

# PROJECT DESCRIPTION

**CLIENT: YPF S.A.  
SIERRA BARROSA/AGUADA TOLEDO FIELD, ARGENTINA**

*Recently*

*Completed*

*or*

*Ongoing*

*Projects*

## **PROJECT DESCRIPTION**

This oil and gas field is situated on a large anticlinal structure which is bounded by a reverse fault along the south flank. The reservoirs comprise a large number of discontinuous sandstone bodies. There are great difficulties in correlating these sandstones and in determining exactly which layers are productive. The production mechanism is essentially from the expansion of dissolved gas and the expansion of the gas cap. There have been 252 wells drilled, of which 128 are actually in production. Gas was injected into the gas cap of the Sierra Barrosa reservoir and a pilot project for water injection was conducted in a section of the Aguada Toledo reservoir. Former studies indicate that the reservoir is sectorized and it is estimated that there are at least 5 geographical sections which are hydraulically independent.

## **OBJECTIVES**

YPF requested that Teknica provide a complete reservoir characterization of the field and advise on the most economical means of producing and increasing the recovery of the remaining oil from this field. The specific objectives are as follows:

- Establish the physical nature, distribution and characteristics of the reservoir integrating the geophysical, geological, petrophysical, geostatistical evaluations, and production data in a geologic-numeric model.
- Estimate the volumes, distribution and physical properties of the hydrocarbons originally "in-situ".
- Adjust the production history against a numerical reservoir simulation.
- Estimate actual reserves.
- Forecast the fluid production under different production and operational schemes of the reservoir.
- Determine the modifications required in the surface installation of different methods of operations of the reservoir.

- Utilize the professionals of YPF S.A. who will participate in the Work Team in a manner that they will be able to perform similar work in the future.

## **METHODOLOGY**

Teknica formed a multidisciplinary team of geologists, geophysicists, petrophysicists, reservoir engineers, production engineers, database experts, geostatisticians, and support personnel. The project team is supported by a large array of workstation and personal computer software.

Studies undertaken include:

- Sedimentological interpretation of cores
- Detailed stratigraphic studies
- Structural analysis
- Petrophysical analysis of all wells
- Petrographic studies
- Geostatistical analyses
- 3D Seismic interpretation
- Reservoir mapping based on 3D inversion
- Detailed mapping of all reservoir intervals
- Basic reservoir engineering
- Reservoir simulation
- Analyses of under performing wells
- Production studies
- Development planning
- Economic scenarios
- Establishing a database to summarize and enter all field information in electronic form
- Fully documented reports recommending exploitation and development programs

## **RESULTS**

Teknica provided:

- Computer database of all well information
- Detailed well correlations and maps
- Detailed 3D seismic interpretation of both structure and stratigraphy
- 3D reservoir model
- A stratigraphic framework of 5 flow units
- Listings of bypassed pays
- OIP and recoverable reserves
- Simulation models
- Development plans
- Waterflood programs
- Drilling and completion recommendations



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