



May 2015

LOS ANGELES BASIN GEOLOGICAL SOCIETY MEETING ANNOUNCEMENT

May 28 (Thursday)

John Jepson¹ & Kimberley A. Holtz²

¹Senior Geologist, City of Long Beach Gas & Oil Department

²Petroleum Operations Coordinator, City of Long Beach Gas & Oil Department

The Wilmington Oil Field: Subsidence and Elevation Monitoring

Abstract

The Wilmington Oil Field is the largest field in the LA Basin. It is unique due to its coastal location beneath the City and Port of Long Beach. It is also unique for its large amount of oil production and its history of subsidence.

Subsidence was first identified in the Wilmington Oil Field in the 1940's; 10 years after production began. By 1952 the subsidence rate had reached 2.4 feet per year. A subsidence bowl developed that extended over 20 square miles with the maximum elevation loss at 29 feet near the northeast corner of Terminal Island. Massive waterflooding began in 1958 and subsidence was reduced to near zero by 1963.

The City of Long Beach Gas and Oil Department (LBGO) has been conducting surface elevation surveying since the 1940's. In 2002, elevation surveys were converted to a Global Positioning System (GPS) Deformation Network utilizing 12 real-time GPS base stations and 240 city wide

benchmarks. Recently, the analytical position software for the system was upgraded with new state-of-the-art technologies to provide more reliable and accurate monitoring to support the benchmark elevation survey campaigns and monthly base station positions.

The LBGO GPS Deformation Network and software allow for monthly elevation monitoring of key locations and field wide elevations are updated semiannually. Surface elevation contour maps and individual benchmark elevation trends allow for timely adjustments to the waterflood operations to maintain effective oil recovery. Waterflood operations are also managed by injection/production balancing and changes to oil zone pressures.

GPS monitoring of surface elevations provides the capability for early detection of surface deformation resulting from production/injection imbalances. The necessary operational adjustments can then be identified and implemented to mitigate the situation. The advantage of early detection is in minimizing the

extent of irreversible reservoir rock compaction, resulting in more stable future surface elevations, and preventing elevation changes detrimental to surface infrastructure.

Speaker's Biography

John Jepson is a Senior Geologist with the City of Long Beach Gas and Oil Department. His primary responsibility is the monitoring and mitigation of elevation changes due to waterflood operations in the Wilmington oil field. His duties include the design, mapping and interpretation of the City's GPS elevation program. Prior to joining the City John was at the California Division of Oil, Gas and Geothermal Resources. At the Division he has involved in production operations permitting, enhanced oil recovery projects and environmental issues.

John has a B. S. degree in geology from San Diego State University and is a California Professional Geologist. He is a past chairman of the Los Angeles Basin Section of the Society of Petroleum Engineers. He is interested in the petroleum history of the Los Angeles Basin and the operation of oilfields in today's urban environment. He has led numerous field trips through the oil fields of Southern California for professional and educational groups.

Kimberley Holtz is a Petroleum Operations Coordinator with the City of Long Beach, Gas & Oil Department. She is responsible for monitoring and analyzing subsidence due to oil/water extraction in the Wilmington Oil Field. She administers the LBGO GPS Real Time Network of 13 GPS Base Stations and overseeing the semi-annual GPS Subsidence Survey and adjustment of 240 benchmarks in the City of Long Beach, Port of Long Beach, and Port of Los Angeles.

Kim's background includes over 30 years of experience in Land Surveying with 23 years in GPS experience. She is a California Professional Land Surveyor. Kim was responsible for setting up the County of Orange's GPS network in the 90's. She has also taught GPS at Rancho Santiago Canyon College along with other Land Surveying classes. Kim

was co-author of the recently published "GNSS Surveying Standards and Specifications, 1.1, California"

Meeting Time, Place, Cost and Reservations

Time:

Thursday, May 28, 2015

Meeting Agenda

Lunch Served: 11:30 AM to 12:00PM
Announcements: 11:45 AM to 12:00 PM
Guest Speaker: 12:00 PM to 12:45 PM
Questions/Close: 12:45 PM to 1:00 PM

Place:

The Grand at Willow Street Conference Center located at 4101 East Willow Street, Long Beach, CA. (562-426-0555). Take Lakewood Boulevard south from the San Diego Freeway (405), turn west onto Willow Street and turn right onto Grand Avenue at the sign for the Center. Park free in the garage structure.

Cost:

Lunch and Speaker: \$25.00 with reservations
\$30.00 without reservations
Retired: \$20.00
Student: \$5.00

Meeting Reservations:

Make your reservations using our web site at www.labgs.org, or by calling Graham Wilson (562)-326-5278, or emailing gwilson@shpi.net.

PLEASE Make:☺ Reservations must be made by 10:00 AM Tuesday morning prior to Thursday's meeting to receive discount price noted above. As always walk-ins are welcome.

Student Sponsorship

Looking for Student Lunch sponsors. If you or your Business/Organization would like to become a Student Lunch Sponsor, please let us know.

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**OUR WEB SITE
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www.labgs.org**

*LABGS will break for
the summer. Luncheon
meetings will resume in
September 2015.*

Have a safe summer!