam demand is 622 KPH and at 25 MW(net) the steam demand is approximately 460 KPH. Since the reservoir model is based on average flow rates, these values were adjusted to 606 KPH and 450 KPH based on the availability factor of 97.5%. At the lower generation level of 25 MW(net), the wellhead pressure constraint was reduced from 87 to 75 psia.

The scenario shown in Figure 3.2 includes a slim-hole injection well drilling in 2015. This second injection well helps in spreading out the injection which results in improved pressure support once sufficient superheat is developed within the reservoir. This second injection well is needed since the current plan on using the existing well A-17 introduces a high level of risk over the life of the project (being an old well it is unlikely to last for an additional 20 years).

These results need to be viewed within the limitation of any mathematical model. The long-term variations in the projected flow rates are a result of the grid block size and relative permeability effects. One would expect that the actual flow rate would follow these trends but would be generally smoother. Also, this forecast assumes no changes in the well field over time. In most fields optimization continues throughout the project. In many fields, such as The Geysers, this

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ongoing optimization of the field (and power plant in some cases) has resulted in higher production rates compared to the "static" forecasts.

Furthermore, the forecast based on the development model has assumed only the condensed steam (amounting to 25% of the production steam rate, which includes the water losses in the cooling tower) to be injected. Calpine and NCPA inject up to 60% of their produced steam mass when supplemental water from captured winter runoff and treated municipal effluent are included. Use of supplemental water from these two sources, or ground water, the performance of the WGP Unit 1 can be further improved.

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FIGURES

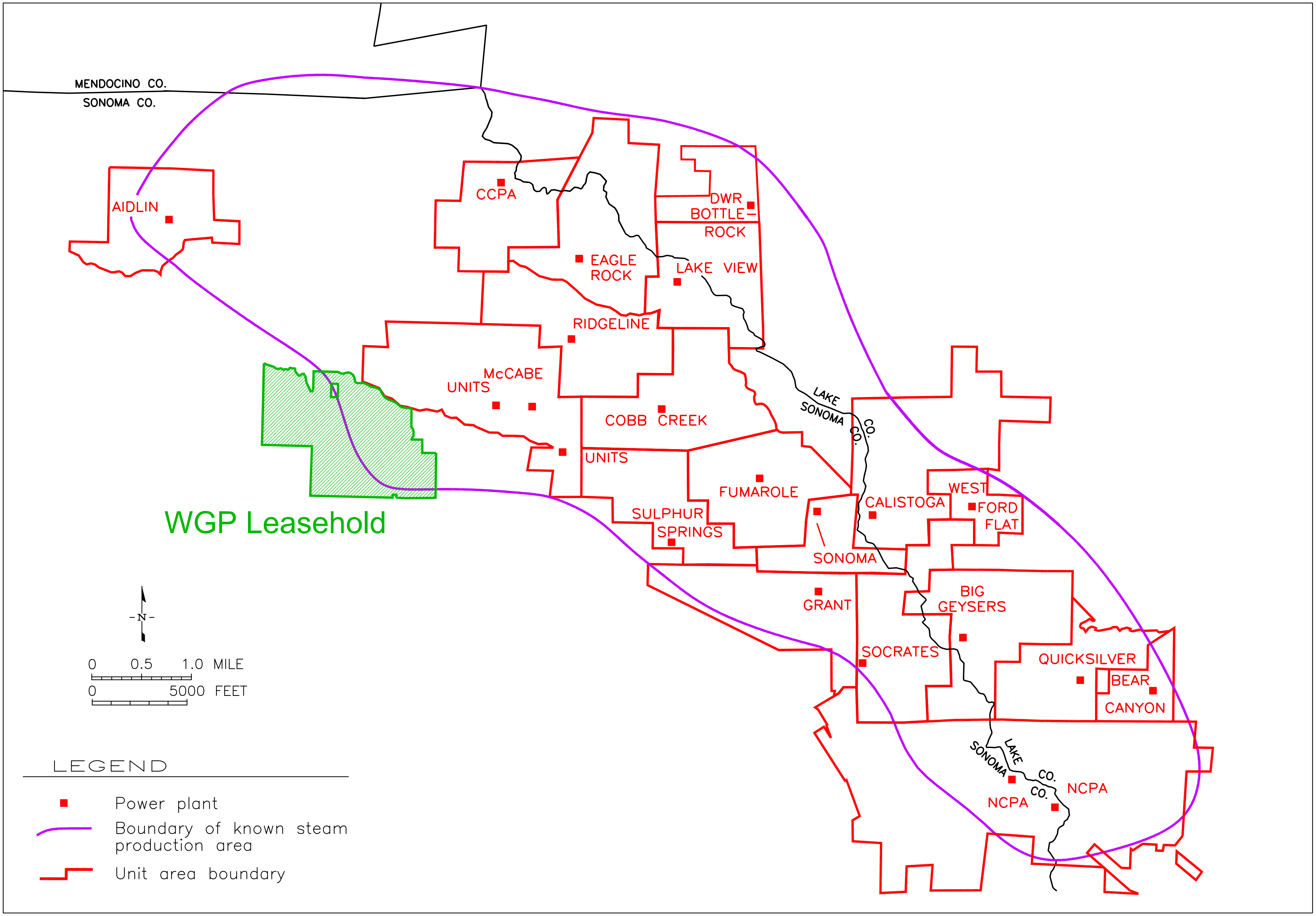

Figure 1.1: Historically dedicated areas within The Geysers Geothermnal Field

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Figure 1.2 Historical field-wide production and injection data for The Geysers

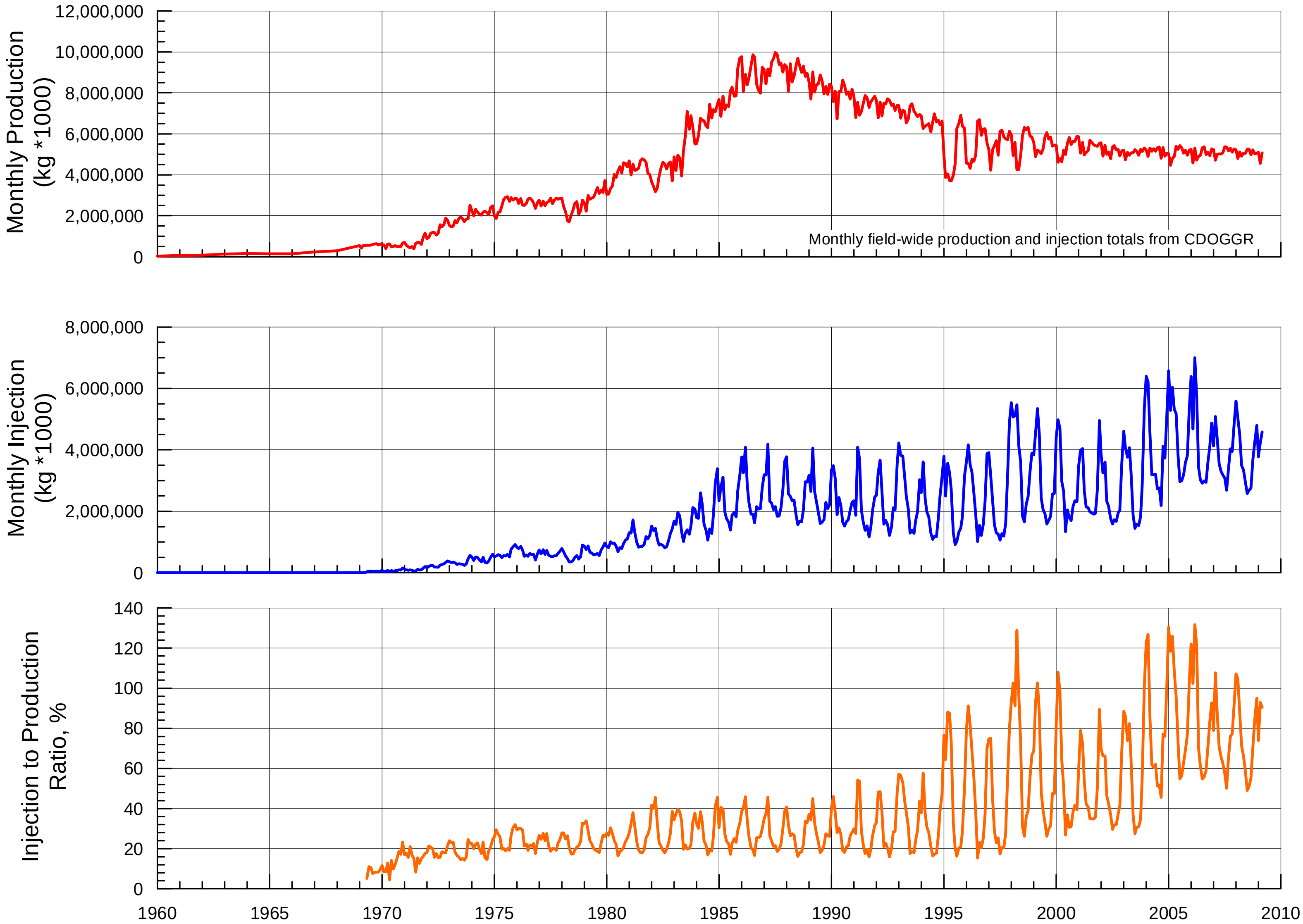

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Figure 1.3 Historical production and injection data in the old Unit 15 area

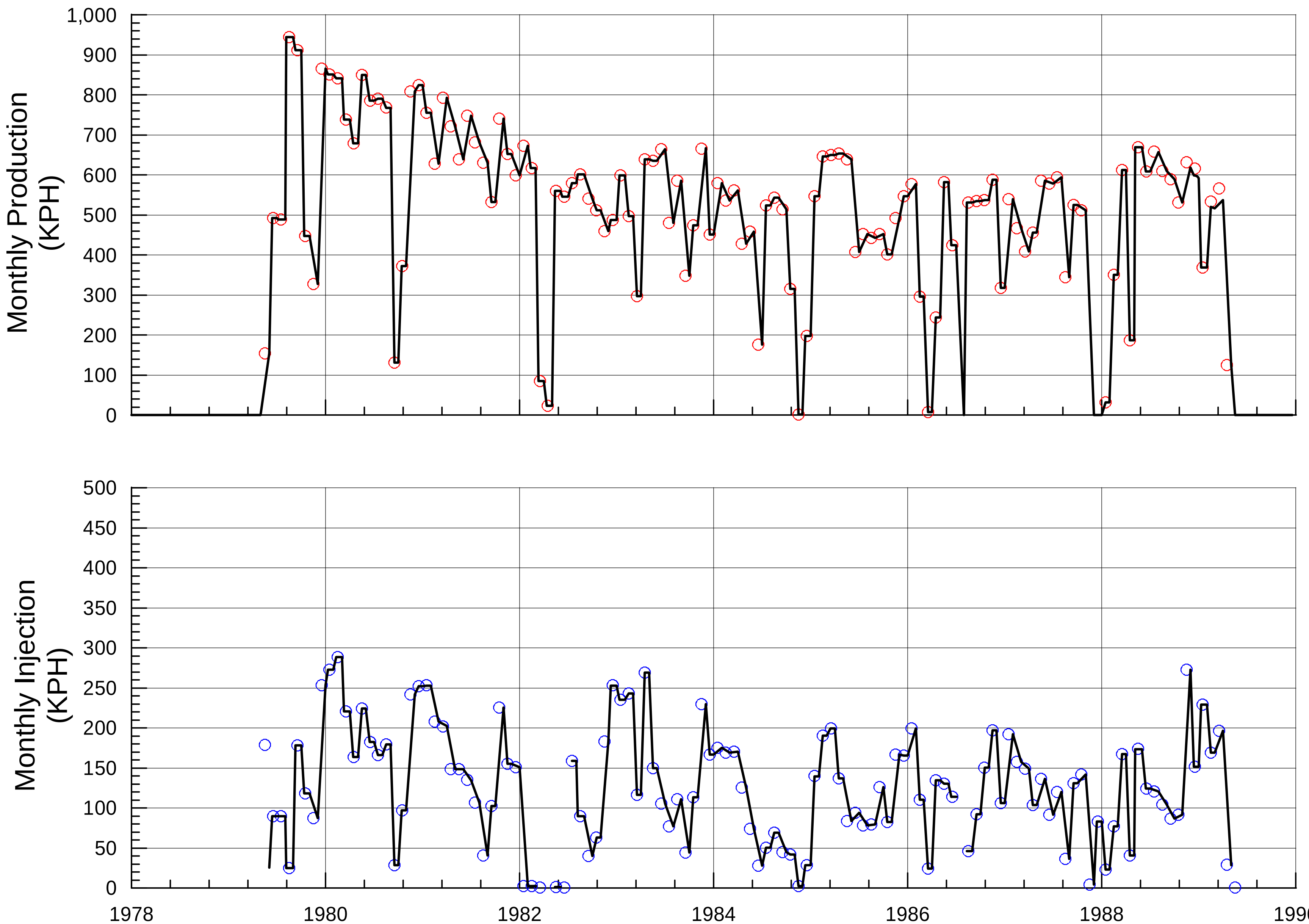

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Figure 2.1: Base grid system used in The Geysers field model

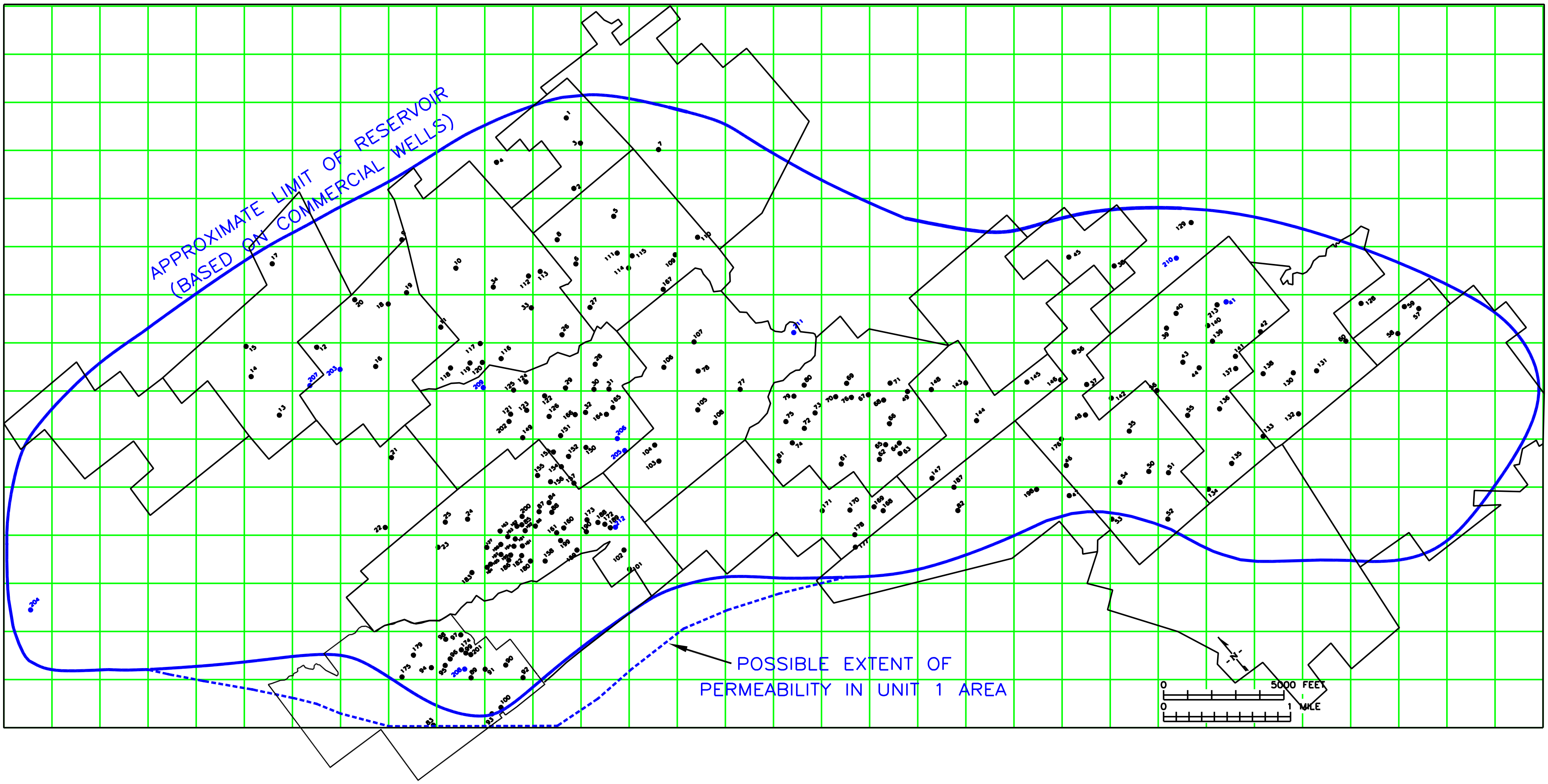
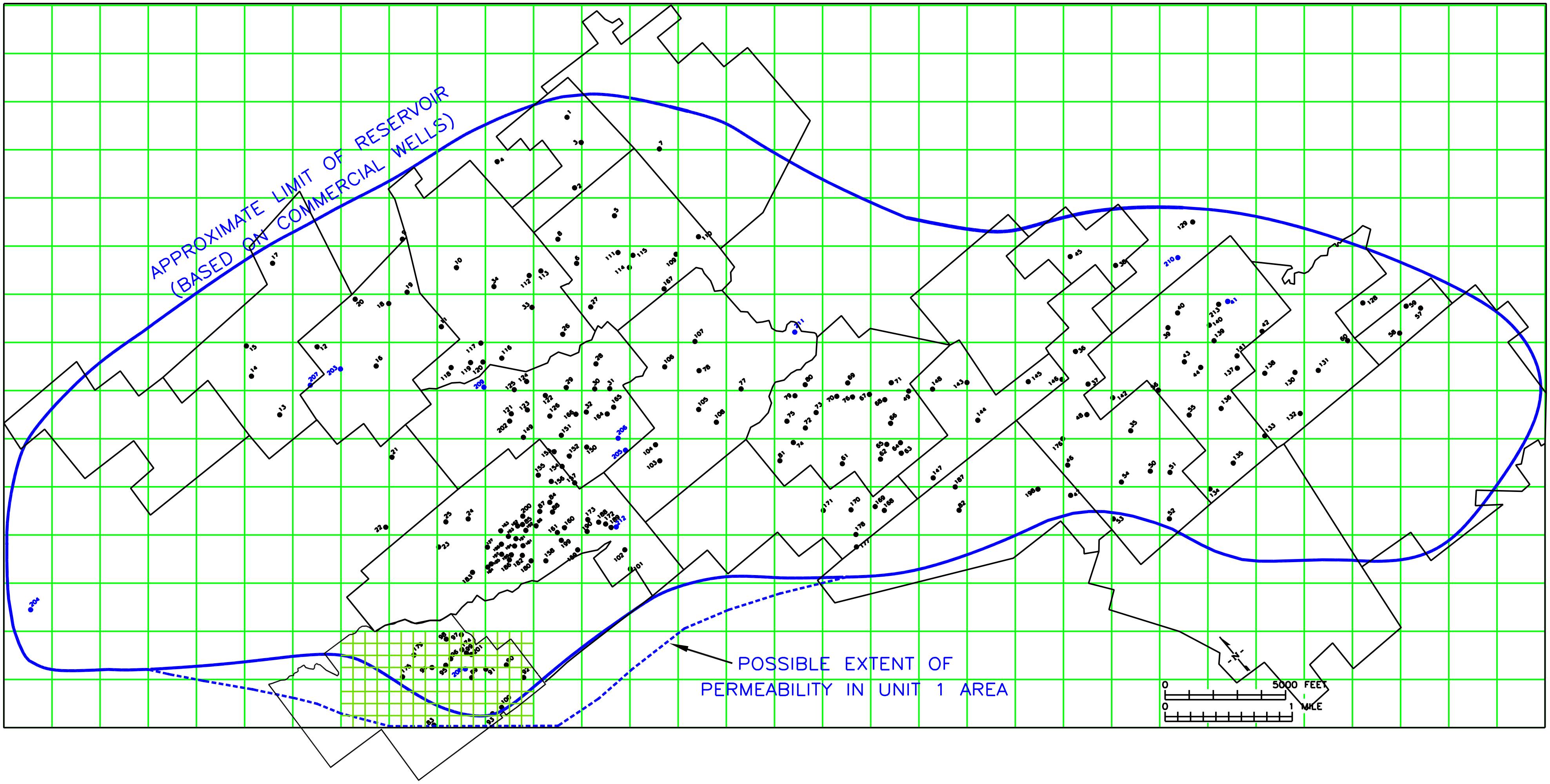


Figure 2.2: Base and refined grid system used in The Geysers field model



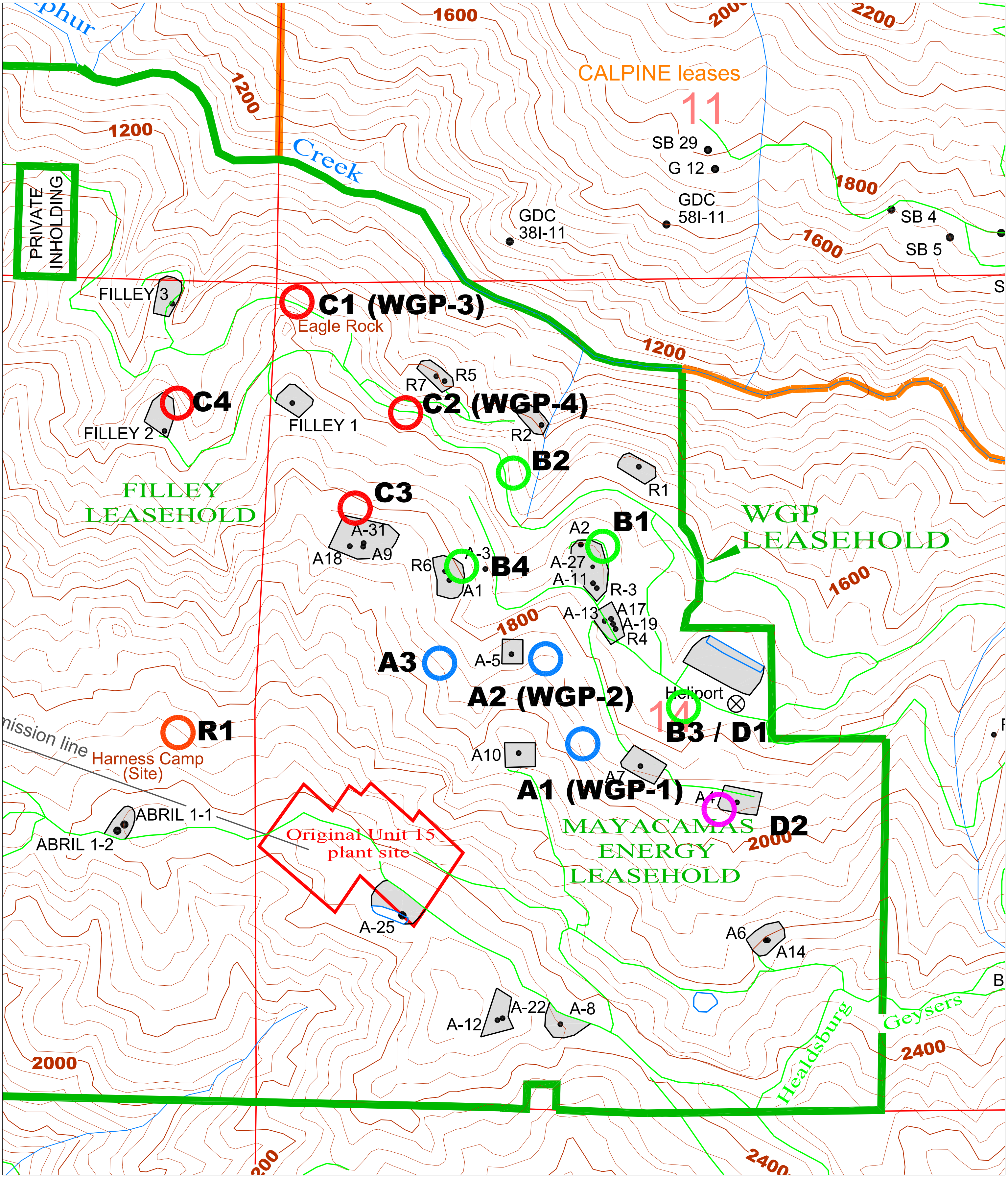


Figure 2.3 WGP Unit 1 - Map of potential drilling targets

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Figure 2.4: Location of the observation wells within The Geysers numerical model

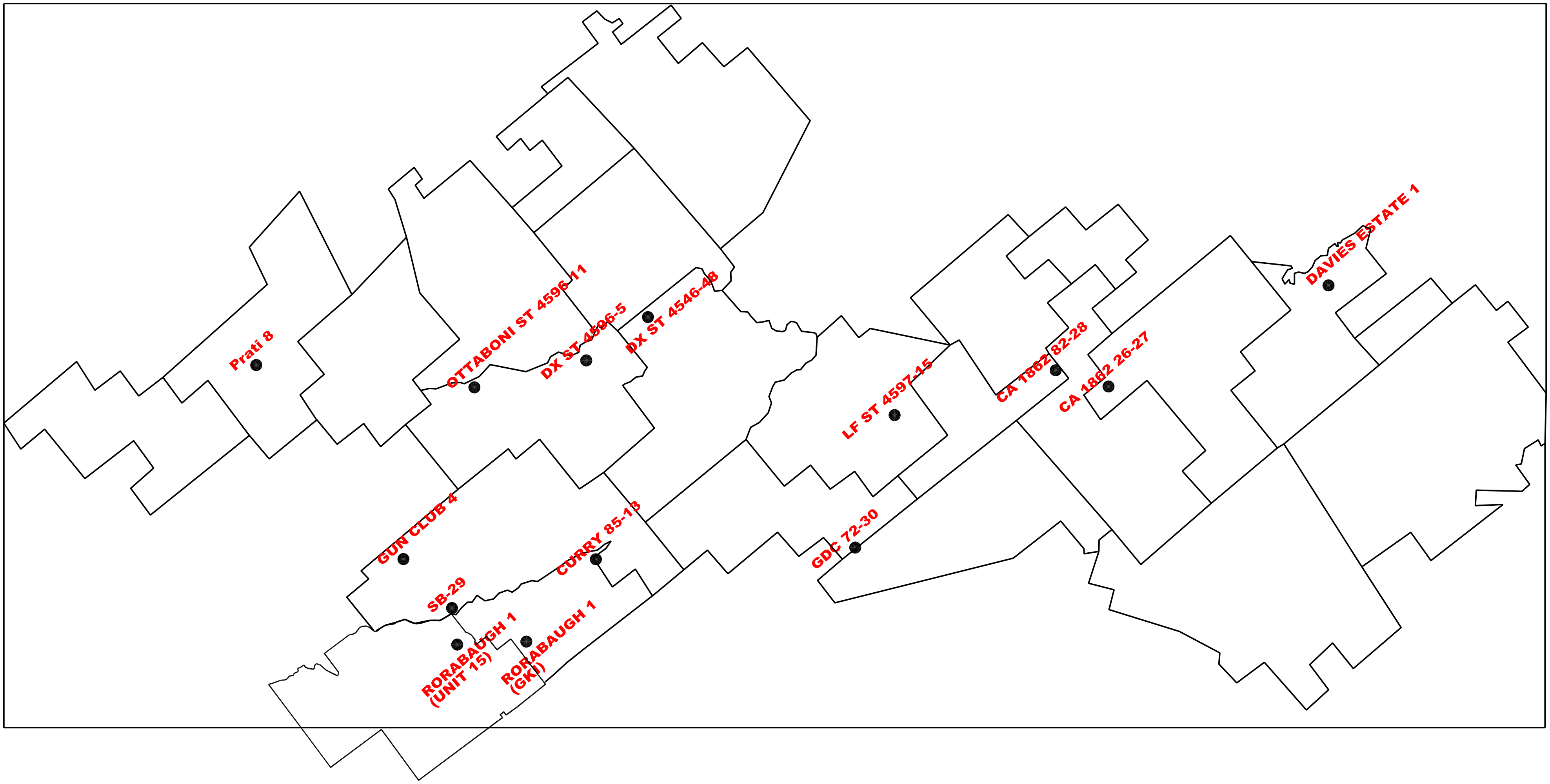

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Figure 3.1 Geysers field-wide production and injection basecase forecast

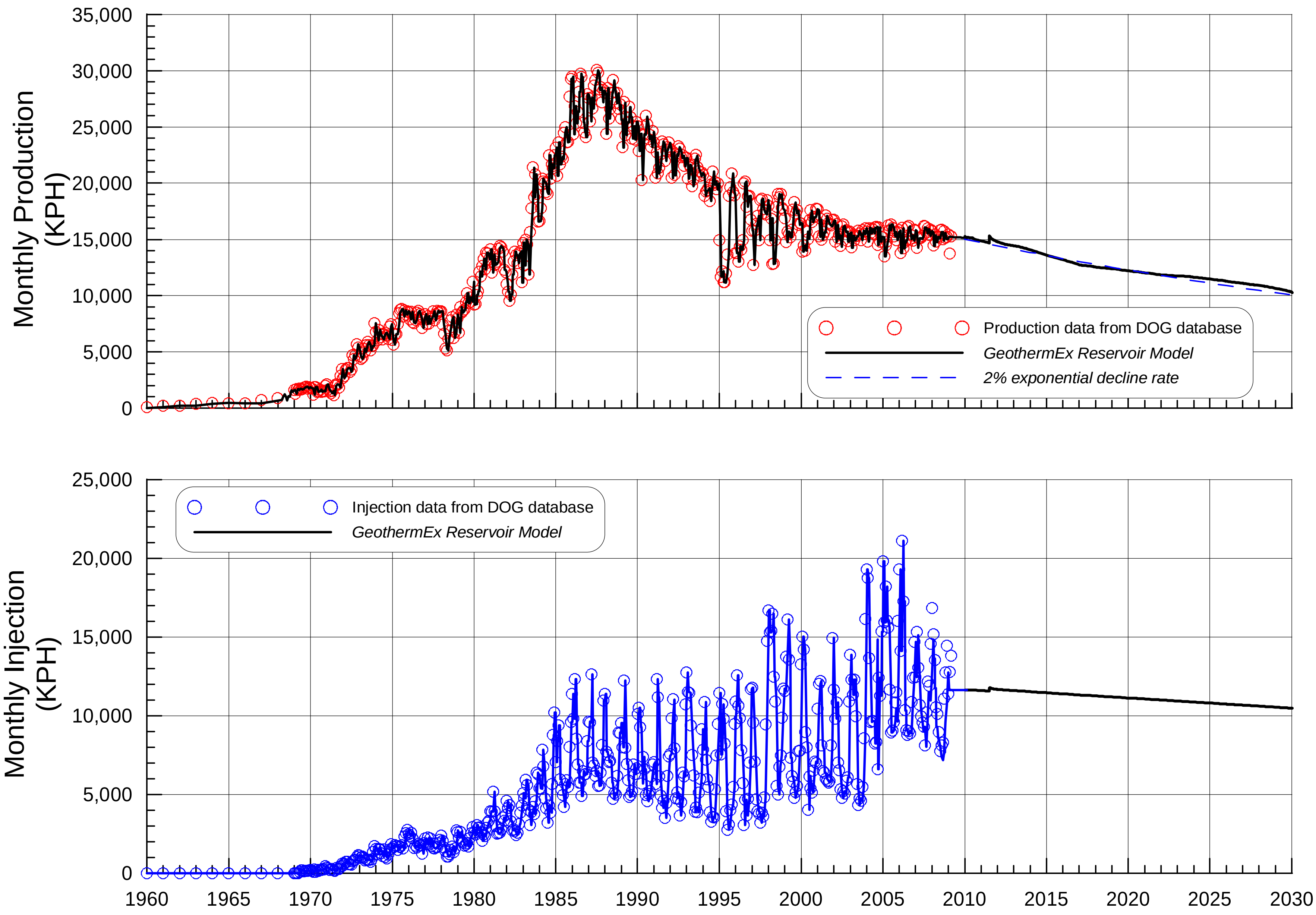

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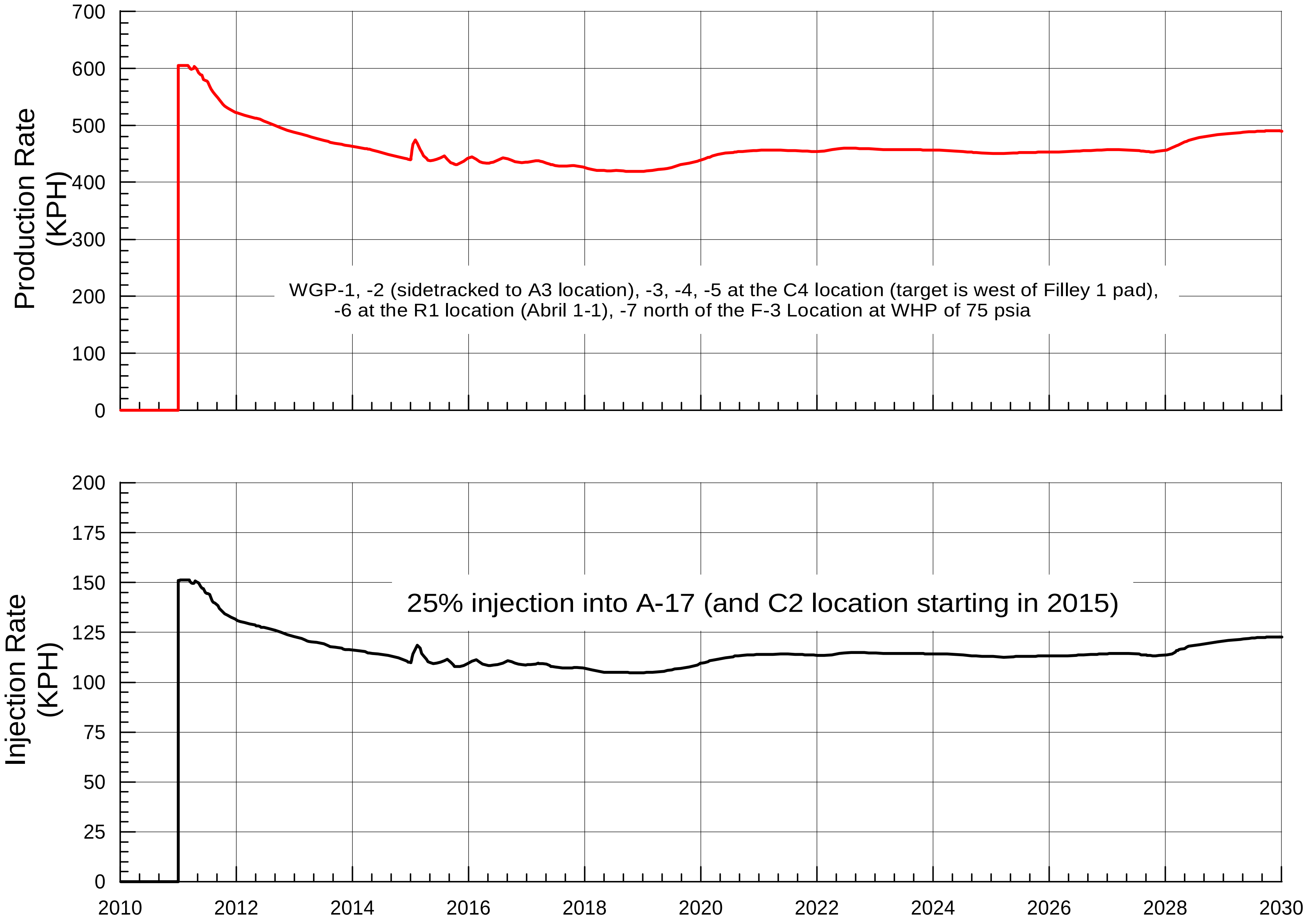
Figure 3.2 WGP Unit 1 Production and Injection Forecast



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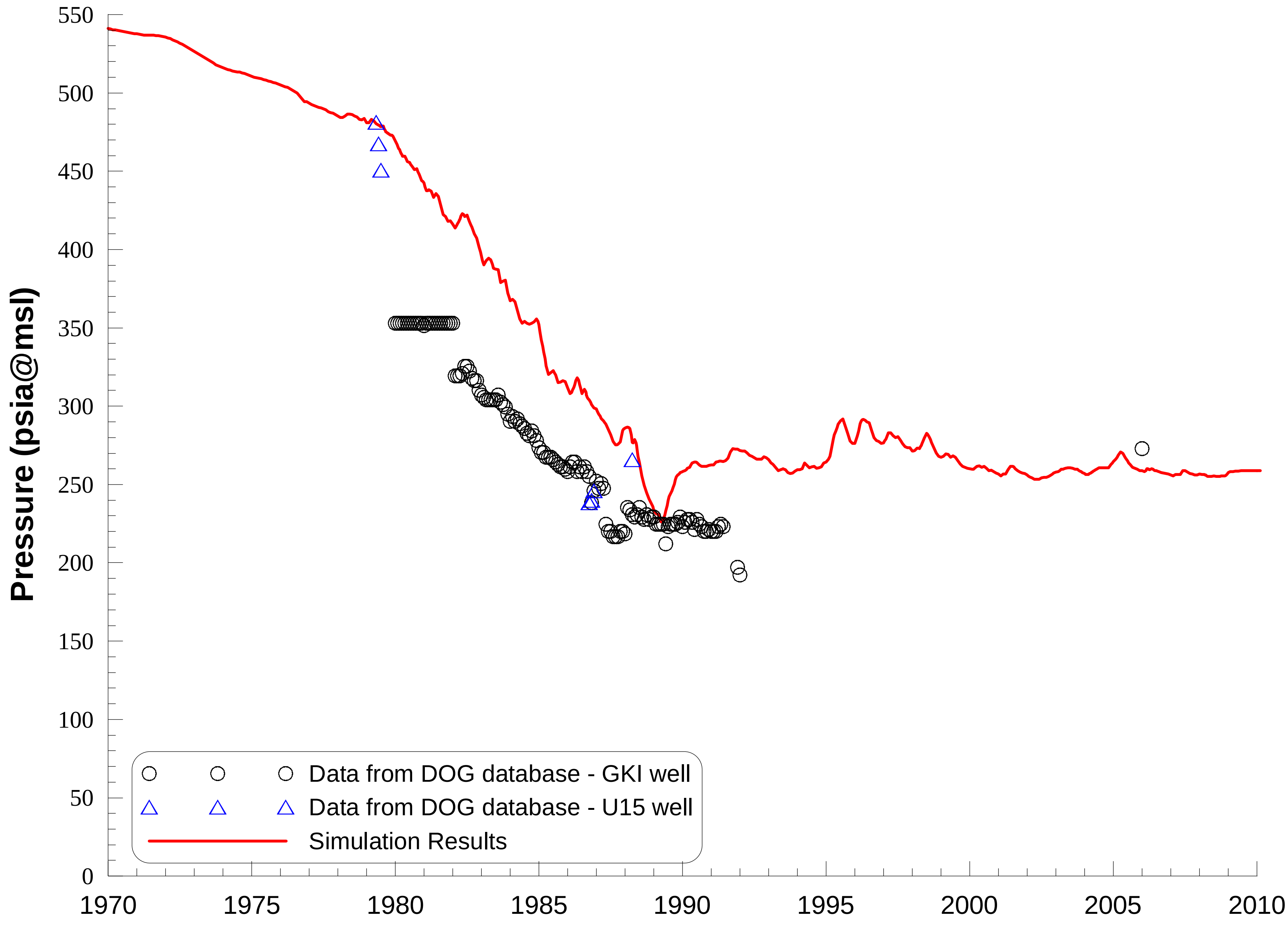
APPENDIX A

Historical pressure matches of shut-in wells scattered throughout the field.



Observed and calculated reservoir pressures for GKI well Rorabaugh 1

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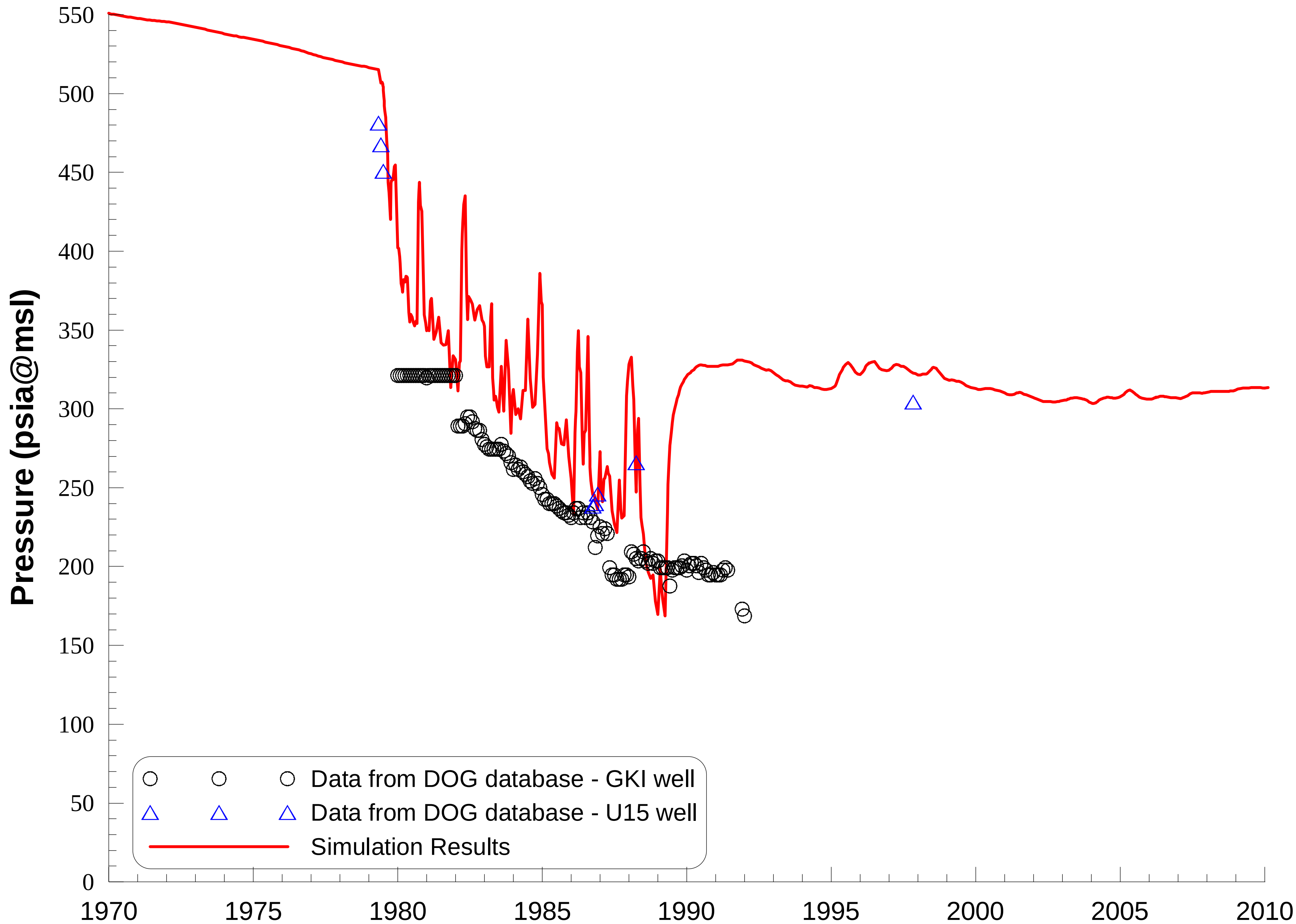

Observed and calculated reservoir pressures for U15 well Rorabaugh 1

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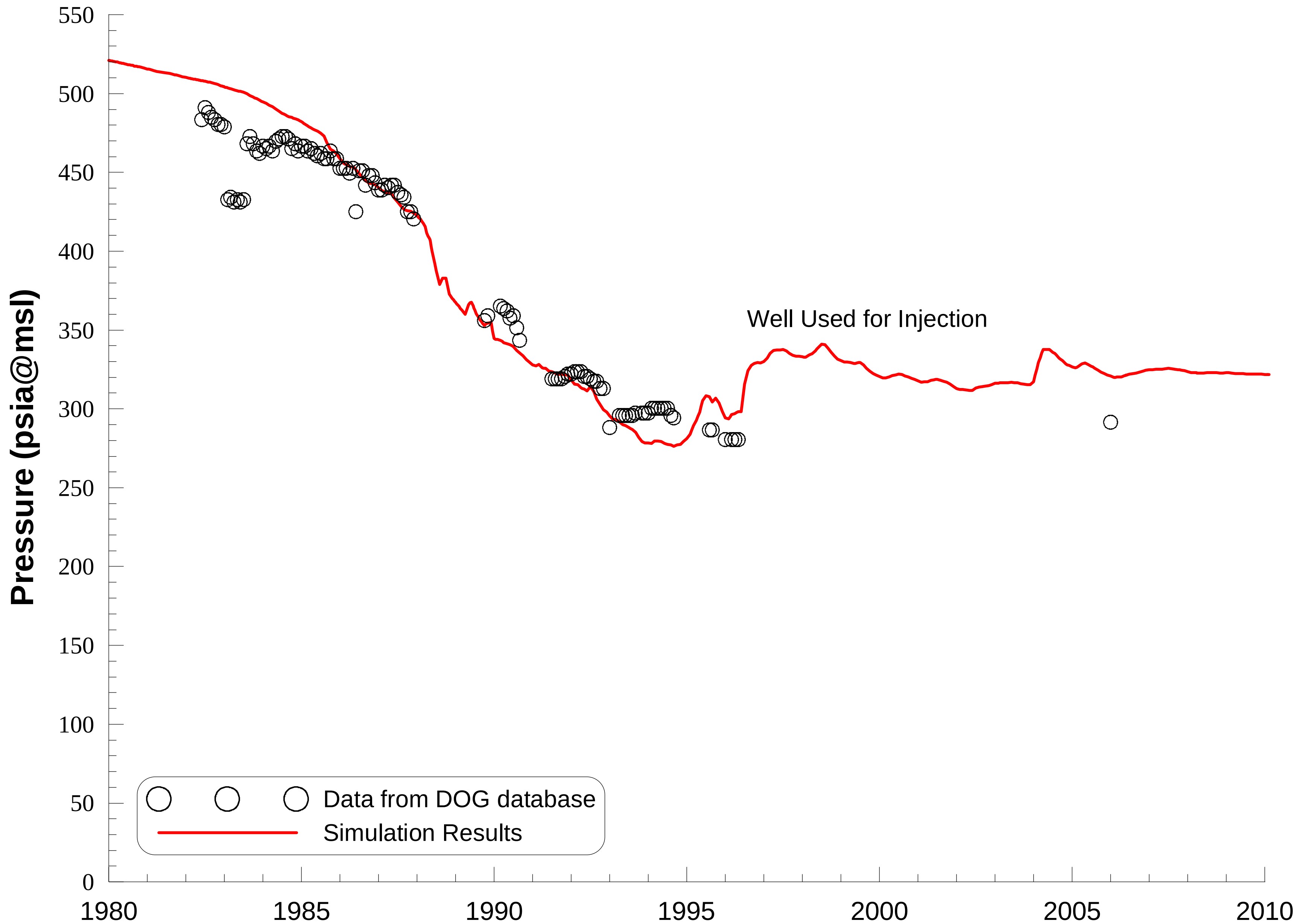
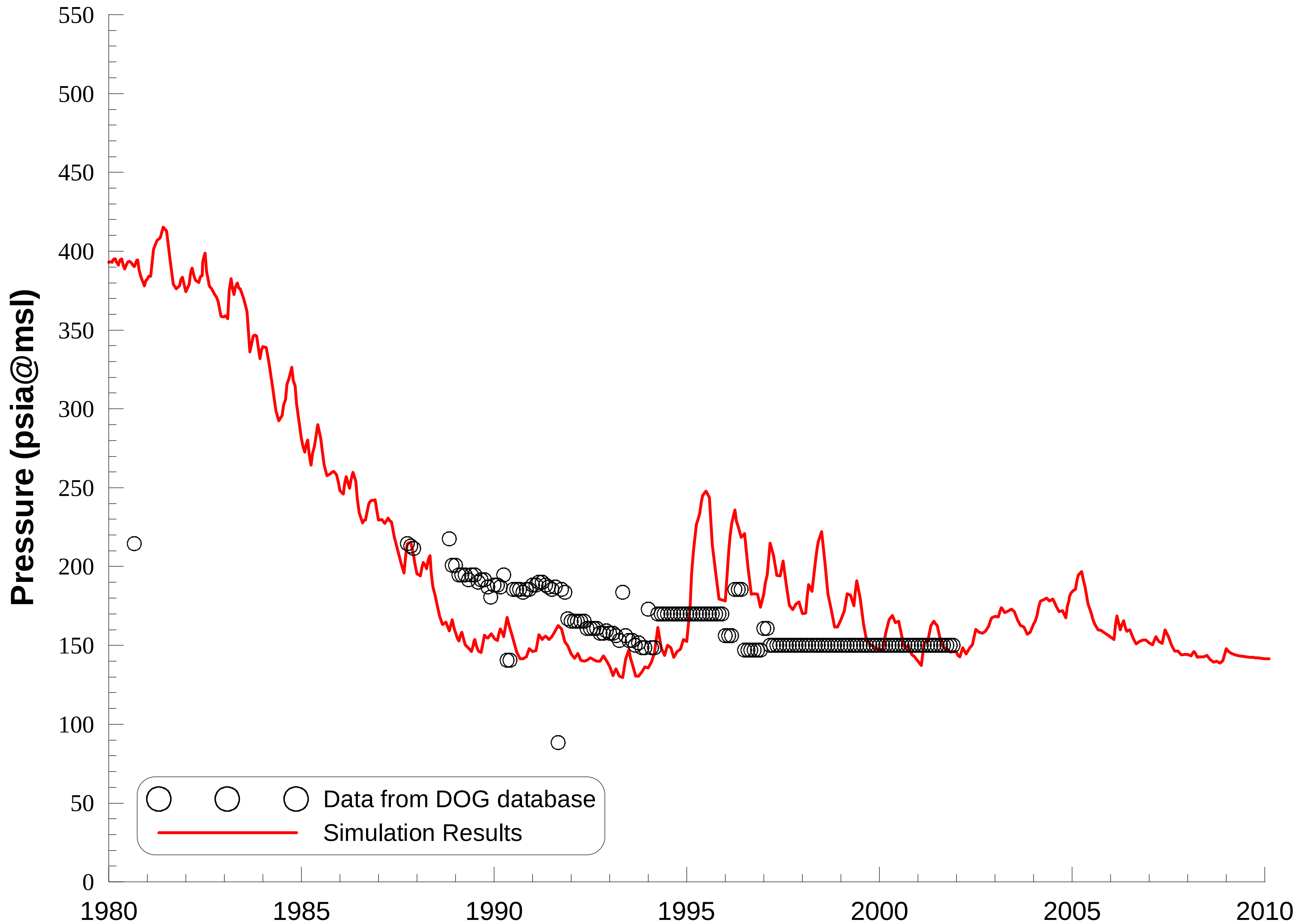


Observed and calculated reservoir pressures for well Prati 8



Observed and calculated reservoir pressures for well Ottoboni St 4596 11

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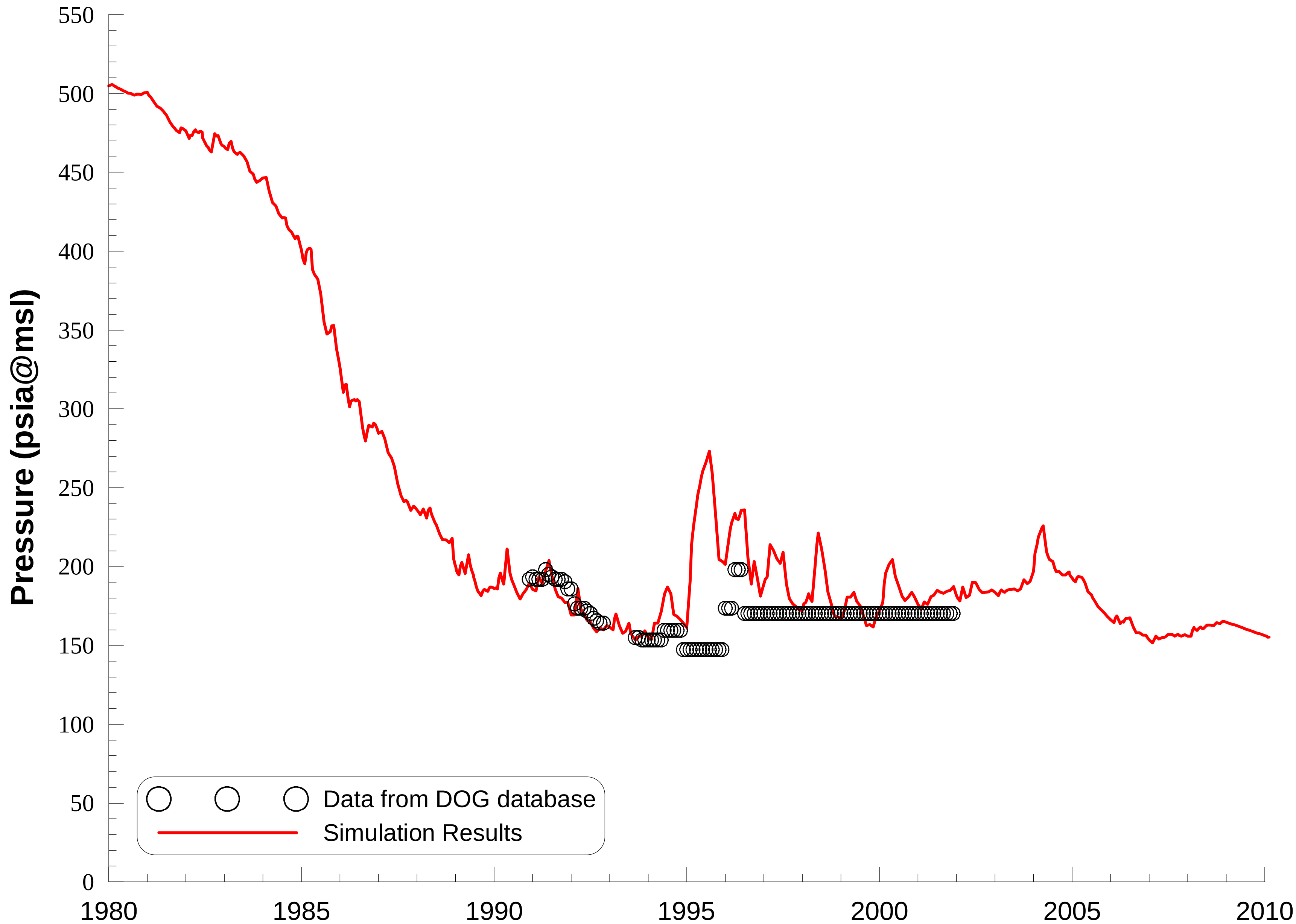

Observed and calculated reservoir pressures for well LF State 4597 15

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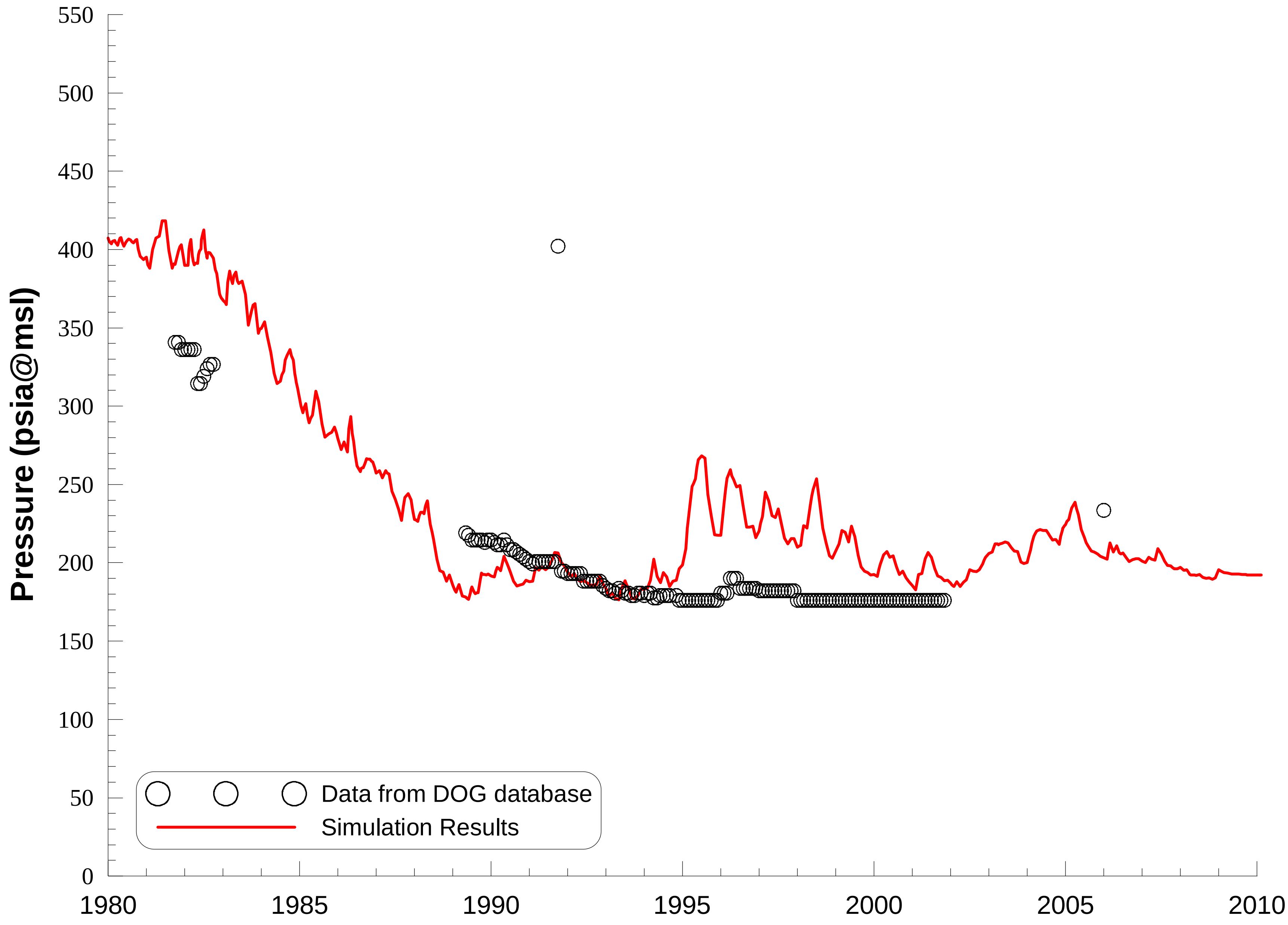
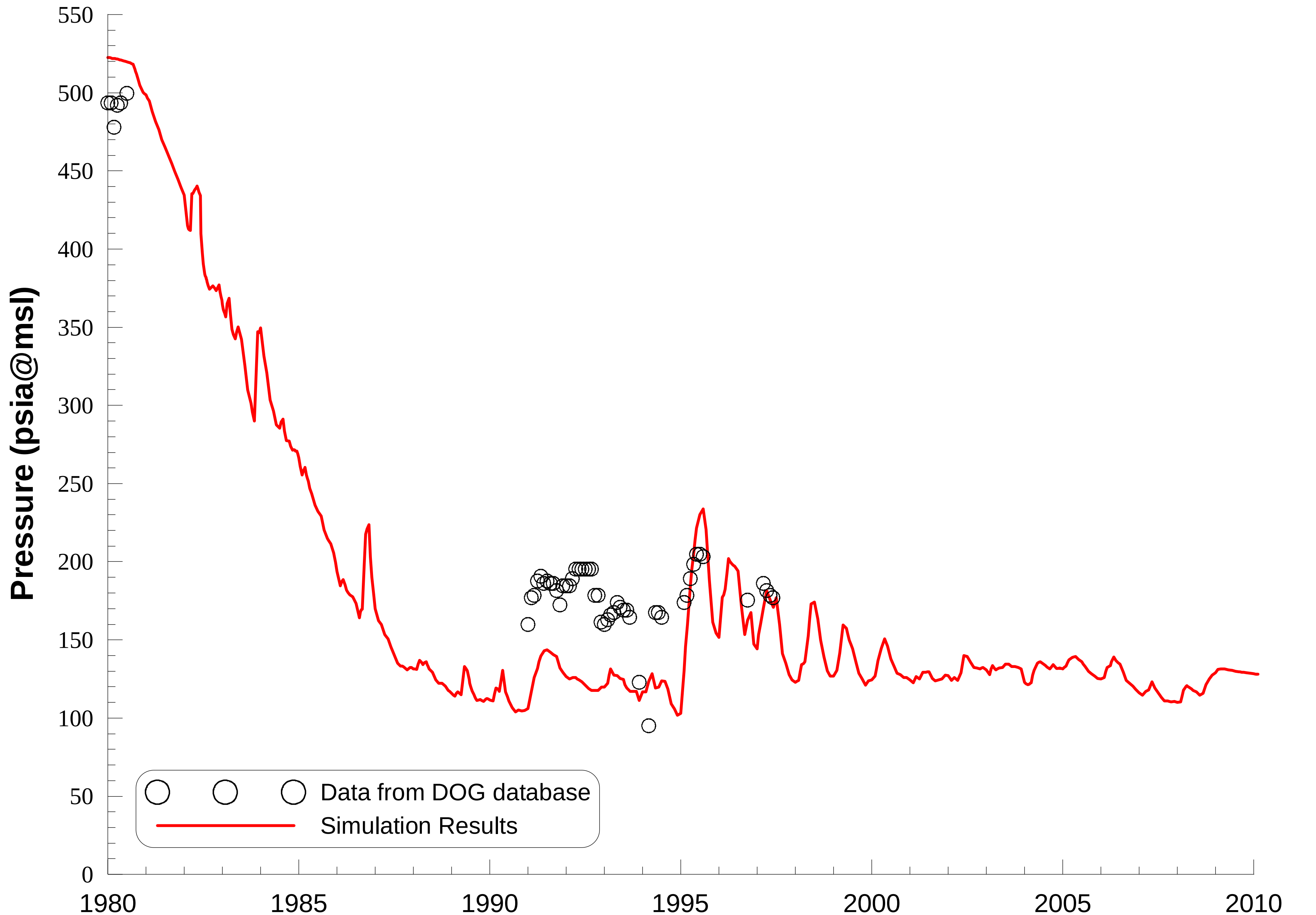
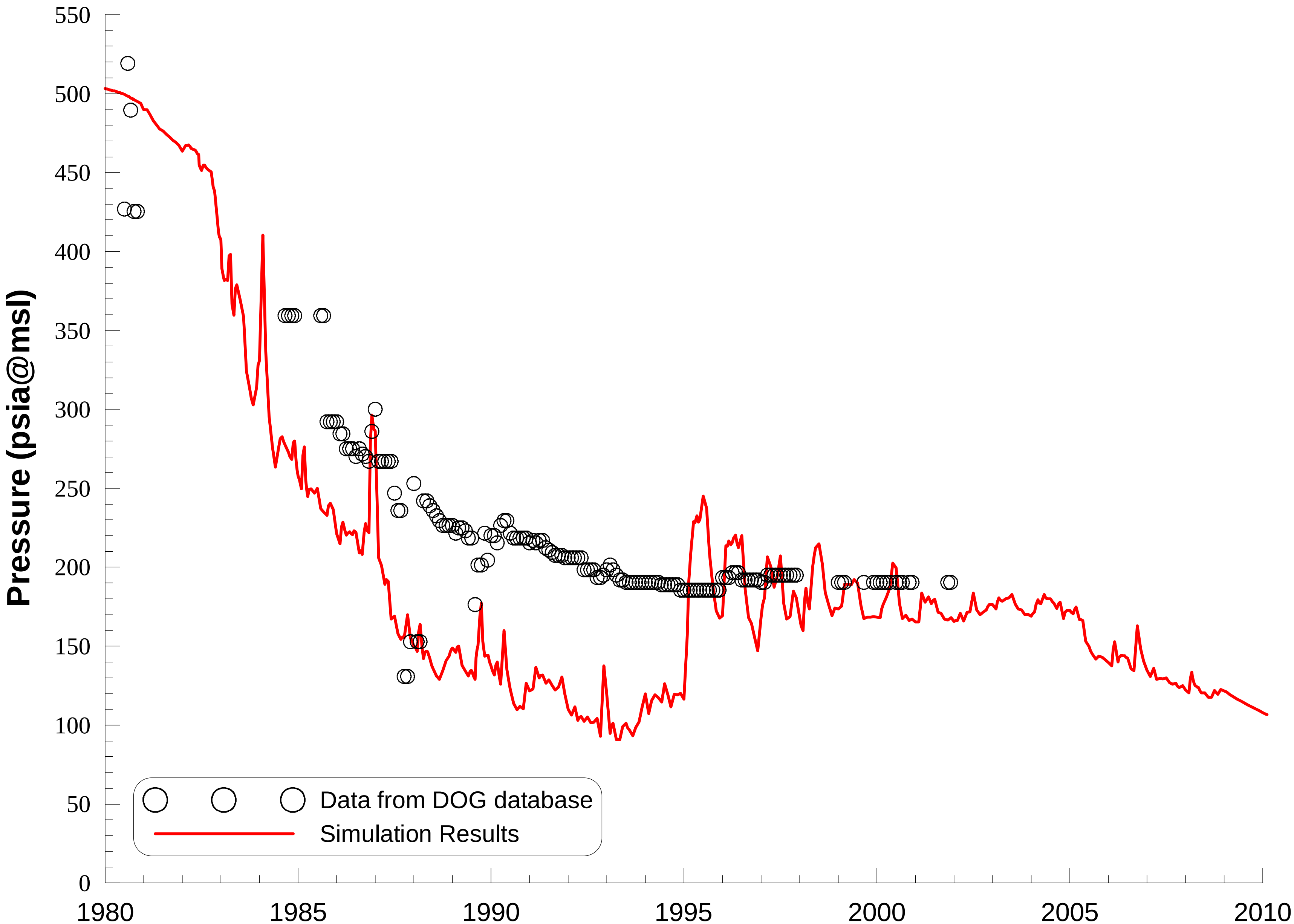


Observed and calculated reservoir pressures for well Geyser Gun Club 4



Observed and calculated reservoir pressures for well GDC 72-30



Observed and calculated reservoir pressures for well DX State 4596 48

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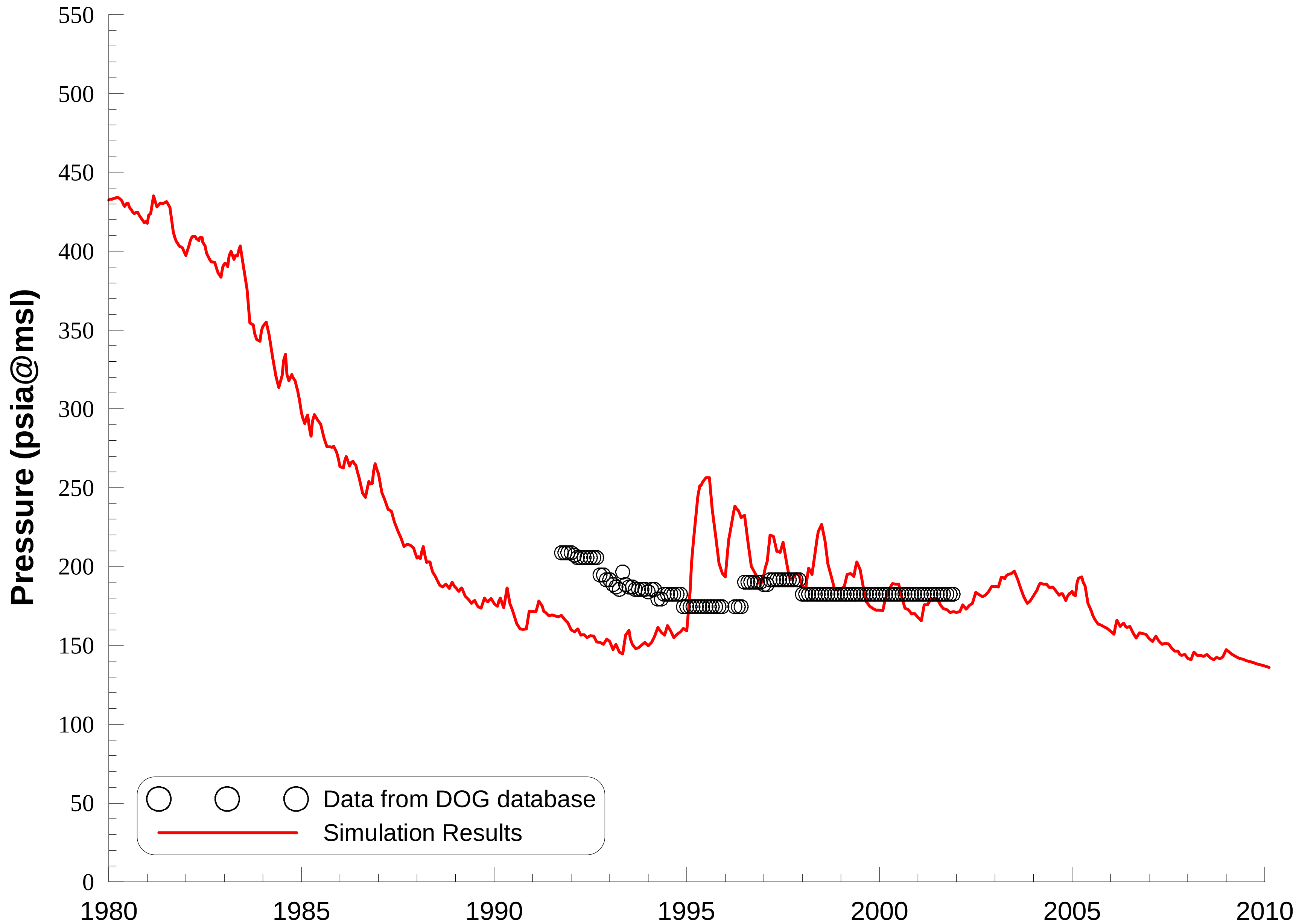

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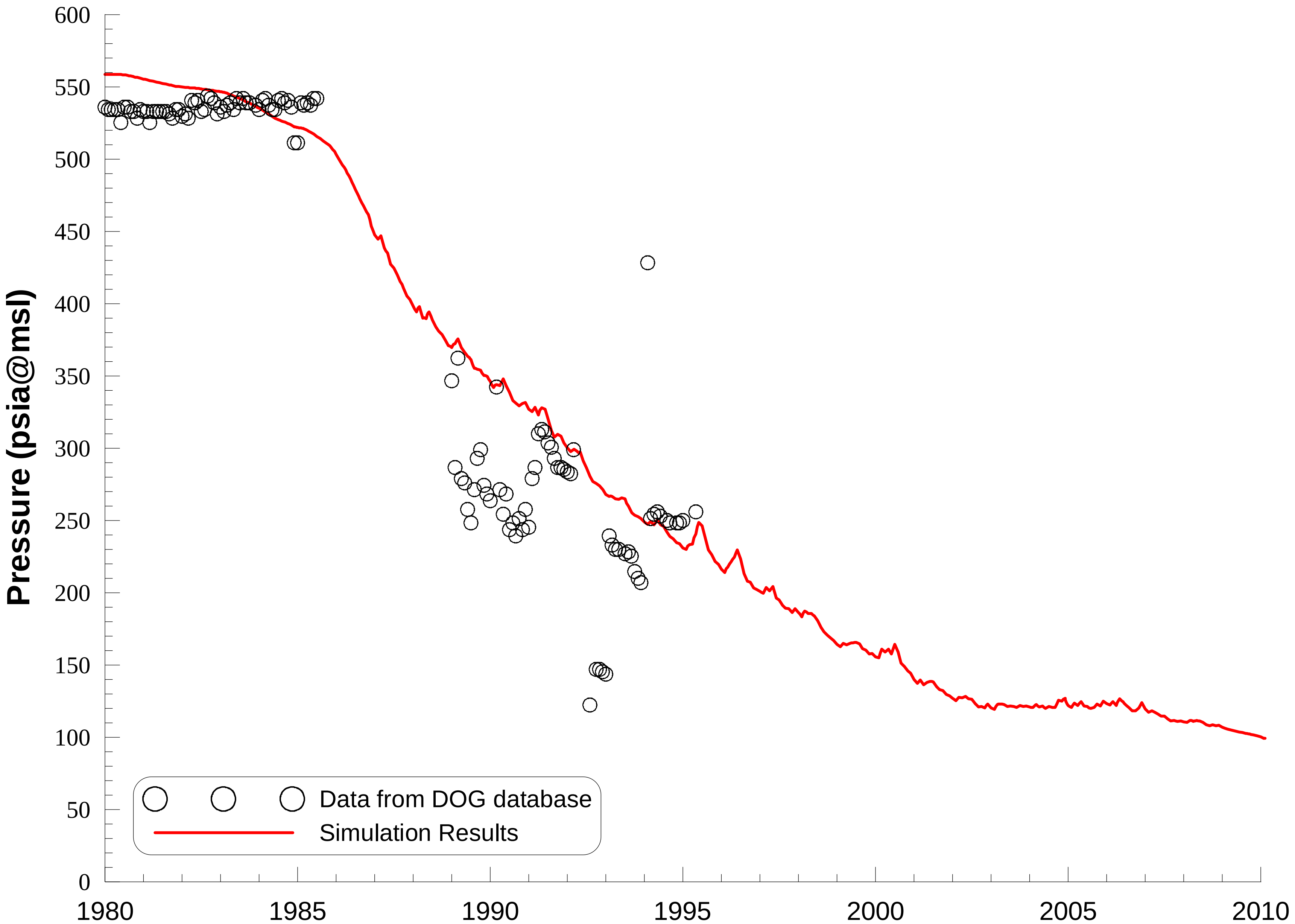

Observed and calculated reservoir pressures for well Davies Estate 1

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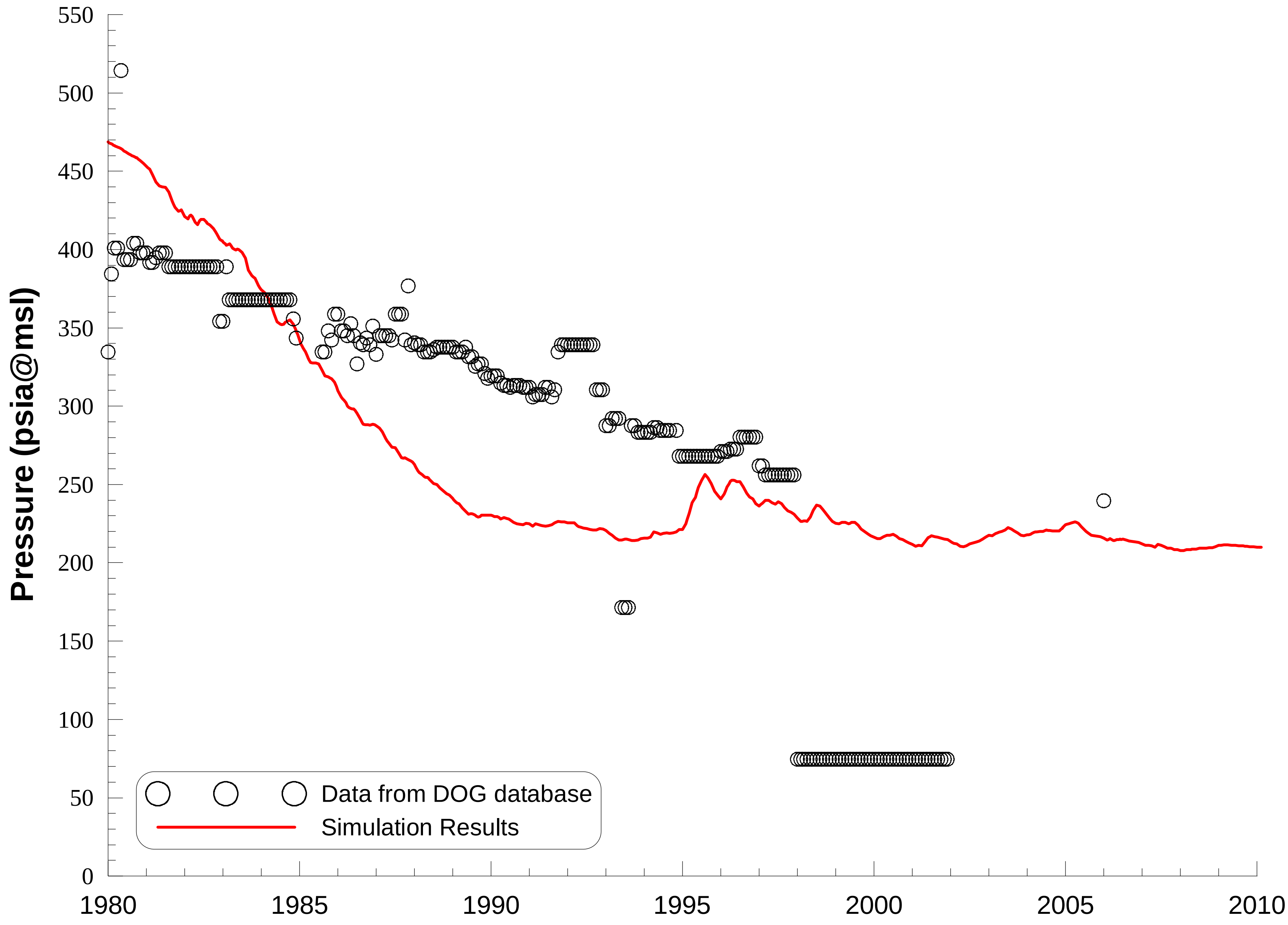
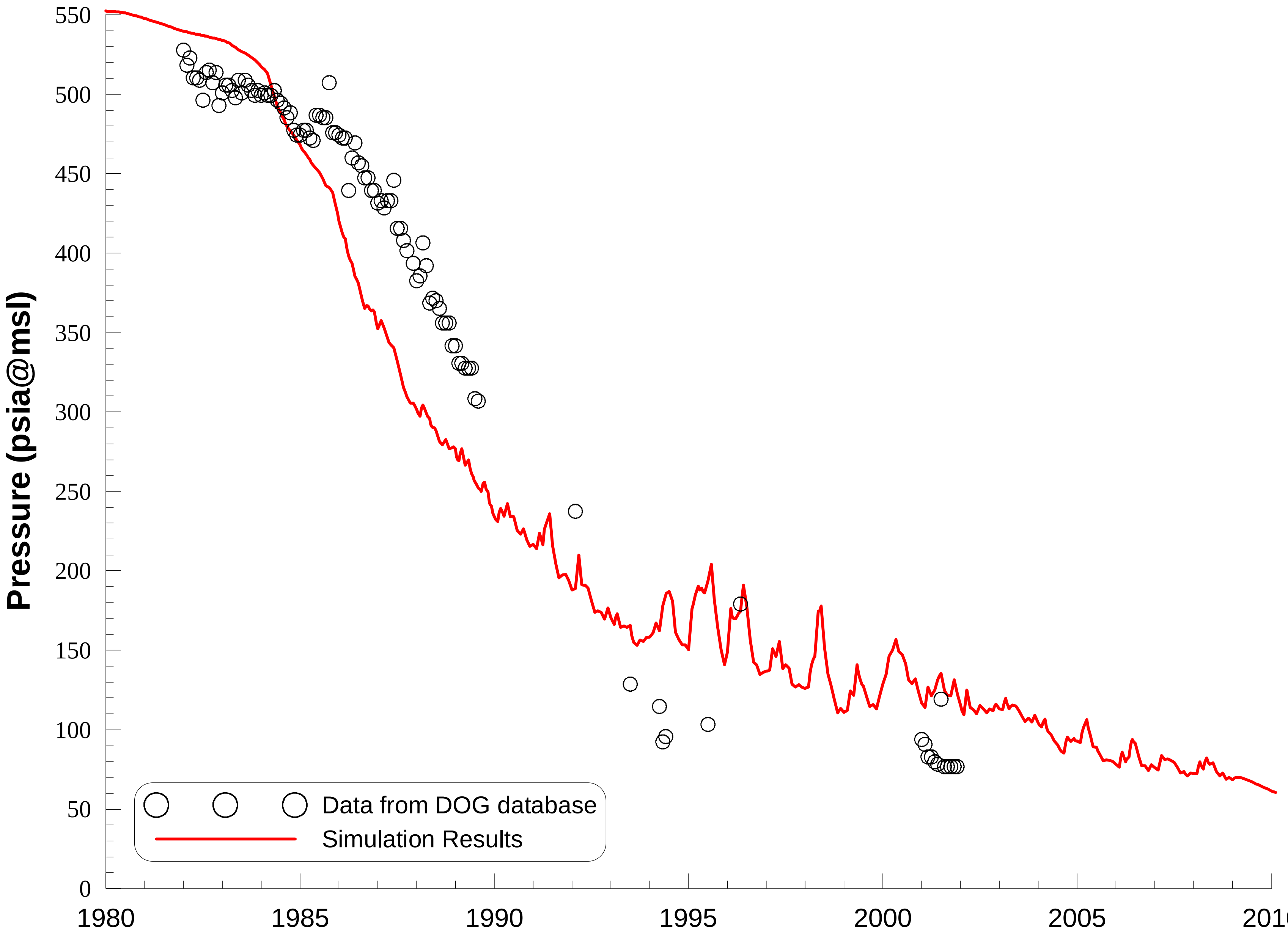


Observed and calculated reservoir pressures for well Curry 85-13



Observed and calculated reservoir pressures for well CA-1862 82-28

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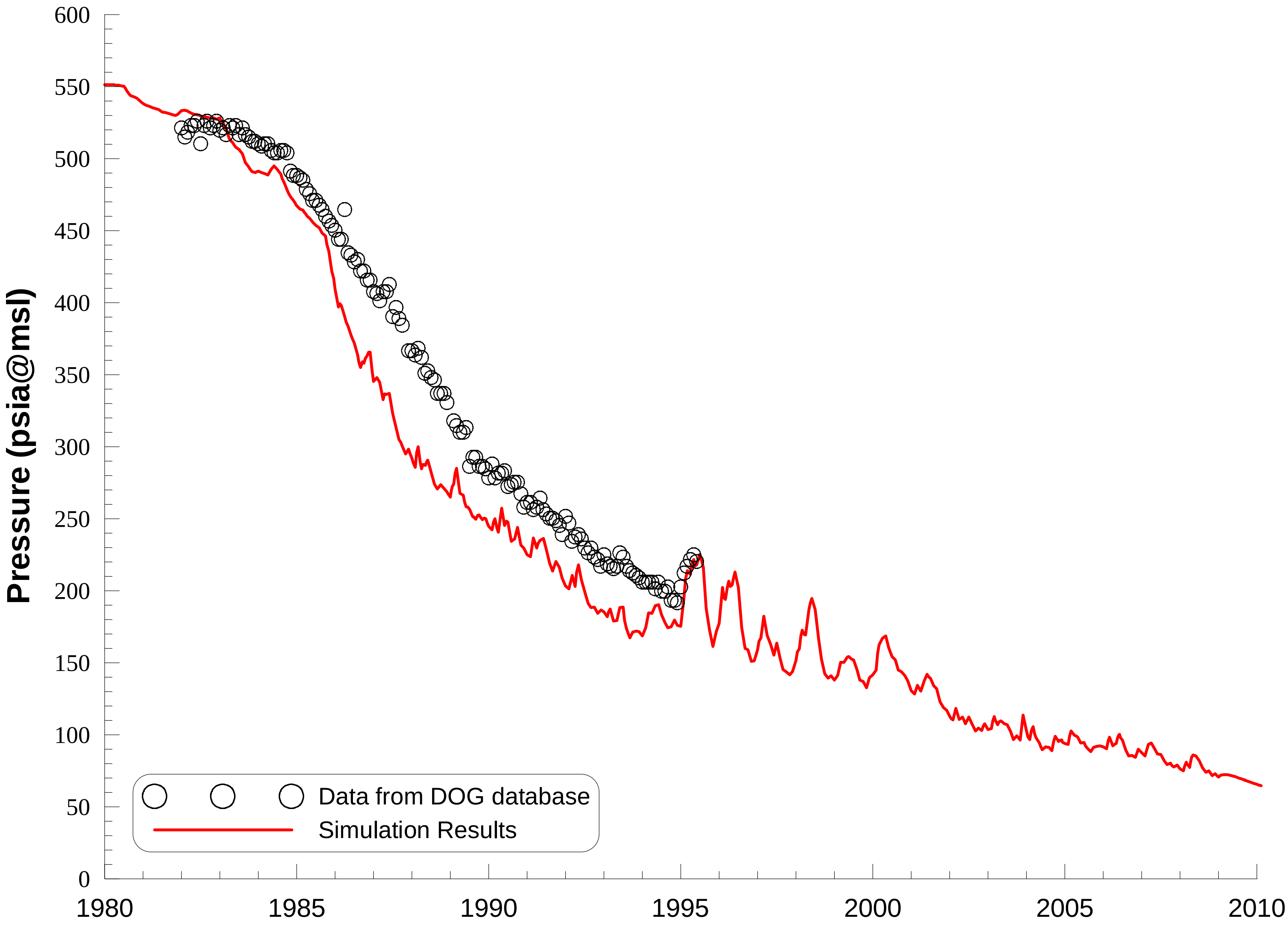

Observed and calculated reservoir pressures for well CA-1862 26-27

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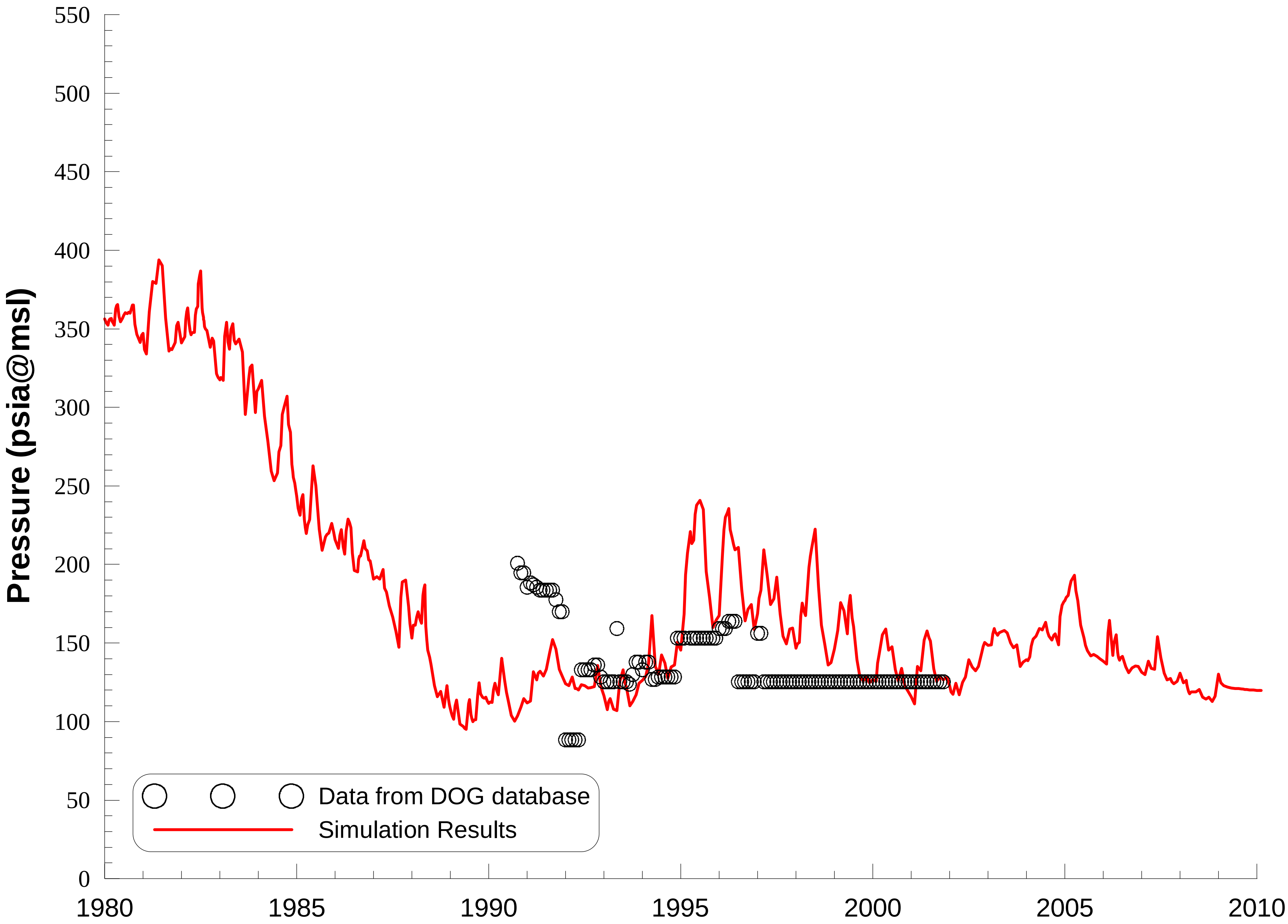

Observed and calculated reservoir pressures for well Sulphur Bank 25

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