

# The **SMITH SYSTEMS** Advantage



**Customer:** China National Petroleum Corporation

**Project:** Lunnan Oil

**Location:** Xinjiang Province, China

**Product:** Crude Oil, Production



A front-access control console with Smith GeoFlo/GeoProv computers and RS-232 communication, links to Smith's Supervisory computer and the CNPC's SCADA system.

## *Integral skid designed for high accuracy measurement in tight space constraints*

The Lunnan Oil system was designed to meter crude oil to custody transfer standards at a flow rate of 500 m<sup>3</sup>/hour. The system consists of three Smith G6-S3 Positive Displacement meters configured in a 2+1 arrangement, where two meters operate on duty at 50% system capacity with one on standby.

To maintain consistent, high accuracy measurement, a Smith Small Volume Prover is mounted integral to the skid design to provide quick, periodic, on-line meter calibration. Prover recalibration is achieved with a separate, self-contained, customized waterdraw test stand, which is traceable to N.I.S.T. standards. Piping manifolds and valving from the prover also permit connection of loose meters for calibration.

An insertion-type BS&W probe and slip stream-mounted densitometer provide constant monitoring of product quality. Total system control is handled by the Smith Supervisory computer communicating to a stand-alone control console with three individual meter run GeoFlo flow computers and a GeoProv proving computer. The console also provides a SCADA link via modem and utilizes two printers; one for alarm logging and one for report printing.

The complete system includes accessways for maintenance and operation personnel and was designed for transportation in two enclosed 20' containers. The self-contained, modular construction conformed to tight space constraints imposed by the site conditions and also enabled easy installation.

# Lunnan Oil

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

Name: Lunnan Oil  
Location: Xinjiang Province, China

## SYSTEM SPECIFICATIONS

**Configuration:** 2+1 x Smith 6" G6-S3 PD Meters  
**System Flow Rate:** 500 m<sup>3</sup>/hr  
**Prover Flow Rate:** 400 m<sup>3</sup>/hr  
**Product:** Crude Oil  
**Viscosity:** 18.23 mPa•s @ 30°C  
**Design Pressure:** 1.6 Mpa @ 38°C (2,300 psig @ 101°F)  
**Design Temperature:** 38°C (101°F)  
**ANSI Rating:** 150 lb  
**Design Code:** ANSI B31.4 Liquid Transportation Systems For Hydrocarbons,  
Liquid Petroleum Gas, Anhydrous Ammonia and Alcohols.

## INSTRUMENTATION

**Supervisor:** Smith Supervisory Computer  
**Flow Computers:** Smith GeoFlo, Model MR-MPS  
**Proving Computer:** Smith GeoProv, Model PR-SVP  
**Printers:** Okidata, Model 182S  
**Console:** Hoffman, Model A-6060  
**Densitometer:** Solartron, Model 7835  
**Pressure Transmitters:** Rosemount, Model 1151GP  
**Pressure Indicators:** Smith, Model AA06-I  
**Temperature Transmitters:** Rosemount, Model 444  
**Temperature Indicators:** Smith, Model AF06

## EQUIPMENT

**Inlet Gate Valves:** Triangle, Model 1822  
**Strainers:** Smith, Model 61-103D  
**Air Release Vents:** Clark, Model SVV-3-300  
**Flow Meters:** Smith, Positive Displacement, Model G6-S3  
**Flow Control Valves:** Keystone, Model K-LOK  
**Double Block and Bleed Valves:** General Twin Seal, Model CA811-G  
**Actuators:** Rotork, Model Syncropak II  
**Thermal Relief Valves:** Crosby, Series 900  
**Meter Prover:** Smith Small Volume Prover, Model SVP-1-150

# Smith Meter Inc

*The Most Trusted Name In Measurement*

## Smith Systems Operation

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**FMC Energy Systems**

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SFSS002 Issue/Rev. 0.0 (12/97)