

# The SMITH SYSTEMS Advantage



**Customer:** Maraven  
**Project:** Bajo Grande  
**Location:** Maricao, Venezuela  
**Product:** Liquefied Petroleum Gas (LPG)

## *Unique system designed for high accuracy measurement in temperatures as low as -50°F*

The Bajo Grande system was designed to meter low temperature, liquefied propane to custody transfer standards, at a flow rate of 8,000 BPH. The system consists of three Smith 6" Sentry turbine meters configured in a 2+1 arrangement, where two meters operate on duty at 50% system capacity and one on stand-by. In addition, the system is provided with a single Smith 3" Guardsman Series turbine meter for "low flow start" and "topping" operations.

A Smith horizontal, bidirectional piston prover, uniquely designed for operation in low temperature applications, maintains system measurement accuracy through periodic on-line meter calibration. Piping manifolds and valving are connected to the meter skid and prover to provide recirculation facilities for performing "cool down" procedures during start-up or to achieve temperature stability before commencing custody transfer operations.

System design includes a flexible piping configuration to accommodate the additional stresses imposed by the thermal differentials experienced in low temperature application during start-up, operation and maintenance. The complete piping system is isolated from the structural skid using insulated barriers to prevent freezing. Insulation lagging is applied to maintain thermal stability and provide personnel safety.

Total system control is handled by the Smith Supervisory computer which performs valve control with two Rotork Pakscan master stations. The computer communicates to individual meter run GeoFlo flow computers and a GeoProv proving computer. A mimic panel provides push-button operation for all skid-mounted block valves when "local" operation is selected at the control console. Reports are printed automatically from the Smith Supervisory computer or from the print menus on selected flow computers.



# Bajo Grande

**Smith Meter Inc**  
An **FMC** EnergySystems business

Project: Bajo Grande  
Location: Maricao, Venezuela

## SYSTEM SPECIFICATIONS

**Configuration:** 2+1 x Smith 6" plus 1 x Smith 3" Sentry Series Turbine Meters  
**System Flow Rate:** 8,000 BPH  
**Prover Flow Rate:** 5,000 BPH  
**Product:** Liquefied Petroleum Gas  
**Viscosity:** 0.211 cSt @ -14°F  
**Design Pressure:** 740 psig @ 100°F (50 bar @ 38°C)  
**Design Temperature:** -50°F to +30°F (-45°C to -1.1°C)  
**ANSI Rating:** 300 lb  
**Design Code:** ANSI B31.3 Chemical Plants and Petroleum Refinery Piping.

## INSTRUMENTATION

**Supervisor:** Smith Supervisory Computer  
**Flow Computers:** Smith GeoFlo, Model MR-MPS  
**Proving Computer:** Smith GeoProv, Model PR-BIP  
**Chart Recorders:** Foxboro, Model NR  
**Printers:** Epson, Model LX850  
**Console:** AMCO, Model FX-70  
**Pressure Transmitters:** Rosemount, Model 1151GP  
**Pressure Indicators:** Ashcroft, Model 2462SS  
**Temperature Transmitters:** Rosemount, Model 444  
**Temperature Indicators:** Ashcroft, Model 50AI

## EQUIPMENT

**Inlet Gate Valves:** General Twin Seal, Model C821-G  
**Strainers:** Smith, Model 63-185C  
**Flow Meters:** Smith, Turbine Meters, Sentry Series, 6"  
Smith, Turbine Meters, Guardsman Series, 3"  
**Flow Control Valves:** Fisher, Model 8532  
**Double Block and Bleed Valves:** General Twin Seal, Model C821-G  
**Actuators:** Rotork, Model Syncropak II w/Pakscan  
**Thermal Relief Valves:** Crosby, Series 900  
**Meter Prover:** Smith 24" Horizontal Bidirectional Piston Prover, Volume 5 Barrels

# Smith Meter Inc

*The Most Trusted Name In Measurement*

## Smith Systems Operation

737 North Padre Island Drive ♦ P.O. Box 4658  
Corpus Christi, TX USA 78469  
Phone: 361/289-3400 ♦ Fax: 361/289-1115

**FMC Energy Systems**

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