



March 28, 2002
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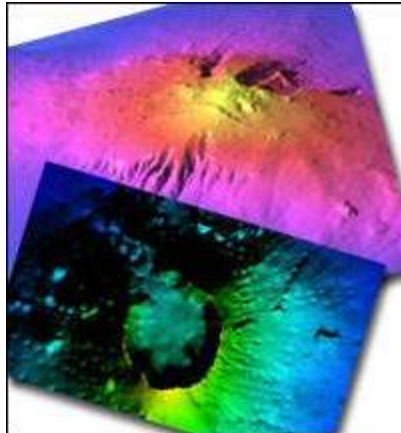
A Publication of LAND INFO International, LLC - Global GIS Data & Consulting Services

Client Solutions

MARATHON TAPS GLOBAL ENERGY RESERVE IN WEST AFRICA

The Alba gas field lies approximately 50 kilometers off the western coast of Africa. The field, first discovered in the 1980's, has only recently undergone major development to fully reap its vast underwater reserves of natural gas. In a November 2001 deal that totaled \$993 million, [Marathon Oil Company](#) acquired the field's drilling rights and nearby processing facilities from CMS Energy. Following the acquisition, Marathon set out to significantly boost production of the field. This meant upgrading the existing production complex, constructing a second processing plant, and evaluating new exploration capabilities. The company used a variety of GIS technologies to support its expansion activities.

Natural gas is a fossil fuel composed primarily of methane, but naturally contains other hydrocarbons and inert gases. The challenge of finding natural gas in remote areas, such as the Alba Field, is transporting it to the user market. Natural gas, which is commonly applied as a heating element and to fuel electric power plants, is used in its gaseous form. However, the gaseous form can only be transported through pressurized pipelines. Therefore, Marathon must



*LAND INFO 3D models help
Marathon develop Bioko Island*

Following the acquisition, Marathon set out to develop a comprehensive GIS database of Bioko Island. One goal was to visually orient its team of geologists and project managers with the island's infrastructure, landscape, and geographic proximity to the Alba Field. Another goal was to identify the best location of a second processing plant. This required analyzing elevations, conducting baseline studies, and evaluating existing infrastructure such as tanker ports, pipelines, and roads.

Marathon contacted LAND INFO International for help building the project's base data. LAND INFO produced geo-referenced [topographic maps](#) of the island at varying scales. It also developed a 90-meter, 3D [digital elevation model](#) (DEM) based on the island's 1:100,000 scale topographic map.

"We've been purchasing data from LAND INFO for years," commented **Roger Holeywell**, Advanced Senior Geologist for Marathon's Exploration

Coverage Spotlight

\$515 MILLION TO HELP REBUILD MACEDONIA

Earlier this month, representatives from 38 countries agreed on a \$515 million aid package to help stabilize Macedonia's fragile economy and sustain its rebuilding efforts. The meeting in Brussels, Belgium was sponsored by the World Bank and the European Commission. The critical funds will be used to build roads, construct utility lines, remove dangerous land mines, strengthen environmental monitoring, and offset spiraling government deficits.

Macedonia is a small, but strategically located, state in the middle of the Balkan peninsula. Its turbulent history dates back before 300 B.C., when Alexander the Great



*Feature Layers Extracted from
Macedonia Topographic
Maps Available*

created a broad empire as King of Macedonia. During World War II,

convert the gas to other forms more suitable for long distance transportation. As necessary, the gas goes through additional processing following transportation.

The closest land to the Alba Field is Bioko Island, a small volcanic island in Equatorial Guinea. The island sits 18 kilometers south of the field. An underwater pipeline connects the offshore drilling rigs to a processing facility on the island. Here, the natural gas is converted into three derivative products: Gas Condensate (*a naturally form of gasoline*), Methanol (*alcohol*), and Liquefied Petroleum Gas (*commonly known as propane*). The gas products are then loaded onto sea tankers and transported to destinations around the world.

Services Group. "Its DEMs are very high quality, and their topos are very easy to use and integrate well with other project data."

The LAND INFO datasets were combined with one-meter [satellite imagery](#) and Marathon's proprietary datasets. The team is now conducting field surveys to collect GPS ground points. This precise ground data will help the construction team pinpoint locations of new facilities and infrastructure.

The Marathon Oil Company is a global energy company engaged in the exploration, production, and transportation of crude oil and natural gas. For more information, visit www.Marathon.com.

Macedonia was divided between Bulgarian, Italian, and German occupation, prior to undergoing a civil war in 1946. In 1991, following years as a Yugoslav republic, Macedonia became independent once again. However, the country's weak infrastructure, and the region's economic struggles, slowed Macedonia's progress.

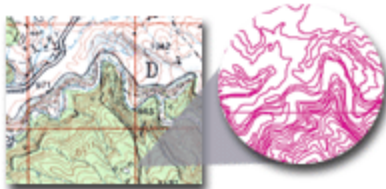
During 2001, Macedonia government forces battled uprisings by ethnic Albanians. In August of 2001, a new peace agreement ended the violence. Earlier this month, the Macedonia government announced a broad amnesty program that further cooled tensions with the Albanian population.

Today, steadied by a NATO peacekeeping force and this fresh aid package, Macedonia is intent on building a successful nation through peace and free trade. This commitment is opening the door for American and international companies to help rebuild the country.

LAND INFO is well prepared to support the many infrastructure projects. The company offers full GIS data coverage of the country at 1:50,000, 1:100,000, and 1:200,000 scales. This includes geo-referenced [topographic maps](#), [digital elevation models](#) (DEM), [roads](#) layers, [hydrography](#) layers, and other [map feature](#) layers. LAND INFO can also provide consulting services, including [data needs assessment](#), custom [data production](#), [data integration](#), database management planning, and general GIS data planning. [Contact](#) your LAND INFO representative for more information.

Services News

EXTRACTING MAP FEATURES FROM TOPOGRAPHIC MAPS



Contour elevations are commonly used in watershed analyses

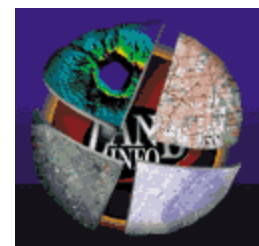
Topographic maps are often used as base maps to reference other GIS datasets. For example, overlaying oil well locations on a topographic map presents geologists with a visual orientation of the wells in relation to the pipelines, refinery, and the major roads. However, topographic maps are increasingly being used to create separate vector datasets, such as roads, buildings, rivers, lakes, landmarks, and contour elevations.

These datasets allow users to overlay specific topographic features, such as rivers & lakes, onto other GIS datasets, such aerial photos. This enables users the flexibility to create a highly customized GIS database.

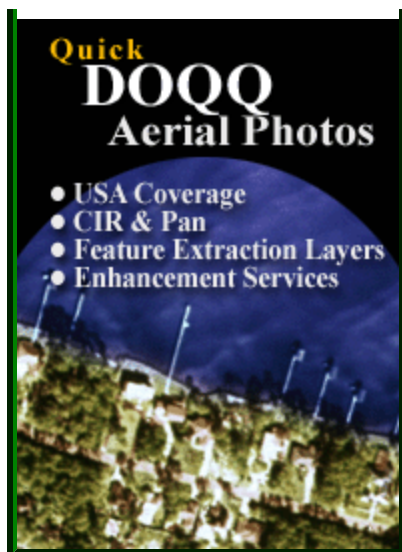
LAND INFO creates these vector datasets from its massive archive of international topographic maps. Following high-resolution scanning, the topographic map image is filtered through a proprietary software application that extracts all colors, leaving only the selected map feature (*i.e. roads, contours*). The image is then "cleaned," eliminating any peripheral data not related to the contour values. The map is then... [\(continue...\)](#)

LAND INFO International, LLC

LAND INFO International provides digital geospatial information of the world, including satellite imagery, 3D models, topographic maps, and map feature layers. 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



- Feature Extraction Services
- 3D Terrain Maps
- Geospatial Services



to civil engineers, government planners, project managers, and other international professionals for a variety of GIS, remote-sensing and land-use applications. Please visit the website 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 discover how our data solutions can maximize the success of your team.

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