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Andreini Nicolò

Da: Lavori all'Estero e Affari Internazionali
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A: Andreini Nicolò
Oggetto: I: Follow up meeting with Italian Engineering Association in ANCE - Rome July 31st 2008
Priorità: Alta

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-----Messaggio originale-----

Da: Francesco Fiermonte [mailto:fiermonte@oice.it]
Inviato: giovedì 31 luglio 2008 16.25
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Oggetto: Follow up meeting with Italian Engineering Association in ANCE - Rome July 31st 2008
Priorità: Alta

From	OICE	Dr. Francesco Fiermonte
To	HEPIZA	Dr. Pham Thuyen Chairman
c.c		H.E. Amb. Nguyen Van Nam.
	DINH VU	Dr. Doan Duc Luyen
	ANCE	Amb. Gerardo Carante
	OAR	Arch. Amedeo Schittarella
	D'Appolonia	Ing. Mario Lazzeri, Ing Alessandro Odasso

Subject: Follow up meeting with Italian Engineering Association in ANCE - Rome July 31st 2008.

Dear Dr. Pham Thuyen,

I have been very glad to meet you along with H.E. the Ambassador of Vietnam in Italy, the President Trinh Quang Su and all the members of the Hai Phong delegation.

As I anticipated an associate of OICE specialized in Ports engineering is interested in Hai Phong's new port project.

01/08/2008

D'Appolonia is market leader in this field and together we have already completed some very successful activities in Russia.

The port project could be a part of a comprehensive urban and industrial development plan organized with our colleagues of ANCE and OAR.

Attached you will find a presentation of D'Appolonia.

I look forward to getting in contact with you the first week of September.

Best regards.

Francesco Fiermonte

PROJECT PROFILE

NATIONAL VESSEL TRAFFIC MANAGEMENT SERVICE (VTMS) SPECIFICATION FOR PHASE 2 DETAIL DESIGN

Client: Alenia Marconi Systems
S.p.A (Italy)

The Italian VTS is characterized as an integrated system VTMS (Vessel Traffic Management Information Service) hierarchically organized on three levels connected by a unique network, the Net of the Public Administration.

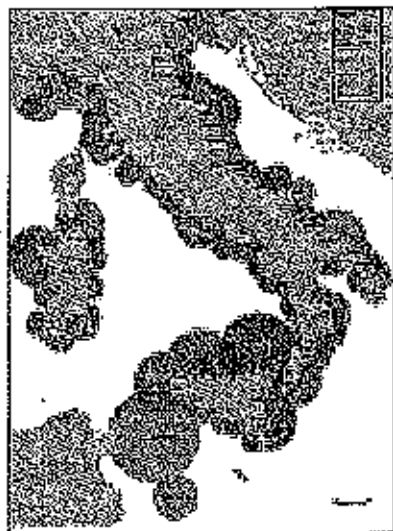


The central level or VTSC, is established at the National Control Center. The intermediate level is constituted by different area centres (VTSA), located in existing Italian Maritime Direction Buildings. Peripheral levels are represented by local centers



(VTSL), placed at the peripheral Maritime Offices, such to cover all the Italian coasts.

The Italian VTS will constitute the global management centre for the Aerial and Maritime Navigation Department, in accomplishment of the respective institutional assignments, for the activities of maritime transports planning, as well as of maritime traffic control and coordination.



Italian VTS is scoped to increase:

- safeguard of the human life in the sea;
- safety in the territorial and international waters;
- respect the safety rules of the navigation;
- environmental protection; pollution control.



D'Appolonia has been involved in the definition of requirements to enable the launch of the detail design phase of the programme, which will lead to procurement and validation of all platforms distributed over the national territory.

Description of the main support:

- editing of the technical proposal VTS 2 ^ Tranche;
- realization of the attached technical documentation;
- preparation of the Phase Review;
- updatings and re-issues of the Executive Project of Detail;
- follow-up of the 2 ^ Tranche.



D'APPOLONIA

Qualification Report

Design of Ports and Shipyards



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**QUALIFICATION REPORT
DESIGN OF PORTS AND SHIPYARDS**

1 INTRODUCTION

The firm was founded in 1956 in Pittsburgh, Pennsylvania by Prof. Elio D'Appolonia. During the early years of soil mechanics development, D'Appolonia pioneered applications of basic soil mechanics to the design and construction of foundations and earthworks for industrial and power applications. Since that beginning, the firm has nurtured a multi-disciplinary staff and with expanded capabilities has undertaken varied and complex endeavors in a range of world wide projects.

1.1 D'APPOLONIA BACKGROUND

D'Appolonia has worked in Europe for more than 30 years, firstly from the United States and then from Brussels, until the opening of Genoa Headquarters in 1981. The Genoa operations were reorganized as an Italian corporation in 1985, maintaining a strong level of cooperation and interaction with the Pittsburgh sister company.

D'Appolonia has always worked with a "System of Quality Assurance" derived from that in use in the United States in the offshore and nuclear fields. The company is certified ISO 9001:2000 by Bureau Veritas Quality International.

The Company develops projects and consulting activities by availing itself of the most up-to-date technologies and know-how acquired from our wide project base. This approach has allowed D'Appolonia to enter in a large number of markets, by diversifying services and clients.

To date, in addition to the Headquarters in Genoa, D'Appolonia has branch offices in Brindisi, Milano, Napoli and Rome. America Headquarters are located in Monroeville, Pennsylvania.

Since its foundation D'Appolonia has participated in more than 20,000 projects in more than 30 countries. D'Appolonia operates in Europe, the Middle East, Africa, China and America.

The key economic figures of D'Appolonia S.p.A. of the last three years are:

<i>Thousands of Euro</i>	2002	2003	2004	2005
Revenue	18,196	18,202	19,898	24,865
Total Assets	20,985	24,514	31,464	34,534
Capital & Reserves	2,231	2,441	3,062	4,510
Profit before Taxes	1,588	1,823	2,403	2,627

1.2 SUMMARY OF CAPABILITIES

D'Appolonia capabilities detailed in the following chapter are focused to:

- 1) **Siting, i.e. all engineering activities related to the site** (screening of possible alternatives, environmental assessments, site remediation, geohazards, permitting, coastal engineering and geotechnics) plus geophysical, geotechnical and environmental surveys;
- 2) **Design: civil, geotechnical, marine, electro-mechanical and fluid engineering;**
- 3) **Specialty engineering:**
 - geotechnics and geohazards,
 - environmental,
 - HSE/safety,
 - construction management,
 - security,
 - inspection and monitoring.

For the development of nearshore and offshore facilities such as LNG terminals, piers, ports, and fixed and seabed structures, D'Appolonia participate in the different phases of the project:

- o screening of site alternatives;
- o pre-feasibility and permitting;
- o feasibility;
- o basic/FEED design,
- o final design, and
- o supervision of construction activities.

2 CAPABILITIES

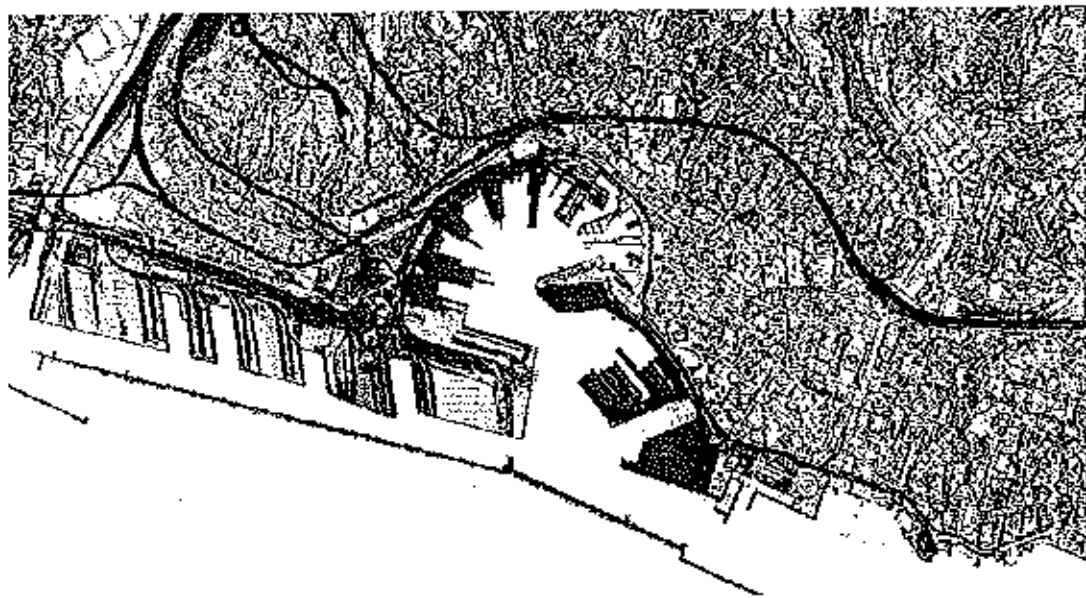
D'Appolonia provides a broad range of capabilities in port engineering and in the design of terminals and construction yards. Our main areas of expertise are described in the following.

2.1 PLANNING OF PORT FACILITIES

2.1.1 Layout Engineering

Layout engineering is carried out at different levels in the feasibility, basic/FEED and final design. For a successful completion of the project it is essential that the layout is "frozen" at the FEED stage.

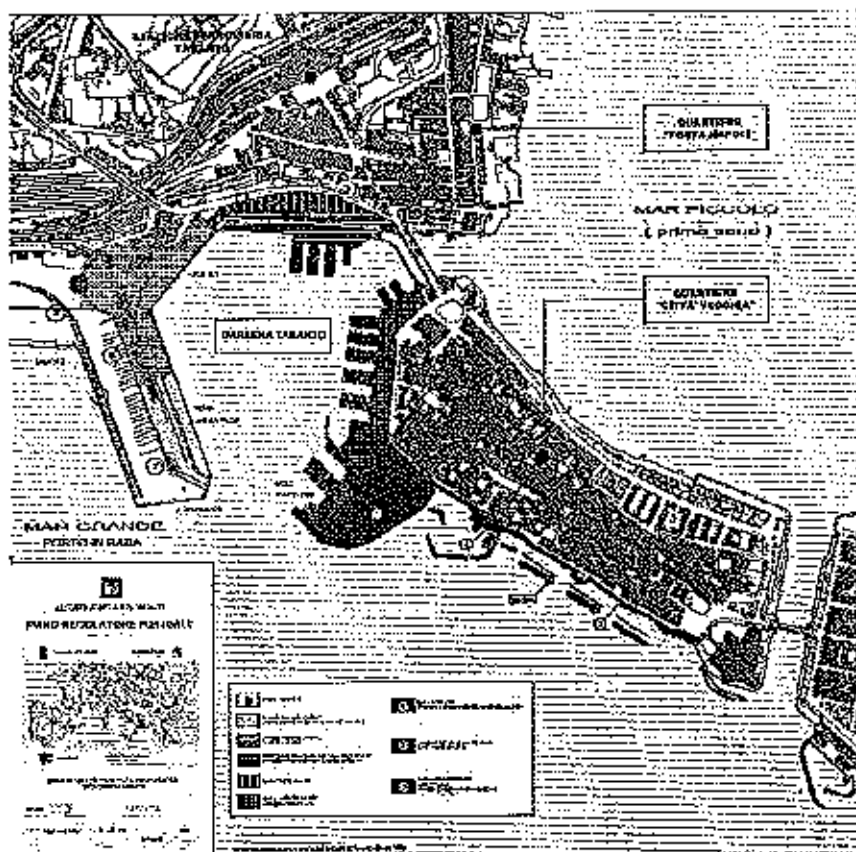
For the layout engineering of ports and construction plants, D'Appolonia relies on a team of experts seconded for the specific project. Input for the layout engineering are the results of the planning studies, including transportation and logistic studies.



Design layout for port development

Merging its capabilities with those of the recently incorporated Marconsult company, D'Appolonia is able to deal with complex projects which involve a multiplicity of aspects in the maritime-transport field and the development of port master plans.

In the last 30 years, Marconsult have been working on master plans for major ports, gaining specific capability of developing this interdisciplinary activity which involves technical, socio-economical and institutional-organisational matters.



A port master plan is a flexible territorial planning instrument for the management of a port.

The master plan establishes developing directions for the port and provides evaluation criteria for future planning. It aims to set the port development through planning of the port structure related to the trend of the maritime market, taking into account the relationship between port and city.

2.1.3 Transportation and Logistics Studies

These engineering activities are aimed at the evaluation of the transportation system related to a port (or system of ports) and to the related facilities (e.g. docks, hinterland intermodal sites, railways and highway network connections, gateways, etc.), with the goal of obtaining system configurations and a feasibility design (of infrastructure, technologies, and service) that satisfy the needs and optimize given targets. The following are typical examples of these activities:

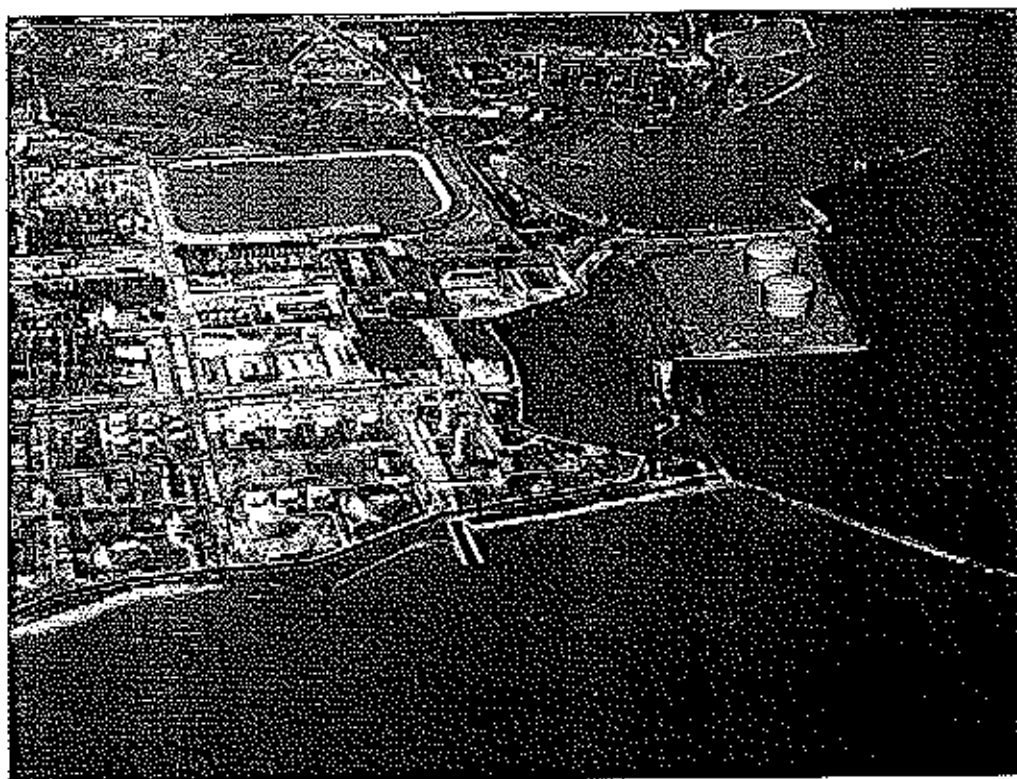


Aerial View of Voltri Container Terminal during Construction

- o Freight demand analysis, based on national and international trade and market database and knowledge of multimodal - intermodal (sea-land) transportation corridors and actual services;
- o Macro-simulation of freight transport (multimodal-multiproduct), based on a scenario definition including modal interchange nodes and generalized cost factors;
- o Micro-simulation of the port and interport operations and related logistics; assignment of available resources to required services; programming of supply; port operation optimization;

- o Planning of the sea-rail-road transportation networks; evaluation of optimal routing of goods;
- o Forecast of cost of future facilities, based on observations of prices of existing installations; cost-benefit analysis;
- o Design and application of advanced technologies to port facilities (robotic handling systems, information systems, telecommunication systems, cargo and container localization, etc.);
- o Development and installation of real-time control systems for management of port and interports operations; real-time control and simulation of cargo handling and transport, selection of alternatives.

2.2 ENVIRONMENTAL ENGINEERING



Environmental impact evaluation

2.2.1 Regulatory Framework: Siting and Permitting

The construction and operation of maritime facilities requires territorial and environmental authorizations. D'Appolonia staff provides:

- o preliminary siting related to the analysis of territorial constraints (e.g. natural protected areas, archeological areas, military zones,

- o city and port master-plans) in order to evaluate the project feasibility in agreement with local regulations and to screen possible alternatives;
- o complete assistance in order to meet requirements of authorities for environmental permits.

D'Appolonia has developed through many years experience a wide expertise in dealing with operators and authorities for the most effective procedures in soil occupation, atmospheric emissions authorization, and soil characterization and reclamation.

2.2.2 Environmental Characterization

Environmental characterization is required by authorization procedures. D'Appolonia provides characterization of the various environmental components, such as soil and subsoil, water, air, noise, and biota.

For port and maritime works, soil and subsoil quality characterization is required in order to evaluate possible pollutant suspension related to sediment/soil movements especially during the construction phase. D'Appolonia can provide complete assistance for:

- o characterization plan;
- o sampling activities;
- o laboratory testing;
- o technical liaison with competent authorities.

D'Appolonia can also manage the activities related to unexploded ordnance reconnaissance and removal.

2.2.3 Environmental Impact Studies

The Environmental Impact Assessment (EIA) consists of a multidisciplinary approach combining the evaluation of the economic aspects of a project, based on cost-benefit ratios, with the environmental consequences of undertaking the project.

D'Appolonia staff includes environmental scientists, engineers, ecologists and biologists, planners, air quality experts, geologists, and experts in environmental law, able to provide the full range of impact assessment capabilities, comprising:

- o identification of sites and/or corridors and analysis of the proposed facility features, scoping and definition of critical environmental variables;
- o modeling and prediction of the environmental impact of proposed activities/facilities;
- o analysis of possible alternatives and related design modifications;
- o definition of mitigation measures, when adverse impacts are identified;
- o submission and follow-up of the most relevant findings with the licensing authorities and the concerned stakeholders community.

D'Appolonia has developed the Environmental Impact Study for the following kinds of projects:

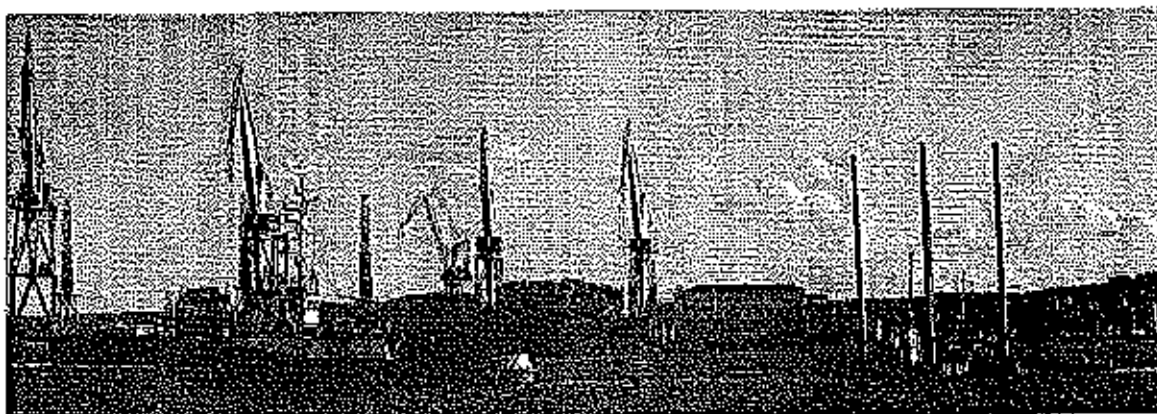
- o new harbor master plans;
- o modification to existing master plans;
- o maritime facilities for onshore LNG regasification plants;
- o offshore LNG regasification plans;
- o offshore oil-ships terminals;
- o new harbor infrastructures for pleasure boating;
- o port facilities;
- o infrastructures for commercial/industrial harbors including re-qualification works;
- o transportation infrastructures within the port areas.

For these facilities, D'Appolonia has developed the Environmental Impact Study and provided the necessary assistance during the authorization procedure. For the authorization procedure, D'Appolonia offers assistance during meetings with local and national authorities, providing dedicated executive reports of the main findings, conclusions and answers to questions of regulators and authorities.

2.3 SITE ENGINEERING

Site engineering includes the activities required to define the site conditions for design and construction of ports and construction yards, namely:

- o geophysical surveys;
- o geotechnical investigations;
- o seismic hazard evaluations;
- o geological hazard evaluations;
- o coastal engineering.

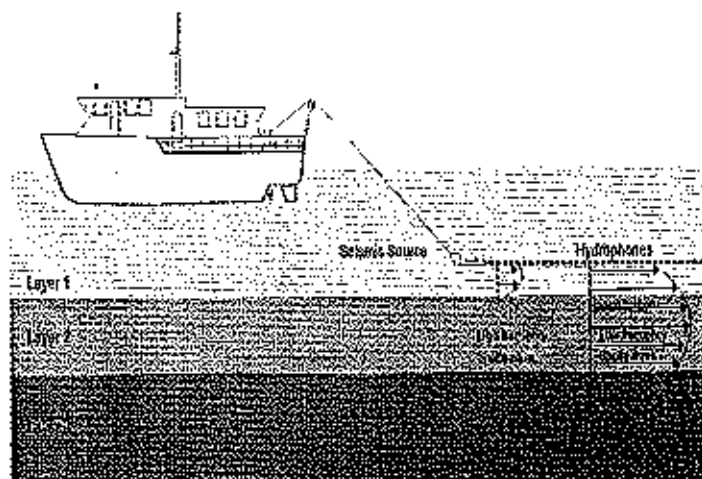


Towing jackup rig for port investigation

D'Appolonia's experience in site investigations dates to our founding in 1956, where we pioneered many techniques of conventional onshore geotechnical work. In 1978 the firm started to provide marine geophysical and geotechnical investigations, working in Europe, Middle East and Africa. Our experience includes investigations for ports, piers, wharfs, breakwaters, LNG terminals, major industrial facilities, power plants as well as offshore platforms, gravity structures and submarine pipelines.

2.3.1 Geophysical Surveys

Geophysical surveys are finalized to obtain wide area characteristics. Geomorphologic surveys are performed to define bathymetry, seabed morphology, presence of obstacles and shallow stratigraphic information. Quantitative geophysical surveys are performed to obtain soil stiffness profiling and stratigraphic data. D'Appolonia has specific experience in both onshore and marine geophysical surveys in nearshore and port environments.



Shear wave survey in dynamic mode

The results of the geophysical surveys are utilized to identify the general area conditions, and to identify local anomalies. Geophysical data are correlated to soil data from drilled boreholes to improve interpretation of site conditions. Quantitative geophysical investigations, based on the surface wave survey method, are mostly suited for the shallow waters of port development. Surface wave surveys offer several advantages. The method can provide results in very shallow water where conventional surveys are masked by multiple reflections. It can give detailed resolution in the upper meters of the soil profile, a zone which is often blind in reflection work. The method gives a quantitative measure of shear wave velocity in the soils. This data has been shown to correlate with soil stiffness, CPT resistance and soil strength.

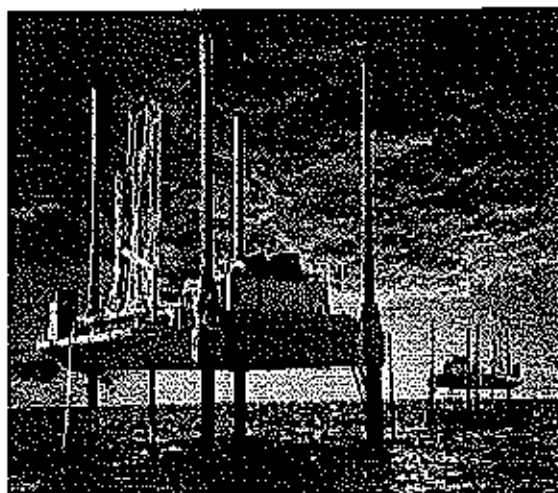
2.3.2 Geotechnical Investigations

D'Appolonia provides a full range of services, including:

- o investigation layout planning;
- o geotechnical boreholes;
- o in situ testing;
- o laboratory testing;
- o data interpretation and geotechnical reporting.

Geotechnical investigation in shallow waters are performed by means of light self elevating platforms. The platform provides a stable deck area to accommodate drilling, sampling and testing equipment. Floating barges are generally not suited to obtain geotechnical data of good quality.

Dedicated geotechnical drilling vessels are used in water depths exceeding the operating limits of geotechnical self elevating platforms. Such vessels are equipped with heave compensation systems allowing high quality geotechnical investigations even in rough sea conditions.



Self elevating platforms for soil coring

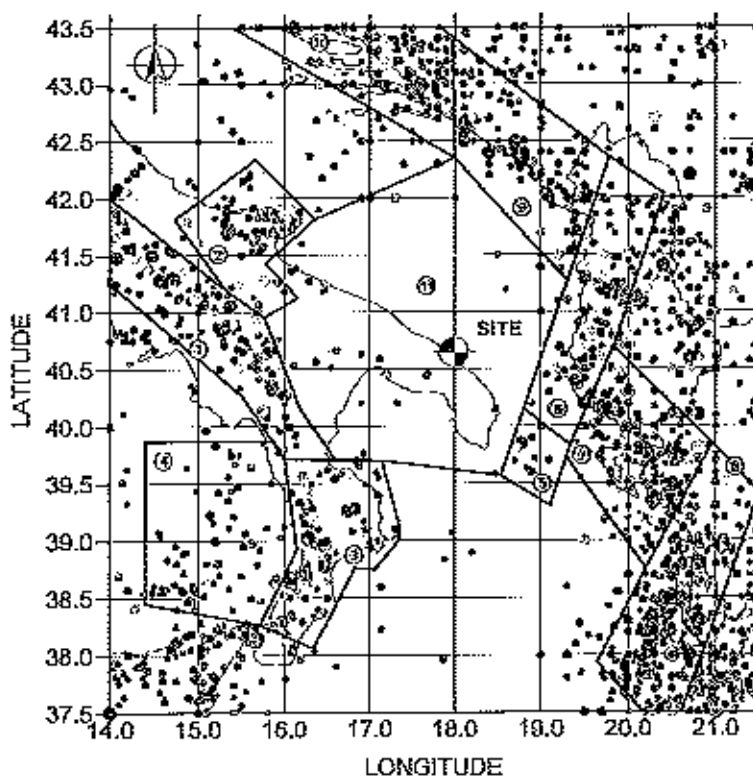
2.3.3 Seismic Hazard Evaluation

Design earthquake ground motions are a fundamental input for civil design. For critical structures, such as ports, a site specific seismic hazard study is often mandated by the governing design regulations.

The scope of these studies is to predict the level of ground shaking that could be experienced at a given site. In practice, the results of a probabilistic analysis are used to determine the seismic input for design. The specific hazard levels, or earthquake return periods, are selected to satisfy regulatory design criteria. Hazard assessments typically include the following steps:

- o identification and characterization of seismic sources;
- o evaluation of source seismicity;
- o choice of attenuation functions;
- o seismic hazard analysis.

Skills we have acquired to support our seismic hazard assessments include the development of computer codes for catalog evaluation and to conduct probabilistic hazard assessments; field mapping and characterization of seismogenic structures; and the interpretation and application of actual strong motion recordings.



Example of earthquake catalog

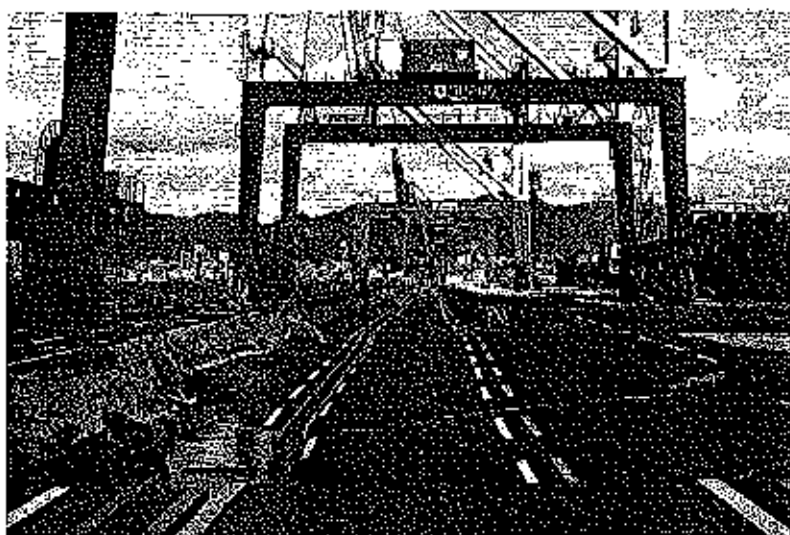
2.3.4 Geological Hazard Evaluation

Services for geological hazard evaluation include all of the earthquake induced hazards, such as:

- o fault hazard;
- o tsunami risk;
- o site response analysis
- o soil liquefaction;
- o soil and rock dynamics;
- o seismic slope stability;
- o seismic foundation design;
- o soil-structure interaction;
- o post-earthquake intervention.

One of the most important earthquake induced hazard in port facilities is soil liquefaction. Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading. Liquefaction typically occurs in loose saturated sands, although low plasticity high water content silts and clays are also at risk. The main risks to structures are bearing capacity failure, tilting, sinking, and deformations caused by

horizontal movements of the liquefied ground, a phenomena known as lateral spreading. Solutions to liquefaction can be either to design the structure to provide satisfactory performance even during ground liquefaction, or to modify soils at the site to prevent the phenomena. We have experience in both solutions, ranging from the design of pile foundations which can resist liquefaction to developing cost effective ground improvement methods to inhibit liquefaction.

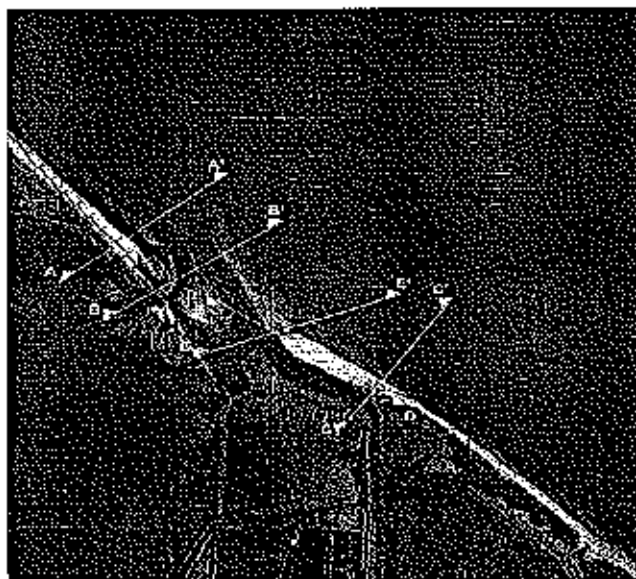


Consequences of soil liquefaction, port of Kobe, Japan

2.3.5 Coastal Engineering

Services of coastal engineering are related to locating facilities on the coast or in the nearshore area, and making particular changes to the coast for various purposes such as coastal disaster prevention or for utilization as terminal and port facilities.

D'Appolonia's expertise includes the understanding of the various factors, such as wave and currents, closely related to coastal phenomena; engineering interpretation of field measurements; clarification of the mechanisms of coastal sediment movements and finding solutions by field observations and numerical modeling; understanding the diffusion and mixing processes of heated water and pollutants in nearshore water.



Close-up of morphodynamic study of the Po River Delta

Our experience include coastal engineering services for ports, pipeline landfalls, LNG terminals and protection structures.

2.4 GEOTECHNICAL ENGINEERING

D'Appolonia has over 45 years experience in geotechnical engineering for a range worldwide projects.

D'Appolonia's principal design services comprise:

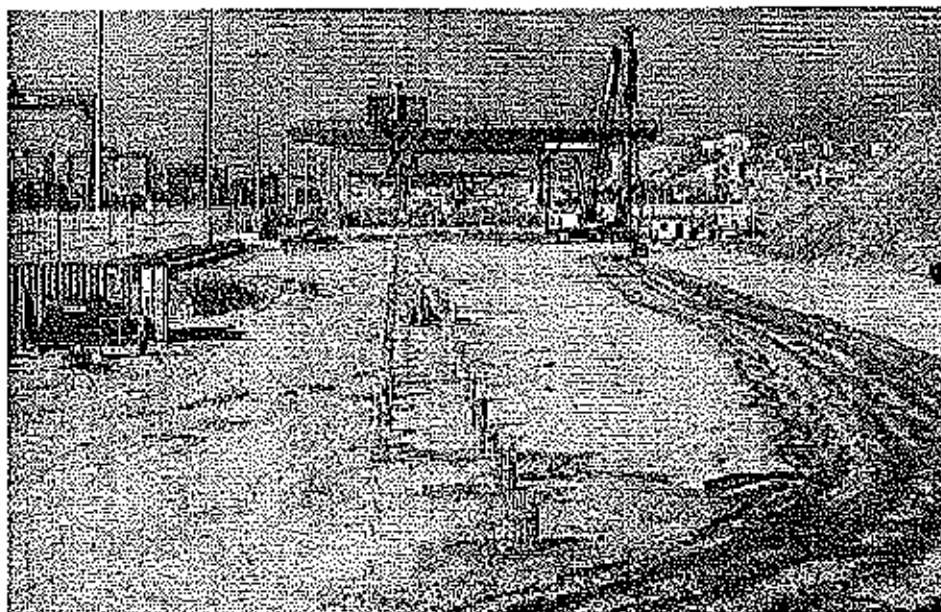
- o foundations for the various types of facilities
- o earth retaining structures;
- o soil improvement;
- o land reclamation.

2.4.1 Foundation Design

Typical services include:

- o shallow and deep foundation design;
- o settlement analysis;
- o soil-structures interaction;
- o pile drivability and installation design.

Our projects include design of industrial facilities for power plants, ports, yards and LNG terminals.



Design of pile foundations for port cranes