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**data SOLUTIONS journal**



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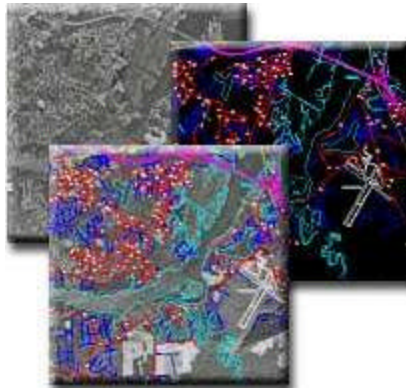


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**Client Solutions**

## DEVELOPING A GPS ACCURATE LANDBASE WITH MATCHING AERIAL OVERLAY

LAND INFO International provides a variety of solutions for engineers, project managers, and other geospatial professionals around the world. Recently, LAND INFO supported a gas pipeline project involving Sentinel USA and Progress Energy. The project involved developing a submeter aerial imagery landbase covering 25 counties in eastern North Carolina.



*LAND INFO supported a solution that helped save thousands.*

Sentinel USA, established in 1997, provides automated mapping, facilities management, and GIS solutions for the utilities market. Progress Energy is one of the top 10 energy producers in the USA, serving over 2.8 million electric and gas customers.

The North Carolina project required roads, hydrology, and other topography layers with submeter accuracy. Most importantly, the project demanded matching aerial photography. This would enable the team to generate pipeline alignment sheets and wetland delineation maps.

The varying accuracies of existing map datasets presented the biggest challenge. DOQQ aerial photos were ortho-rectified primarily through 30-meter and 10-meter digital elevation models (DEM). TIGER transportation data and other submeter pipeline data would not effectively line up with the standard DOQQ photography. The project team ruled out funding new fly -overs due to the high costs. Therefore, the

DOQQ's without compromising the visual integrity of the photography.

LAND INFO worked with the project team to gather the data needed for the 25-county region. "LAND INFO was very responsive to our data needs," stated Dan Colby, president of Sentinel USA. "Their ability to rapidly deliver quality data at a great value enabled us to concentrate on integrating the coordinate enhancements."

Key roads, intersections, and features were strategically selected from the aerial photos. GPS points for these features were collected in the field, and integrated with the corresponding photograph. The photograph was then repositioned, rotated, and scaled to match the collected GPS points. Each photo was then geo-referenced, re-sampled, and generated at the original one-meter resolution for the new submeter accurate positions.

data to match the newly created aerial landbase. Road segments and intersections were repositioned and digitized to match the GPS control points. This required heads up digitizing of all the topographic layers to correspond with the coordinate accurate aerial landbase. The Sentinel USA team then developed an overall grid layout that met the specifications of the project.

The final result was a cost effective and coordinate precise landbase that saved hundreds of thousands of dollars. "The decision to build our sub-meter coordinate GIS system with aerial coverage has proven to be extremely effective," commented John Lepper of Progress Energy. "It provided us a platform to quickly design and process changes in pipeline routes."

### data solutions journal **POLL**

*Do you have a need for aerial photography overlaid with matching submeter vector layers?*

YES

NO

COMMENTS?

team set out to enhance the positional accuracy of the existing The project team then used TIGER

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## Coverage Spotlight

# AZERBAIJAN: OIL RESERVES AND PIPELINES CREATING NEED FOR GIS

Azerbaijan's strategic Caspian Sea ports and rich offshore oil reserves have created a unique economic potential for the developing country. Azerbaijan has been an independent republic since the 1991 collapse of the Soviet Union. Following a decade of territorial disputes, lengthy political posturing, and strengthened foreign investment, the country is beginning several new engineering and infrastructure projects that will help define its stability and success in the region. The use of Geographic Information Systems (GIS) and associated topographic maps, satellite imagery, and other geospatial data is expected to support these new projects.

One of the largest engineering projects in the region is a proposed oil pipeline from Jeyan, Turkey, through Tbilisi, Georgia, and ending at the port city of Baku, Azerbaijan. The engineering stage of the project began in November 2000. By the middle of 2002, project planners expect to begin acquiring land and constructing the massive pipeline. This is just one of the projects that will require the use of GIS.

LAND INFO offers full country coverage of 1:50,000 and 1:200,000 scale [topographic maps for Azerbaijan](#). The digital datasets are fully geo-referenced to accommodate use with GPS, GIS, and engineering applications.

LAND INFO color scans paper [topographic maps](#) to produce a high resolution, digital image. Latitude and longitude coordinates are then assigned to each map. This enables engineers, GIS project managers, and other end users, to overlay other geospatial data on top of the base topographic map. For example, oil pipeline planners may overlay well locations and [satellite photos](#) on top of the topographic map for analysis purposes.

LAND INFO offers a variety of derivative products based on the Azerbaijan topographic maps. The company specializes in creating [digital elevation models](#) (DEM), [contour layers](#), [road layers](#), [hydrography layers](#), and other value-added datasets from the original topographic maps. Through a series of production steps, LAND



*LAND INFO offers full coverage of high-resolution topographic maps and other data for Azerbaijan.*

INFO extracts the [contour elevation data](#) from the source map to create a 3D interpretation of the land area, and extract roads, waterways, buildings, and other features published on the map.

LAND INFO also offers topographic maps in multiple scales for [Armenia](#), [Iran](#), [Afghanistan](#), [Georgia](#), [Tajikistan](#), [Yemen](#), [Bahrain](#), [Ukraine](#), [Russia](#), [Romania](#), and other areas in the region.

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of GIS, remote-sensing and land-use applications. Please visit the website [www.LANDINFO.com](http://www.LANDINFO.com) to learn more about these products and services.

Contact LAND INFO today at 1-800-949-5080 (+1 303-369-6800) to learn more about our complete geospatial solutions.

## LAND INFO International, LLC

LAND INFO International provides digital geospatial information of the world, including satellite imagery, 3D models, and topographic maps. LAND INFO provides clients with the world's largest database of [digital topographic and geospatial services & products](#)...so clients can spend time analyzing the data, not gathering it. The company markets to civil engineers, government planners, project managers, and other international professionals for a variety

### Road, Waterway, & Contour Layers

LAND INFO specializes in feature extraction from international topographic maps. Roads, rivers, bridges, contours, buildings, and other map features are extracted and output as a separate vector layer.

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