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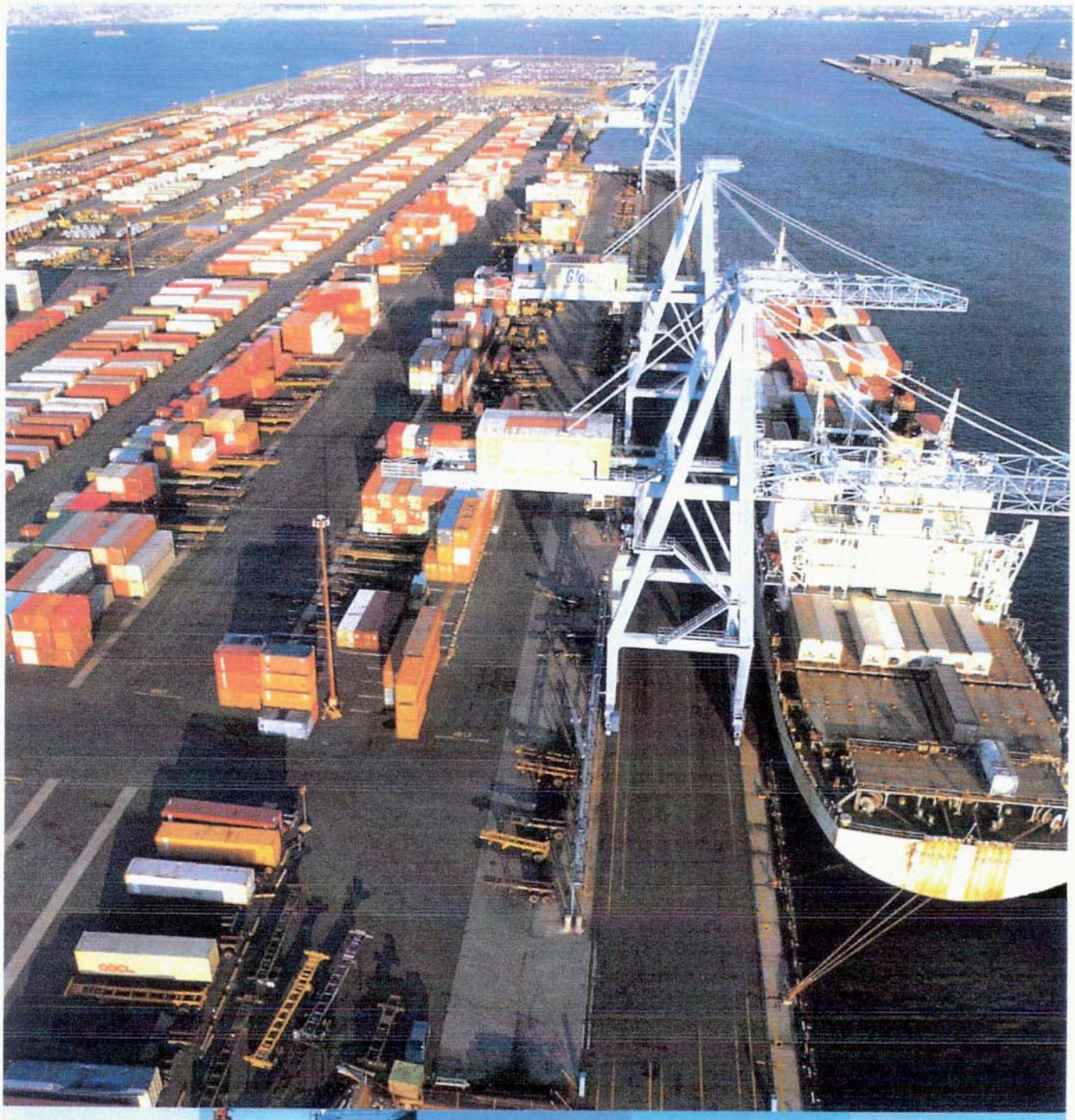

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Survey requirements for ports and marine structures

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A combination of the tough economic climate and a need to keep ports and marine structures in operation 24/7 and year round on a severely restricted budget places huge pressures on those responsible for the smooth running of port installations. It is clear that whilst funds are still often available far more value for money and engineered value is required and innovation in all aspects is now key to the saving of funds and hence the go ahead of a project that is crucial to operations.

A surprising number of clients are still taking projects forward and bringing previously mothballed jetties and wharfs back on-line, and of prime importance is the need for accurate information that not only establishes technically correct long term repair and protection strategies but also fixed, non-escalating costs.

The need for total in-house ('one stop shop approaches') to a survey project is apparent more than ever before. Clients need to have total confidence that the consultants engaged have both the experience and the in-house capabilities to deliver not only the comprehensive package being undertaken but any unforeseen tasks that might be required as the survey develops.

Unfortunately but somewhat inevitably in these current times companies are taking on surveys outside their normal area of operation, often with little experience and even less resources, this can not only be a route to high costs due to the need to sub-consult tasks but also a recipe for disaster due to quality and continuity issues.

Where then does a client go for a comprehensive yet cost-effective consultancy service? – The answer is to companies with in-house resources, who will not sub-consult any tasks and who can demonstrate a comprehensive track record.

A typical full survey requires:

Fully equipped survey boat carrying out survey at Southend Pier

Top side

Experienced teams of surveyors and technicians capable of accessing all parts of a structure including, in the case of wharf walls and jetties, roped access and industrial climbing teams to inspect the piles and soffits.

There is a broad range of tasks required due to the many construction materials and elements present. A typical wharf or jetty top side could have steel pipe work, brick buildings, concrete bunds and so on...

A comprehensive range of diagnostic testing and structural appraisal is often needed and depending on the future requirements the

deliverables could be used to simply maintain the structure or to form the basis of a design strategy for strength upgrading, extension or rebuild.

Below deck level

Here the tasks and service requirements become far more complex as not only are the elements more complex but the key factors of nature, environment, tidal aspects and so on come into play.

Access by survey boat and / or roped access techniques make the below deck to water level survey reasonably straightforward for an experienced team – what though of the elements that cannot be viewed from above?

The very nature of jetties and wharf walls mean that often, due to the need for all day berthing of vessels a part of the structure will always be submersed in water making visual inspection extremely difficult at best. In such circumstances, dive teams are required but many dive teams (although highly professional and skilled divers) are not engineers and do not have the skills required to inspect, diagnose and report on complex forms of distress.

Underwater

Inspections demand skilled and experienced specialists as many different forms of distress need to be accurately diagnosed, for example in the case of steel piles on wharf walls and jetties different types of corrosion including accelerated low water corrosion require accurate diagnosis.

To be able to not only accurately diagnose distress on all marine structure elements but also advise on technically correct remedial measure options ranging from underwater welding and coating to below and above water repair and protection through to the design of remote monitoring systems and cathodic protection is not only desirable but essential if cost-effective long term durability of marine structures worldwide is to be achieved.

About the author: Michael Nugent is the Managing Director of The Concrete & Corrosion Consultancy Practice Ltd, a multi-disciplined consulting engineering practice with a dedicated marine survey division that incorporates dive and roped access teams as well as fully equipped survey vessel. Services are carried out UK and Worldwide. Michael would welcome discussion on any of the topics within the article and can be contacted via e-mail: michaelnugent@concorr.co.uk

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Technician carrying out survey using industrial roped access techniques

Dive team preparing for underwater structural evaluation

Technicians carrying out bore logging