



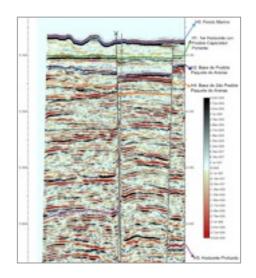
Marine High Resolution Geophysical Measurements and Studies

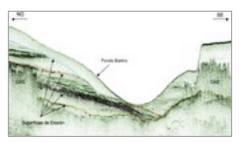
Studies

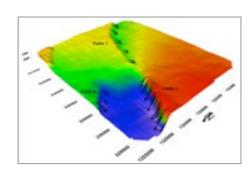
- Monochannel and multichannel 2D high resolution geophysics
- Marine bottom geomorphology
- Litho logical, estratigraphical and structural characterization of the marine sub-bottom
- Geological and geotechnical risks evaluation for borings and for marine infrastructure installation
- Shallow gas detection
- Detection and characterization of pipes, objects and debris in the marine bottom
- Isopachous models for the determination of the thickness of eroded surfaces, paleo-channels and horizons of the marine sub-bottom
- Structural models of the marine sub-bottom
- Multi-beam precision bathymetry
- Studies for dredging and fillings
- Precision satellite positioning for pipeline laying and location of boring platforms, vessels and coastal and off-shore infrastructures

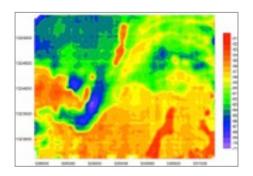
Acquisition and Processing 2D High resolution seismic acquisition equipment:

- Sercel type GI and MiniGI air guns
- High capacity compressors up to 3.000 PSI
- Sercel digital streamers up to 180 channels
- Sercel SEAL acquisition system
- DigiCourse levelers
- Sercel eSQC-Pro quality control system
- Paradigm Focus on-line processing for geophysical projects







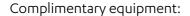




Marine High Resolution Geophysical Measurements and Studies

Monochannel geophysical acquisition equipment:

- Marine Sub-Bottom Profilers
- GeoPulse Pinger and GeoChirp shallow profilers
- GeoPulse Boomer and Sparker intermediate profilers
- GeoAcoustics double frequency side scan sonar
- GeoSwath multibeam Echosounder
- Double frequency digital echosounders
- GeoMetrics Cesium vapor magnetometers
- GeoPro digital acquisition, processing and integrated interpretation system



- Navigation and DGPS precision positioning systems with satellite differential
- Drop corer
- Clamshell

2D Processing and Interpretation:

- Paradigm Focus processing system
- SMT Kingdom Suite integrated interpretation system





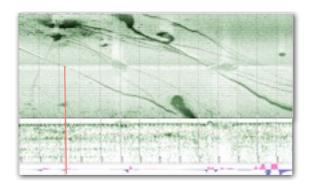






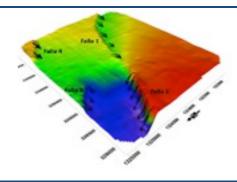


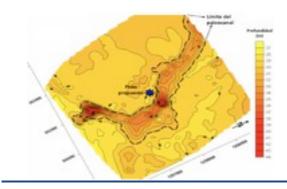
Relevant Projects



Geophysical and Geodetic Services in PDVSA
Occidente
PDVSA
Zulia State. Venezuela

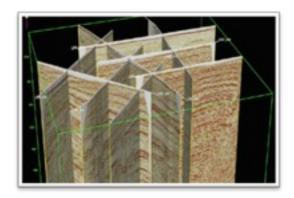
High resolution Monochannel and Multichannel geophysical studies of the Cardon IV Block. Rafael Urdaneta Off-shore exploration project Cardon IV Gulf of Venezuela





High resolution Monochannel and Multichannel geophysical studies of the Moruy II Block. Rafael Urdaneta Off-shore exploration project Moruy II Gulf of Venezuela

High resolution Monochannel and Multichannel geophysical studies. Liquefied Gas Loading Terminal Project Gran Mariscal de Ayacucho Industrial Complex PDVSA
Sucre State. Venezuela





Geophysical estudies in the Corinto Port. EMPRESA PORTUARIA NACIONAL, EPN 2020 Corinto. Chinandega. Nicaragua

Geophysical survey a FSU of natural gas at Sandino Port.
SANCHEZ ARGUELLO CIA LTDA
2020
Nagarote. Nicaragua

<u>Geophysical engineer for marine geohazards interperetation.</u>
ENVIROS

2019

Carmen City. Mexico

Positioning service at the Maracaibo Lake.
MARIDIVE OFFSHORE PROJECTS
2018
Lago de Maracaibo. Venezuela

Mecor pipeline project- Venezuela provision survey support services. SAIPEM

2017

Venezuela

Geophysical estudies in the area of the Cruise Ship project. Perico Island. ACCIONA INFRAESTRUCTURAS, S.A.

2017

Amador. Panamá

Fenix site survey.
Mg3 UK LIMITED

2017

República Argentina

<u>Supply of personnel and equipment for the search of the crashed plane west of Macanao.</u> <u>Nueva Esparta State.</u>

INSTITUTO NACIONAL DE LOS ESPACIOS ACUÁTICOS. INEA

2017

Nueva Esparta State. Venezuela

Geodesic support for the supervisión and technical management of the maintenance dredging of the lacustrine terminal of the Ana Maria Campos Petrochemical Complex. PETROQUÍMICA DE VENEZUELA, S.A. (PEQUIVEN)



2017

Zulia State. Venezuela

<u>Professional services for the geodetic and hydrographic control of the PDVSA Occidente</u> piers dredging.

PDVSA PETROLEO, S. A

2017

Zulia State. Venezuela

Submarine cable inspection using Side Scan Sonar.

KOCECO

2017

Nueva Esparta State. Venezuela

Developing of a dredging plan, work control and technical assistance necessary to its execution.

PRALCA

2016

Zulia State. Venezuela

Seabed debris survey Perla Field.

CARDON IV, S.A.

2015

Gulf of Venezuela

Geophysical and geotechnical study for submarine cable installation at Perla Field.

EQUINOX

2015

Gulf of Venezuela

<u>Diving Inspection, geophysical and bathymetric survey in Puerto Miranda.</u>

GLOBAL PANDI, S.A.

2015

Zulia State, Venezuela

<u>Service specialized studies (geophysical), required for pipeline replacement Sisor Tramo San Tome - Puerto Ordaz.</u>

PDVSA PETROLEO, S.A.

2014

Bolivar State, Venezuela

2D seismic acquisition of high resolution (Site Survey) RC11 Siluro.

REPSOL EXPLORACION COLOMBIA S.A.

2014

Republic of Colombia

Bathymetric and geophysical surveys for laying sublacustre Bajo Grande-Ule.



EHCOPEK, S.A. 2014

Zulia State, Venezuela

Acquisition, processing and interpretation seabed in the exploratory Block Rc-9, with option of geohazard evaluation in two additional areas in blocks belonging to Ecopetrol. ECOPETROL, S.A.

2013

Colombian Caribbean Sea

Review of geotechnical and oceanographic information available in the off-shore field (Block Z-1) of Pacific Rubiales Peru.

PACIFIC RUBIALES ENERGY PERU

2012

Republic of Peru

Aban Pearl Site Survey
CAPITAL SIGNAL COMPANY LIMITED
2012
Republic of Trinidad & Tobago

<u>Bathymetric</u> and geophysical study for engineering of the dredging project at the common marine zone of the San Antonio Port

SIGA INGENIERÍA Y CONSULTORÍA S.A.

2012

San Antonio. Chile

Geophysical exploration at coastal sectors of Valparaiso region.

EMPRESA PORTUARIA VALPARAISO

2012

Valparaiso. Chile

Cable Detecting Services.

CARDON IV, S.A.

2012

Gulf of Venezuela

Geodesic support for the dredging in the PDVSA Occidente jetties.

PDVSA PETRÓLEOS S.A.

2012

Zulia State. Venezuela

Rising with Multibeam in Moron.

CONSORCIO MORON

2012

Coasts of Carabobo State. Venezuela



Acquisition, processing and interpretation of marine geophysical data from surface and high-resolution 2D seismic for the study of geomorphological risks in Patao Field.

COORDINATING OFFICE OF HYDROGRAPHY AND NAVIGATION (OCHINA)

2012

Gulf of Venezuela

Geotechnical assessment of the marine bottom. Geotechnical Studies, geophysical and seismic risk in three locations for drilling with Jack up, and two locations for the platform. Amistad Block.

WORKGROUP, S.A.

2012

Gulf of Guayaquil

High-resolution 2D multichannel seismic data prospection acquisition, processing and interpretation service for the risks geomorphological study of the Mejillones y Rio Caribe Project. Phase I and II

COORDINATING OFFICE OF HYDROGRAPHY AND NAVIGATION (OCHINA)

2012

Gulf of Venezuela

Geodesic support for dredging on the docks of PDVSA Occidente.

PDVSA PETROLEO, S.A.

2012

Zulia State. Venezuela

High-resolution 2D multichannel seismic data prospection acquisition, processing and interpretation service for the geomorphologic study. Corocoro-Posa Project.

PDVSA PETROSUCRE, S.A.

2011

Pedernales. Delta Amacuro State, Venezuela

Accurate positioning of the BOA 30 barge in Corocoro field for the CPF project.

VHICOA VENEZUELAN HEAVY INDUSTRIES, C.A.

2011

Delta Amacuro State, Venezuela

<u>Echo sounder and Side Scan Sonar rising at the Corocoro field Pedernales for the CPF</u> project.

VHICOA VENEZUELAN HEAVY INDUSTRIES, C.A.

2011

Delta Amacuro State, Venezuela

Geophysical and profilometric rising to confirm the presence of a shipwrecked German submarine from the II World War.

HYDROGRAPHY AND NAVIGATION COORDINATION OFFICE (OCHINA)

2011

Mochima Bay. Sucre State. Venezuela



<u>Positioning and navigation service for a site survey at the Malvinas Islands.</u>

NOUEL CONSULT, C.A.

2010

Malvinas Islands. Argentina

<u>Loran-Manatee offshore development Project. Shallow Water High-Resolution</u> Geophysical Survey

CHEVRON

2010

Republic of Trinidad & Tobago

Geodesic and hydrographic services in PDVSA Occidente.

PDVSA

2010 - 2012

Zulia State, Venezuela

<u>Data acquisition</u>, processing and interpretation services for the geophysical studies in the area of the marine facilities of the natural liquefied gas plant (PGNL).

PDVSA

2009

Anzoategui State, Venezuela

Geophysical studies for the deep draft port engineering in the Delta Amacuro.

WATER SPACES NATIONAL INSTITUTE (INEA)

2009

Delta Amacuro State, Venezuela

Geophysical survey for the location of the new single buoy mooring, Jose Cryogenic Complex.

KORT CONSULTING XXI, C.A.

2009

Anzoategui State, Venezuela

Geophysical and geotechnical study of the Perla area, Gulf of Venezuela – Cardon IV Block.

REPSOL - GEOHIDRA

2008 - 2009

Gulf of Venezuela

<u>High-resolution Mono channel geophysics in the area were the second crossing over the lake of Maracaibo will be constructed: Nigale Bridge.</u>

ODEBRECHT - GEOHIDRA

2008 - 2009

Zulia State, Venezuela



Geotechnical and geophysical study service in the Moruy II Block. Rafael Urdaneta Project.

REPSOL - GEOHIDRA

2008 - 2009

Gulf of Venezuela, Venezuela

High-resolution Mono channel geophysics. Urumaco I and II Blocks.

GEOHIDRA CONSULTORES, C.A.

2008

Gulf of Venezuela

High-resolution Mono channel geophysics in the Cardon III Block.

GEOHIDRA CONSULTORES, C.A.

2008

Gulf of Venezuela

<u>Side Scan Sonar rising for the location of the crashed aircraft at the Los Roques</u> archipelago.

CIVIL PROTECTION AND DISASTER MANAGEMENT

2008

Federal Agencies, Venezuela

Geophysical study for the detection of sewage collector in Macuto. Vargas State.

HYDRO PROJECTS OF THE CARIBBEAN

2008

Vargas State, Venezuela

Bathymetric and geophysical risings, water intake channel, IPC project of the Termozulia II combine cycle.

JANTESA

2006 - 2009

Zulia State, Venezuela

Geophysical study for the Venezuela-Colombia gas pipeline.

GEOHIDRA CONSULTORES, C.A.

2006 - 2008

Gulf of Venezuela

<u>Dredging project and geophysical study for the detection of superficial debris and limestone in the Puerto Cabello navigation areas.</u>

PUERTO CABELLO AUTONOMOUS PORT INSTITUTE (IPAPC)

2006 - 2007

Carabobo State, Venezuela

Bathymetric and geophysical study in the Orinoco river for the laying of a fiber optic cable between the communities of Los Barrancos y San Felix.

CORPO TELETECNICAL



2005

Monagas and Bolivar State, Venezuela

Marine engineering studies for the Barbacoa-Cumana-Margarita Island gas pipeline.

PROYECTA CORP. S.A.

2005 - 2006

Sucre and Nueva Esparta States, Venezuela

Marine engineering studies for the Barbacoa-Cumana-Margarita Island gas pipeline.

PROYECTA CORP. S.A.

2005 - 2006

Sucre and Nueva Esparta States, Venezuela

Geophysical rising at Block IV of the Deltan Platform.

STATOIL

2004 - 2008

Delta Amacuro State, Venezuela

Geodesic Services in PDVSA Occidente.

PDVSA

2004 - 2008

Zulia State, Venezuela

Shallow Geophysics in Balboa Port, Panama City.

HAN-PADRON ASSOCIATES

2003

Republic of Panama

<u>Pre-feasibility technical-financial study for the construction of a river port in Cabruta.</u>

MINISTRY OF INFRASTRUCTURE (MINFRA)

2003

Guarico State, Venezuela

Geophysical rising for phase I of the Corocoro project.

CONOCO

2002 - 2003

Delta Amacuro State, Venezuela

<u>Bathymetrical</u>, <u>geophysical</u> and <u>geodetic risings in Pedernales for the mobilization of the</u> Maersk Pioneer barge to the water injection well.

PERENCO VENEZUELA, S.A.

2002

Delta Amacuro State, Venezuela

Geodesic control of pipeline laying in Pedernales.

PERENCO OF VENEZUELA, S.A.



Delta Amacuro State, Venezuela

Hydrography, geophysical and geodetic satellite services in the Pedernales-Capure sector, Orinoco Delta.

PERENCO OF VENEZUELA, S.A.

2001 - 2002

Delta Amacuro State, Venezuela

Rising of the sub-lacustrine facilities in wells and locations.

PDVSA

2001 - 2002

Zulia State, Venezuela

Geophysical and geotechnical survey in the Petrozuata Terminal. Field studies for the dredging project.

DRAVENSA

2001

Anzoategui State, Venezuela

Geotechnics in the Orinoco River.

GEOHIDRA

2000

Delta Amacuro State, Venezuela

Geophysical rising for the future facilities of PDVSA / Pequiven Jose.

SINCOR

2000

Anzoategui State, Venezuela

Sample taking and characterization of the bottom at the future zone of cruisers anchorage in the Guaraguao Bay, Porlamar.

PORTS OF THE SEA DEVELOPMENTS

1999

Nueva Esparta State, Venezuela

Geophysical, geotechnical and hydrographic surveys in the area of La Ceiba.

CAURA ENGINEERING

1997

Trujillo State, Venezuela

<u>Bathymetrical, geophysical and geotechnical rising and sedimentation study at the Cryogenic Complex of Jose.</u>

CORPOVEN, S.A.

1997

Anzoategui State, Venezuela

Geotechnical Data Base.



BP EXPLORATION OF VENEZUELA

1996

Sucre State, Venezuela

Bathymetric and geophysical rising in the North sector of the Lake of Maracaibo strait.

PEQUIVEN, S.A.

1996

Zulia State, Venezuela

Topographic rising and borings in Jose.

FUGRO

1996

Anzoategui State, Venezuela

Satellite positioning for a boring barge in Pedernales.

FUGRO

1996

Delta Amacuro State, Venezuela

Gephysical measurements in Punto Fijo.

VENEZUELA NATIONAL TELEPHONE COMPANY (CANTV)

1996

Falcon State, Venezuela.

Monochannel geophysics in Pedernales.

BP EXPLORATION OF VENEZUELA

1995

Sucre State, Venezuela

Geophysical and bathymetric rising in Punta Cuchillo.

LAGOVEN, S.A.

1995

Bolívar State, Venezuela

Soil studies for the Deep Water Terminal (DWT) project.

LAGOVEN, S.A. - INELECTRA

1995

Sucre State, Venezuela

Borings for the dredging and structures of Puerto Cabello.

PUERTO CABELLO AUTONOMOUS PORT INSTITUTE (IPAPC)

1995

Carabobo State, Venezuela

Structure borings in the El Palito refinery. New pier project El Palito Refinery. NUMREP.

PDVSA



Carabobo State, Venezuela

Soil studies for the Deep Water Terminal (DWT) in Güiria.

LAGOVEN, S.A.

1995

Sucre State, Venezuela

Chipping planta and export terminal in the Orinoco river. Hydrographic and geotechnical measurements in Punta de Piedra.

VENEPAL - STON

1994

Monagas State, Venezuela.

Soil survey in the Pozuelos bay.

SUN PORTS CORPORATION

1994

Anzoategui State, Venezuela

Bathymetrical and geophysical rising for the Jose Terminal off-shore facilities.

TOTAL OIL & GAS VENEZUELA

1994

Anzoategui State, Venezuela

Geotechnical study for the submarine discharge of Barcelona.

HACROW CONSULTING

1994

Anzoategui State, Venezuela

Soil study for the flexicoquer combustion project. Amuay refinery (CFAY).

LAGOVEN, S.A.

1993

Falcon State, Venezuela

Geotechnical study of the port area of Puerto Cabello.

NOUEL INGENIEROS CONSULTORES, C.A.

1992

Carabobo State, Venezuela

<u>Bathymetry, geophysics and geotechnics for the submarine pipeline laying. Flexicoquer combustion project. CFAY.</u>

TECNOFLUOR

1993

Falcon State, Venezuela

Hydrographic and geotechnical studies. Macagüita Marina.

NOUEL INGENIEROS CONSULTORES, C.A.



Falcon State, Venezuela

Geophysical, bathymetric rising and geotechnical study of the port zone of Puerto Cabello.

NOUEL INGENIEROS CONSULTORES, C.A.

1993

Carabobo State, Venezuela

Soil study for the design of the Porlamar new port.

SUN PORTS CORPORATION

1993

Anzoategui State, Venezuela

<u>Sub-bottom survey at the Punta Palmas sector.</u>

NATIONAL INSTITUTE OF WATERWAYS (NIW)

1992

Zulia State, Venezuela

Geotechnical borings for the Pequiven in Jose liquids dock.

PEQUIVEN, S.A.

1992

Anzoategui State, Venezuela

Soil study in Los Taques. Paraguaná.

GUSTECA

1991

Falcon State, Venezuela

Geophysical study and topographic and bathymetrical rising of the area of the future liquids pier of the petrochemical complex of Jose.

PEQUIVEN, S.A.

1991

Anzoategui State, Venezuela

Soil study in the Gulf of Coro for the Ule-Amuay pipeline laying.

LAGOVEN, S.A.

1990

Falcon State, Venezuela

Geotechnical study for the new loading and parking area of Pequiven, Maracaibo.

PEQUIVEN

1986 - 1987

Zulia State, Venezuela

Borings and soil studies at the future Arauca navy station, El Amparo, Apure State.

NATIONAL INSTITUTE OF WATERWAYS (NIW)



Apure State, Venezuela

Geotechnical and sedimentological studies for the National Institute of Waterways (NIW)

base in Puerto La Cruz.

NATIONAL INSTITUTE OF WATERWAYS (NIW)

1987

Anzoategui State, Venezuela

<u>Shallow waters geotechnical investigations in the area of Jose.</u>

MENEVEN, S.A.

1982

Anzoategui State, Venezuela

Geotechnical study at the coastline of Jose.

MENEVEN, S.A.

1982

Anzoategui State, Venezuela

Currents and sediment studies at the Pedernales Bar.

LAGOVEN, S.A.

1981

Delta Amacuro State, Venezuela