

BENTOS has more than 20 years of experience and has participated in more than 200 hydrography, oceanography, marine geophysics and marine environmental studies, including studies in connection with the principal maritime projects carried out in Chile. This has exposed BENTOS to the engineering demands of various Chilean and international companies and firms, such as:

- Consorcio Puente Chacao. Hyundai (Corea)
- Petrus (Chile)
- Freeport -McMoRan Copper & Gold Inc. (USA)
- Compañía Minera Teck Quebrada Blanca S.A. (Chile)
- GasAtacama Chile S.A. (Chile)
- Compañía Minera del Pacífico S.A. (CAP Minería, Chile)
- Ausenco Sandwell (Australia)
- Minera ARATIRÍ S.A. (Uruguay)
- CCM Candelaria (Chile)
- HALCROW (United Kingdom)
- Planal-PetroBras (Brazil)
- L3 Communications MariPro (USA)
- Montgomery Watson (USA)
- Vale do Rio Doce (Brazil)
- HidroAysén (Puerto Yungay, Río Bravo and Estero Mitchell) (Chile)
- Port works Administration, Chile (Caleta La Arena and Puelche, Seno Reloncaví) (Chile)
- Norddeutsche Sekabelwerke GmbH & Co. KG (Germany)
- SANDWELL (Canada, Peru, Uruguay)
- Nautronix Maripro (USA)
- CH2M Hill (USA)
- Science Applications International Corp. (USA)
- PRDW Aldunate-Vásquez (Chile and South Africa)
- COWI Engineers and Planners (Denmark)
- Parsons Engineering Science (USA)
- Aldunate y Asociados (Chile)
- Ingeniería Cuatro (Chile)
- Southern Peru Copper Corporation (Peru)
- NJS (Japan)
- Antofagasta Terminal Internacional S.A. (Chile)
- Iquique Terminal Internacional S.A. (Chile)
- Terminal Portuario Arica S.A. (Chile)
- San Vicente Terminal Internacional (Chile)
- Comprehensive Test Ban Treaty Organization (Austria)
- Celulosa Arauco Constitución S.A. (Chile)
- Noranda Minerals (Canada)
- Nutreco (Chile)
- EMPRESA CONSTRUCTORA BELFI S.A. (Chile)

- HOCHTIEF (Germany)
- Vinci (France)
- CLEDIR (Uruguay)
- BPZ ENERGY INC. (Peru)
- COMPAÑÍA MINERA MISKI MAYO S.A.C. (Peru)
- GOLDER (Chile)

EXPERIENCE IN DIRECTIONAL WAVE MEASUREMENTS

CHILE

Official Currents, Waves and Tides Study to support the Engineering Design Project of the Suspension Bridge over the Chacao Channel. Tenth Administrative Region. **CHACAO BRIDGE CONSORTIUM**. 2014 - 2015 - 2016.

Multibeam bathymetric survey and current measurements in the Chacao Channel, Tenth Administrative Region, **PONTIFICAL CATHOLIC UNIVERSITY OF CHILE**, 2012.

Oceanography study with approval of the Hydrographic and Oceanographic Service of the Chilean Navy (SHOA), Bahía Chapaco, Third Administrative Region, **COMPAÑÍA MINERA DEL PACÍFICO S.A. (CAP-MINERÍA)**, 2012.

Official study of currents, waves and tides. Deep undersea discharge pipe project, Huasco, Third Administrative Region, Chile, **COMPAÑÍA MINERA DE PACÍFICO S.A. (CAP-MINERÍA)**, 2011.

Oceanography, hydrography and geophysics study with SHOA approval, Bahía Chapaco, Third Administrative Region, **COMPAÑÍA MINERA DEL PACÍFICO S.A. (CAP-MINERÍA)**, 2011.

Oceanography, hydrography and geophysics study with SHOA approval, Punta Padrones (Third Administrative Region), **COMPAÑÍA CONTRACTUAL MINERA CANDELARIA S.A.**, 2010 -2011.

Oceanography and water quality studies with SHOA approval, Puerto Yungay, Eleventh Administrative Region, **CENTRALES HIDROELÉCTRICAS DE AYSÉN S.A.**, 2008 - 2009.

Oceanography and water quality studies with SHOA approval, Puerto Río Bravo, Eleventh Administrative Region, **CENTRALES HIDROELÉCTRICAS DE AYSÉN S.A.**, 2008 - 2009.

Study and design of the improvement and maritime connectivity of the Puerto Montt - Chiloé - Palena and Caleta La Arena network, Tenth Administrative Region, **PRDW AV - PORT WORKS ADMINISTRATION (DOP)**, 2008 - 2009.

Study and design of the improvement and maritime connectivity of the Puerto Montt – Chiloé – Palena and Caleta Puelche network, Tenth Administrative Region, **PRDW AV - PORT WORKS ADMINISTRATION (DOP)**, 2008 - 2009.

Directional wave studies, Punta Chascos (Third Administrative Region) for **SANDWELL (CANADA)**, 2008.

Directional wave study for the CELCO Constitución discharge pipe, **CELCO-CONSTITUCIÓN**, 2006.

Directional wave study for a terminal (measurements in real time), **ABASTIBLE SAN VICENTE**, 2006.

Directional wave study, **TERMINAL PORTUARIO ARICA S.A. (TPA)**, 2005.

Directional wave study for the Quintero LNG Terminal. **ENAP – PRDW-AV**, 2005.

Directional wave study, **ANTOFAGASTA TERMINAL INTERNACIONAL S.A. (ATI)**, **2003**.

Directional wave study, Puerto Ballena, Pargua, **NUTRECO CHILE S.A.**, 2001.

Directional wave study, **IQUIQUE TERMINAL INTERNACIONAL S.A. (ITI)**, 2001.

Directional wave study, Puerto Mejillones, **PUERTO DE MEJILLONES S.A.**, 2000.

Directional wave study, Directional wave study Oxiquim Terminal, Quintero, **OXIQUIM S.A.**, 2000.

Directional wave study for the Mejillones Port Complex Project, **CORPORACIÓN NACIONAL DEL COBRE (CODELCO)**, 1998.

PERU

Measurements of waves, currents and sea level, Pampa Pongo, Province of Nazca, Peru, **PRDW ALDUNATE VÁSQUEZ**, 2012 – 2013.

Multibeam bathymetry and wave measurements. Marine studies, Bahía Islay Marine Terminal, Arequipa, Peru, **TERMINAL INTERNACIONAL DEL SUR S.A.**, 2011.

Study of wave climate at Bahía Ancón, Peru, **TRAMARSA S.A.**, 2009 – 2010.

Study of wave climate, Ventanilla Project, El Callao, Peru, **SANDWELL PERU**, 2008.

Study of wave climate and geophysical exploration (side scan sonar, seismicity and bathymetry). El Galeno Project, Pacasmayo, Peru, **MTB PROFESSIONALS**, 2008.

Miski Mayo Port Terminal, Bahía Sechura, Department of Piura, Peru, **COMPAÑÍA MINERA MISKI MAYO S.A.C.**, 2006.

Hydro-oceanographic studies for the Marine Trestle Project at Bahía Tablones, Ilo, Peru. **SOUTHERN PERU COPPER CORPORATION, PERU**, 2005.

Directional wave studies for the Camisea Project, **CONSORCIO BELFI-COSAPI**, 2003.

Implementation of a system of navigation aids for the Camisea Project, **CONSORCIO BELFI-COSAPI**, 2003.

Oceanography and geophysics studies for the Greater Chimbote Discharge Pipe, **PARSONS ENGINEERING SCIENCE**, 2000.

URUGUAY

Directional wave studies for a port project, **MINERA ARATIRÍ S.A.**, 2010 – 2011.

Directional wave studies for the Río La Plata Port Project. **CLEDIR-SANDWELL**, USA, 2006.

PANAMA

Directional wave studies for the Compañía Minera Petaquilla port project, **SANDWELL, CANADA**, 2007-2008.

EXPERIENCE IN MULTIBEAM (MB) BATHYMETRIC SURVEYS

CHILE

Wide Coverage Bathymetric Survey to Support a Modeling Studies (Los Lagos Administrative Region). FIPA-2016-05 Project. Chiloé, Tenth Administrative Region. **UNDER-SECRETARY OF FISHERIES AND AQUACULTURE**. 2016.

Official Multibeam Bathymetric Survey. Maritime Terminal. First Administrative Region. **MINERAL MINING COMPANY**. 2015.

Multibeam Hydrographic Survey and Marine Geophysical Survey. Red Dragon Coal Fired Power Plant Project. Mejillones, Second Administrative Region. **PETRUS CONSULTORES GEOTÉCNICOS LTDA**. 2015.

Submarine exploration for the Fiber Optic Cable Route, Tenth and Eleventh Administrative Regions. **TELFÓNICA DEL SUR. S.A.** 2014.

Exploratory multibeam bathymetric survey, side scan sonar, sub bottom profiler and coastal topography. Punta Guastral and Isla Huar, Tenth Administrative Region, **SAESA**, 2013.

Offshore exploratory multibeam bathymetry, Fourth Administrative Region, **RESERVED CUSTOMER**, 2013.

Official multibeam bathymetry, marine geophysics (sub bottom profiler, side scan sonar, marine magnetometry and piston corer), Puerto Lirquén, Bahía Concepción, Eighth Administrative Region, OCTOPUS LNG Project, **GEOVENOR EXPLORA SpA.**, 2013.

Exploratory multibeam bathymetry, Lago Villarrica, Villarrica, Ninth Administrative Region, Chile. *Ad Honorem* investigation work. **UNIVERSITY OF GENT (BELGIUM) and UNIVERSITY OF ZURICH (SWITZERLAND)**, in collaboration with **AUSTRAL UNIVERSITY OF CHILE (UACH)** and **BENTOS**. 2013.

Multibeam survey for a submarine cable route, Robinson Crusoe Island, Fifth Administrative Region, Chile, **L-3 MARIPRO**, 2012.

Multibeam bathymetric survey and current measurements in the Chacao Channel, Tenth Administrative Region, **PONTIFICAL CATHOLIC UNIVERSITY OF CHILE**, 2012.

Multibeam bathymetric survey and marine sub bottom profiler, Bahía Chapaco, Third Administrative Region, **COMPAÑÍA MINERA DEL PACÍFICO S.A. (CAP-MINERÍA)**, 2012.

Multibeam bathymetric survey and marine geophysical exploration, Mejillones Second Administrative Region, Gas Atacama Project, **GASATACAMA CHILE S.A.**, 2011.

Multibeam bathymetric survey and marine geophysical exploration, First Administrative Region, Quebrada Blanca Project, Phase 2, **COMPAÑÍA MINERA TECK QUEBRADA BLANCA S.A.**, 2011.

Multibeam bathymetric survey and marine sub bottom profiler, Bahía Chapaco, Third Administrative Region, **COMPAÑÍA MINERA DEL PACÍFICO S.A. (CAP-MINERÍA)**, 2011.

Multibeam bathymetric survey and marine sub bottom profiler. Bahía Cumberland, Robinson Crusoe Island, Fifth Administrative Region, Chile, **PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR TEST-BAN-TREATY ORGANIZATION (CTBTO)**, 2010-2011.

Multibeam, geophysics, costal topography and soil mechanics studies for submarine power cable studies on alignments in the Tenth and Eleventh Administrative Regions, Chile, **CENTRALES HIDROELÉCTRICAS DE AYSÉN S.A.**, 2009 - 2010.

Multibeam bathymetric survey or the Juan Fernández submarine cable route, Fifth Administrative Region, **L3 COMMUNICATIONS MARIPRO INC.**, 2009.

Multibeam bathymetry, Austral cable route, Chiloé, Tenth Administrative Region. Chile, **NORDDEUTSCHE SEEKABELWERKE GMBH & CO. KG. SUBMARINE CABLE SYSTEMS**, 2007.

Multibeam bathymetry, centerline area of the Chacao Bridge and future port facilities, , Chacao Channel, Tenth Administrative Region, Chile, **EMPRESA CONSTRUCTORA PUENTE CHILOÉ S.A.**, 2006.

URUGUAY

Multibeam bathymetric survey, side scan sonar and marine sub bottom profiler (SBP). Directional wave and current measurements and sedimentology sampling, Rocha District, Uruguay, **MINERA ARATIRÍ S.A. - AUSENCO MANAGEMENT**, 2010-2011.

PERU

Multibeam bathymetry and wave measurements. Marine studies for the Bahía Islay Marine Terminal, Arequipa, Peru, **TERMINAL INTERNACIONAL DEL SUR S.A.**, 2011.

BRAZIL

Multibeam bathymetry and geophysics study for the URUCU-MANAUS gas pipeline, Amazonas, Brazil, **PLANAL SERVICIOS DE ENGENHARIA**, 2008.

EXPERIENCE IN GEOPHYSICAL SURVEYS BY MEANS OF SUB BOTTOM PROFILER (SBP)

CHILE

Multibeam Hydrographic Survey and Marine Geophysical Survey. Red Dragon Coal Fired Power Plant Project. Mejillones, Second Administrative Region. **PETRUS CONSULTORES GEOTÉCNICOS LTDA.** 2015.

Exploratory multibeam bathymetric survey, side scan sonar, marine sub bottom profiler and coastal topography. Punta Guastral and Isla Huar, Tenth Administrative Region, **SAESA**, 2013.

Official multibeam bathymetry, marine geophysics (sub bottom profiler, side scan sonar, marine magnetometry Marina and piston corer), Puerto Lirquén, Bahía Concepción, Eighth Administrative Region, OCTOPUS LNG Project, **GEOVENOR EXPLORA SpA.**, 2013.

Multibeam bathymetric survey y and marine sub bottom profiler. Bahía Chapaco, Third Administrative Region. **COMPAÑÍA MINERA DEL PACÍFICO S.A. (CAP-MINERÍA)**, 2012.

Multibeam bathymetric survey y and marine sub bottom profiler. Bahía Chapaco, Third Administrative Region. **COMPAÑÍA MINERA DEL PACÍFICO S.A. (CAP-MINERÍA)**, 2011.

Multibeam bathymetric survey and marine geophysics exploration, Mejillones, Second Administrative Region, Gas Atacama Project. **GASATACAMA CHILE S.A.**, 2011.

Multibeam bathymetric survey and marine geophysics exploration, First Administrative Region, Quebrada Blanca Project, Phase 2, **COMPAÑÍA MINERA TECK QUEBRADA BLANCA S.A.**, 2011.

Multibeam bathymetric survey and marine sub bottom profiler, Bahía Cumberland, Isla Robinson Crusoe, Fifth Administrative Region, Chile. **PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR TEST-BAN-TREATY ORGANIZATION (CTBTO)**, 2010-2011.

Official single beam bathymetric survey, littoral protection zone (ZPL), beach line and study of currents, waves and tides; official study of sea bottom quality by means of sub bottom profiler (SBP) technology, Punta Padrones, Bahía Caldera, Third Administrative Region, Chile, **COMPAÑÍA CONTRACTUAL MINERA CANDELARIA S.A.**, 2010-2011.

Multibeam hydrography, geophysics, coastal topography and soil mechanics studies for submarine power cables on alignments in the Tenth and Eleventh Administrative Regions, Chile, **CENTRALES HIDROELÉCTRICAS DE AYSÉN S.A.**, 2009 - 2010.

Hydrography, geophysics (SBP), beach line and coastal topography studies, El Morro Water Desalination Plant Project, Third Administrative Region, Chile, **HALCROW GROUP LTD. CHILE**, 2009.

Marine seismic survey (SBP) in Bahía Talcahuano, Eighth Administrative Region, Chile, **GEOEXPLORACIONES S.A.**, 2009.

Official single beam bathymetric survey, beach line, study of currents, waves and tides; official study of sea bottom quality by means of sub bottom profiler (SBP) technology, Río Bravo, Estero Mitchell, Eleventh Administrative Region, Chile, **CENTRALES HIDROELÉCTRICAS DE AYSÉN S.A.**, 2008 - 2009.

Oceanography, hydrography, marine geophysics and beach line studies with SHOA approval; study and design for the improvement and connectivity of the Puerto Montt – Chiloé – Palena and Caleta La Arena maritime network, Tenth Administrative Region, **PRDW AV – PORT WORKS ADMINISTRATION (DOP)**, 2008 - 2009.

Oceanography, hydrography, marine geophysics (SBP) and beach line studies with SHOA approval; study and design for the improvement and connectivity of the Puerto Montt – Chiloé – Palena and Caleta Puelche maritime network, Tenth Administrative Region. **PRDW AV - PORT WORKS ADMINISTRATION (DOP)**, 2008 - 2009.

Location of submarine pipes by means of marine sub bottom profiler (SBP), Bahía de San Vicente, Eight Administrative Region, Chile, **CADE IDEPE INGENIERÍA Y DESARROLLO DE PROYECTOS LTDA.**, 2007.

Survey study with marine sub bottom profiler (SBP) in Bahía de Quintero, Fifth Administrative Region, Chile, **IPS INGENIEROS LTDA.**, 2006.

Marine sub bottom profiler (SBP) survey, harbor basin, Puerto de Arica, First Administrative Region, Chile, **TERMINAL PORTUARIO ARICA S.A. (TPA)**, 2006.

Acoustic exploration study of the marine bottom (SBP) in Bahía de Quintero, Fifth Administrative Region, Chile, Quintero single buoy mooring capacity increase, **GEOVENOR S.A.**, 2005.

Study of marine bottom profiles, Bahía Quintero, Fifth Administrative Region, Chile, **GEOVENOR - ENAP REFINERÍA ACONCAGUA**, 2005.

PERU

Marine geophysics studies (SBP), single beam bathymetry, side scan sonar, directional wave measurements; Puerto Eten, Chiclayo, Peru, **LUMINA COPPER**, 2009 - 2010.

Study of wave climate and geophysical exploration (side scan sonar, SBP seismicity and bathymetry), El Galeno Project, Pacasmayo, Peru, **MTB PROFESSIONALS**, 2008.

Geophysical exploration, Melchorita LNG Project, Peru, **JAN DE NUL**, 2008.

Geophysical exploration (SBP), Punta Vegueta area, Peru, **TRAMARSA S.A.**, 2008.

Geophysical exploration, Bahía Ancón, Peru, **TRAMARSA S.A.**, 2007.

Study of marine sub bottom profiles, Zorritos, Tumbes, submarine pipeline project for pipelining gas, **BPZ ENERGY INC., SUCURSAL PERÚ. SEHIDRO.**, 2006.

URUGUAY

Multibeam bathymetric survey, side scan sonar and marine sub bottom profiler (SBP). Directional wave and current measurements. Sedimentology sampling, Rocha District, Uruguay, **MINERA ARATIRÍ S.A. - AUSENCO MANAGEMENT**, 2010-2011.

BRAZIL

Multibeam bathymetry and geophysics study (SBP) for the URUCU-MANAUS gas pipeline, Amazonas, Brazil, **PLANAL SERVICOS DE ENGENHARIA**, 2008.

For more detailed information on our company, the services we offer and the work we have performed, visit our web site <http://www.bentos.cl>.

We also can place at your disposal the Certificates of Correct Execution of projects performed.