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upright & afloat

A newsletter for the Maritime Industries from:

FISHER MARITIME Consulting Group

Consulting Naval Architects
Marine Engineers
Project Managers

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The Art (and Risks) of Managing Owner-Furnished Equipment

Risk Avoidance by Vessel Owners and Shipyards

The provision of owner-furnished equipment ("OFE") and owner-furnished information ("OFI") after a ship construction or conversion contract has been signed introduces multiple risks into the contractual relationship between the vessel owner and the shipyard that has to use that OFI and/or install the OFE. If any of these risks transition from the 'possible' to the 'actual', the cost and schedule impacts can quickly escalate to disproportionate magnitudes. Understanding this, there should be a tendency to a general reduction in the use of OFE and OFI, giving the shipyard the responsibility to obtain all that equipment and information and therefore bear the associated risks. However, vessel owner's staffs recognize that shipyards rarely understand the particulars of the specialized equipment that is being integrated into ships with increasing frequency. Accordingly, owners sometimes cannot afford

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About this Issue

This issue of *Upright & Afloat,* published by the Fisher Maritime Consulting Group, is somewhat longer than our past issues. This is in order to present, in one consolidated manner, a fairly comprehensive discussion to assist readers in identifying and managing risks associated with owner-furnished equipment ('OFE'). This discussion is derived from the training course which we present worldwide, "Contract Management for Ship Construction, Repair and Design," as described on the back of this newsletter.

As readers of past issues of this newsletter are aware, in addition to developing and managing projects for the marine and offshore industries, the Fisher Maritime Consulting Group endeavors to educate these industries in the best practices needed for the development and management of successful vessel design, construction, conversion and repair projects. Best practices are accomplished through the artful use of appropriate contracting and by implementation of project management mechanisms that have proven successful in the maritime and offshore industries. Since owner-furnished materials are often the initiating source of major —and many minor—contractual difficulties impacting project schedules and costs in the marine and offshore industries , we present the accompanying discussion to assist readers in avoiding, or at least minimizing, the consequences of those risks when OFE is part of the project. Fisher Maritime is available to assist parties in resolving misunderstandings associated with OFE and other contractual issues.

the risk of allowing shipyards to acquire such specialized equipment since the shipyard will be looking for low cost. Thus, the shipyard-selected equipment may not necessarily incorporate all the features and characteristics that owners look for when acquiring such equipment. Therefore, the use of OFE and OFI will continue.

In view of that fact—the continuing use of OFE and OFI—it appears desirable to identify the causes of problems that have arisen so that the owner's participants in the OFE/OFI acquisition process can better understand these potential risks to avoid their onset. This also educates shipyard personnel in the identification of the early signs of OFE/OFI-related problems, thereby allowing them to prod their client owners to attend to the matters in order to avoid development of the risks, or at least to limit the cost and/or schedule impacts on the ship construction or conversion project.

Based on Fisher Maritime's extensive experience (33 years) of assisting project management teams cope with the problems arising from mis-managed or un-managed OFE and OFI acquisitions, this article lists and describes the major aspects from which OFE/OFI problems tend to arise. With this information in mind, both the owner's and the shipyard's participants in projects involving OFE/OFI will be more likely to work from the outset to avoid such problems, or at least to identify the problems as they begin to emerge, rather than fail to understand the origin of such problems until the impacts have already become unmanageable or unacceptable.

The Motivation Behind the Use of OFE/OFI

Some owner's are motivated to acquire the equipment because it necessitates a long lead-time for acquisition; the purchasing process for the equipment has to commence earlier than the awarding of a contract to a shipyard to install the equipment. This appears to be a reasonable basis for the use of OFE/OFI. Another equally valid reason is the specialized nature of the equipment, necessitating considerable dialogue between vendor and purchaser (the future user of it) to ensure that the precisely-needed product is acquired, instead of a less-costly, not-quite-adequate substitute selected by the shipyard. Some owners, however, are motivated by cost considerations and fantasies of savings; they think they can avoid the shipyard's mark-up of eight-to-20 percent by providing the equipment to the shipyard. If cost considerations are the primary basis for the owner's decision to acquire the equipment, this is realized to be faulty reasoning when the components of the shipyard's mark-up are considered.

Owners choose to use OFE to:
- **avoid a longer lead-time**
- **be sure the product is precisely what is needed, and**
- **avoid the shipyard's mark-up.**

Is this always wise?

When an item of equipment comes to the shipyard, the shipyard has to receive it, warehouse it, track it, and possibly maintain it until installation. The costs of these services are part of the mark-up; but if the owner buys the equipment instead, the shipyard includes these costs elsewhere in the contract price because those costs will be incurred regardless of which party actually purchases the item. Later, the item of equipment has to be transported from warehouse to the ship, which transportation costs are routinely covered as part of the mark-up; but if the owner purchases the item, the shipyard will include that transportation cost elsewhere in the contract price. Once the item of equipment comes into the shipyard, the shipyard is responsible for its care and well-being until the ship sails away with the equipment installed.

The shipyard has insurance to cover repair or replacement costs of damaged equipment; and the shipyard has to maintain that coverage for all equipment coming through the shipyard regardless of whether it was purchased by the owner or the shipyard. Accordingly, the portion of the mark-up that contributes to the cost of the insurance policy is included in the contract price when there is OFE instead. A shipyard always gives a warranty on its workmanship for installation of the items of equipment; so the shipyard needs a contribution to its warranty reserve fund regardless of whether the equipment was purchased by owner or shipyard. Accordingly, that portion of the mark-up is also included in the contract price where there is OFE.

The shipyard does not need the part of its normal mark-up to help cover the costs of its purchasing department, since the purchasing of OFE is accomplished by the owner, not the shipyard. So, while the owner will save only this last portion of the shipyard's normal mark-up, the acquisition of OFE places a burden on the owner's purchasing staff which not only causes the owner to incur greater costs, but also – and this is very important – transfers to the owner all of the purchasing, content, form and integration risks that would otherwise have been the responsibility of the shipyard. These risks are discussed below.

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However, having assisted many project management teams to cope with the results of improperly managed OFE acquisitions, **Fisher Maritime has concluded that the almost inevitable development of these risks always outweighs the cost savings. That is, the owner's cost considerations (not having to pay the shipyard's mark-up) should never be the basis for introducing OFE into a project, since such savings are not actually realized.**

Purchasing Risks

Regardless of which party purchases the item of equipment, risks start developing at the commencement of the purchasing process. If the owner is providing the equipment as OFE, the management of the risks becomes the duty of the owner, and the consequences of any problems are the responsibility of the owner. Thus, understanding the possible origin of these risks will assist the owner's project team in the management of the process which is necessary to minimize, if not eradicate, the possible development of problems originating with purchasing risks.

The first component of the purchasing risks is ensuring that the requested item is actually purchased. The owner's purchasing department sends out a request for quotation ("RFQ"). The vendor's responding quotation is supposed to be consistent with the RFQ's attached (requested) technical specifications and with the owner's terms and conditions ("T&Cs"), also attached to the RFQ. However, many vendors do not provide the exact form of response that has been sought. Instead a vendor may offer one of its standard models, which is close to, but not exactly in conformance with, the requested technical specifications. Unless the owner's purchasing department asks the project team to compare the vendor's offered technical specifications to the owner's requested ones, the owner's purchasing department may end up acquiring something different from what was expected by the project team.

The second component of purchasing risks is timing. The owner's project team may recognize that the OFE has to be delivered to the installing shipyard by a certain date, but the owner's purchasing department may not have given this acquisition process sufficient priority. The result is that the purchasing department starts the process later than is compatible with the project schedule. It may be that the owner's purchasing department kept shopping around to get lower prices or extended negotiations to get better pricing, which delay in actually issuing the purchase order ("P.O.") resulted in late delivery of the OFE to the shipyard.

The third component of purchasing risks is the "battle of the forms" which focuses on payment terms and warranty issues, among other matters. The RFQ anticipated that the item of equipment would be purchased in accordance with the owner's T&Cs which address, among other factors, the timing of payment as well as the commencement and duration of the warranty. However, the vendor's response to the RFQ may not have been merely a quotation, but instead was an offer-to-sell in accordance with the vendor's T&Cs. The likely differences are timing of payment (vendor wants it sooner) and warranty (commencement and duration are different from that sought by owner). Also, the vendor's T&Cs may state that no warranty is given if prompt payment is not received.

When the owner issues the P.O. at a later date, it is thought to be issued in accordance with the owner's T&Cs, thus appearing to re-establish control of the payment and warranty terms per the owner's ideas of what is needed. However, the vendor may not be content to accept those limitations. The vendor ships the equipment to the owner or shipyard, and has the recipient execute a delivery receipt, which states that the delivery is accepted in accordance with the vendor's T&Cs attached to the delivery receipt. Thus, if this battle of forms has occurred, it remains unclear whether the owner's or vendor's T&Cs will control the payment and warranty issues. Accordingly, the owner's project management team and purchasing department have to jointly monitor the potential development of these purchasing risks involving technical content, delivery timing, warranty (commencement and duration) and payment timing.

Understanding the Content of the OFE

As obvious as it may seem that the shipyard has to know what OFE will be delivered to it for installation, this is often a source of misunderstandings. The problems start with the fact that the owner's

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When do you need us?

When you need help with…

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Fisher Maritime writes **contracts, specifications, and complete bid packages** for new construction, conversion, overhaul or repair. We also review and revise draft contracts and specs.

Recent contract work included new construction on:

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- Class of 220' offshore supply vessels
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- Class of well test vessels

Project Management

Fisher Maritime consultants are grounded in commercial fleet construction and repair, as well as naval repair and overhaul. **Fisher Maritime provides on-deck project management** services for shipyard construction and conversion projects.

Recent project: *A thorough pre-contract review of draft specifications for a high-value research vessel, initially prepared by a naval architecture consultancy, resulted in far fewer ambiguities, replacement of certain performance requirements (which would result in large contingency pricing) by firm design requirements, and greater project oversight and control by the owner, to ensure the construction of a long-life vessel.*

Dispute Resolution

It takes many forms, from project-phase analysis through litigation. **In every situation, we provide accurate assessments and incontrovertible analyses.**

Recent case: *Disputes in pipe-laying barge-conversion project about work scope, schedule, cost.* Fisher Maritme provided on-site project management oversight, and follow-on expert analysis and support before arbitrator.

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We support our clients with **construction and repair disputes in state, federal, civil and criminal courts**, in every stage of litigation. We can also help you avoid litigation.

Recent case: *Emergency repairs to a damaged vessel proved to require far greater steel renewals than anticipated by the contract. The owner's representative refused to recognize that the redelivery date had to be extended as a consequence, and withheld significant funds when the vessel was redelivered later than originally planned.* Fisher Maritime *prepared an analysis justifying the shipyard's later redelivery of the vessel. After review of that analysis by the vessel owner's team, the parties settled the matter without going to arbitration.*

For 33 years, Fisher Maritime Consulting Group has been resolving technical, cost, and schedule issues in shipbuilding and repair contract disputes. Our clients come from every sector of the industry: shipyards, shipowners, third-party vendors, government agencies and private concerns. Because we're experienced naval architects, marine engineers and project managers, we bring strength and clarity of insight to our clients. **Our overriding goal? A well-developed suite of contract documents, structured management controls for complex projects, rapid resolution of developing conflicts and disputes, and projects completed with minimal growth.**

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staff is under the impression that the OFE vendor understands the shipyard's perspective; but it doesn't. **The shipyard needs to know what hardware is being provided as OFE, because if some additional hardware will be needed for installation, then the shipyard has to know that in advance for pricing and ordering purposes.** The physical interfaces are often the setting for the issues to develop. One way to avoid these problems is to first think of a large clear plastic sack around the OFE and ask: what is inside the sack; what is outside that connects to the OFE; and what penetrates the sack that connects to both the OFE and the ship? Then clearly identify the party that is supplying the hardware in each category.

If the item of OFE is going to be affixed to a foundation, which party supplies the foundation? Which party supplies the bolts that connect the OFE to the foundation? If control cables are needed to connect an OFE console to an OFE item, which party supplies those control cables? If power cables are needed to connect an electrical panel to the OFE, which party is supplying those electrical cables? Ask the same questions regarding piping as well as for the small transition pieces between shipboard piping and OFE piping. If the OFE item has to be re-painted after installation, which party is providing the paint? If the hydraulic piping within the OFE has to be flushed several times, which party is providing (and disposing of) the flushing fluids? For clarity and to avoid misunderstandings once the project is underway, it is essential to have the bid package and contract specifications indicate clearly the answers to these and similar questions regarding the content of the OFE and the supply of supporting hardware that will be needed to finalize the installation and testing.

O.F.I. — Information

Usually the provision of OFE requires a supporting provision of owner-furnished information, "OFI". An appreciation of the potential scope of this information stems from the fact that the installing shipyard may need to know: (a) foundation design and manufacturing requirements if the shipyard is to provide the foundation for the OFE; (b) specific requirements for structural and arrangement modifications to the existing vessel; (c) electrical power requirements so it can modify panels and install the cable as needed; (d) fluids inflow and outflow requirements so it can prepare piping, valves and connections as needed; (e) heat dissipation requirements so it can modify or add ducts and fans as needed; and (f) testing and trials procedures for which it will have to supply testing equipment and personnel, among other possible information requirements. The owner's organization has to recognize that the shipyard will assume that it does not have to procure or provide any of that information unless the requirement to do is clearly identified in the contract workscope and specifications.

Form

Another commonly-incurred origin of problems associated with OFE is, from the shipyard's perspective, a surprise to see the form in which the OFE arrives at the shipyard. The following are some of the form-related concerns that have been the source problems. (a) Will the OFE arrive assembled or unassembled? (b) Will the OFE arrive in weather-proof covering, or does it have to be kept out of the weather by the shipyard until it is finally installed in the vessel? (c) Will the item of equipment have to be repainted by the shipyard or can it remain with the manufacturer's paint on it? (d) Will the OFE require any special services prior to installation, such as dehumidification or power to heater bars to prevent condensation? (e) Will preservatives have to be removed and disposed by the shipyard as part of the installation process? (f) If the OFE is heavy, what lifting equipment will be needed?

Time of Delivery

When can the shipyard reasonably expect that the OFE will arrive at the shipyard? If this question cannot be answered by, "Read the contract," then the issue is a candidate for differing interpretations by the parties. Sooner or later, the shipyard has to know when to expect the arrival of the OFE in order to plan and implement a timely and efficient installation. Best practice, of course, is to have a date-certain established in the contract documents, such as "April 3, 20—." Second best is for the use of a target date-relative, such as "not later than 21 calendar days after vessel arrival at the shipyard." When the contract appears silent about the date of OFE arrival at the shipyard, the reality is that a required date is being established by an indirect but binding mechanism, as described below.

Typically, the owner contractually requires the shipyard to develop a detailed vessel construction or conversion schedule, and to provide copies of it to the owner. At the moment the schedule is transmitted to the owner, the shipyard has thereby announced the date it is nominating to

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receive and start installing the OFE, as indicated by one or more activities on that schedule. If the owner's team responds within a few days to the effect that the vendor's delivery date will be later than nominated by the shipyard, then the shipyard has to revise its schedule to reflect the later date indicated by the owner. However, if the owner's team is silent about the date the OFE is to arrive at the shipyard after receiving the requested copy of the shipyard's schedule, then the owner is implicitly acknowledging the acceptability of that date. This means that the owner's team has to be aware, in the absence of a contractual date-certain or date-relative for arrival of the OFE, that it has given the shipyard the right to nominate the date for arrival. If there is going to be a different arrival date, the owner's team has a duty to advise the shipyard as promptly as possible of a more-realistic date in order to mitigate damages and minimize schedule disruptions. This is the fundamental reason why the owner's team has to set up and maintain a delivery control system for each item of OFE and OFI.

If there is going to be a different arrival date for OFE items, the owner's team has a duty to advise the shipyard as promptly as possible of a more-realistic date in order to mitigate damages and minimize schedule disruptions.

Location of Delivery

Although it may, on first consideration, appear to be trivial matter, the location for delivery of OFE can become a troublesome issue if the parties do not stick to the script, i.e., stay consistent with the contract. Even when the shipyard's warehouse is the contractually-designated delivery location, sometimes a different location is orally arranged. For example, the owner arranges for the OFE to be flown in to the nearby airport in order to save time of overland transportation. The owner then asks the shipyard to send a truck to pick up the OFE at the airport freight depot. When the loaded truck rolls over due to an errant driver of another vehicle, the OFE is damaged and no longer suitable for installation on the vessel. Now there will be extra costs and delays while the OFE is repaired or replaced. Which party is responsible for those impacts?

The owner's perspective will be that the shipyard is responsible because the OFE had been satisfactorily received by the shipyard's employees at the airport. The shipyard's perspective may be that the contract requirement to have the OFE be accepted at its warehouse has not yet been satisfied, so the continuing delay is the owner's responsibility. The truck was sent to the airport, the shipyard may allege, under a separate oral transportation contract, unrelated to the ship construction or conversion contract. Unfortunately, there is no reliable means of predicting the winner of these arguments. Accordingly, to avoid this risk, the shipyard should insist that the owner accomplish delivery of the OFE to the shipyard in accordance with the written contract.

Integration—General

Integration is the engineering and design process that confirms that each item of equipment will integrate perfectly into the vessel before purchasing the OFE. This means that the owner's team has to ensure for each OFE item that an appropriate entity is charged with the responsibility to confirm the validity of each of the following applicable aspects: (a) deck area and dimensions; (b) structural arrangement to support its weight and deal with possible vibration and noise concerns; (c) compartment geometry to ensure there is sufficient space for installation and maintenance; (d) installation geometry, determining the route by which the item of equipment will be rigged into its final position and checking in advance for interferences in that route; (e) electrical power sources, cable requirements and location of connections; (f) electronic controls, alarms and signals requirements (and associated cable requirements) and compatibility with console designs; (g) liquids inflow and outflow requirements, location of piping connections, and sources and destinations for such flows; and (h) airflow and heat dissipation requirements. Some specialized OFE may create additional integration requirements.

Vertical Integration

Integration is divided into two categories, using the modifiers 'vertical' and 'horizontal' to assist in remembering the differentiation of their roles. Vertical integration is the application of the described integration functions to the interface between each item of OFE and the ship. Which party has that responsibility? It is not realistic to expect the shipyard to accomplish those engineering tasks for equipment being purchased by the owner unless the owner's team provides the shipyard with everything there is to know about the OFE well in advance of the time it is to be installed. Alternatively, if this task is assigned to the shipyard, the owner has to give the shipyard the authority to modify other parts of the vessel to accomplish the physical

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integration as may be needed, or at least contractually address those possible requirements.

Horizontal Integration

Horizontal integration comes into effect when the owner provides two or more items of equipment that have to fit and work together or otherwise communicate with one another. The objective of horizontal integration is to ensure, long before installation commences, that the two or more items do, in fact, fit and work and communicate with one another. Are they compatible with one another in terms of geometry, electrical power, signals, controls, fluid flows and heat dissipation? Which party is responsible for providing connecting cables between them? These responsibilities automatically fall onto the shoulders of the owner's team unless, as with the vertical integration, it is contractually assigned to the shipyard, in which case the owner's team will have had to provide the shipyard with everything there is to know about the OFE well in advance of the time it is to be installed.

Testing & Commissioning

Once the item of OFE has been installed, if it is anything more complex than a pump, it will be subjected to a series of tests to confirm that it has been properly installed and integrated into all of the ship's systems with which it has to work seamlessly. Often, these confirming tests consume considerable resources, namely, skilled labor and schedule-critical time near the end of the project. In order to avoid surprises and last-minute impacts to the project's cost and schedule, the shipyard has to know in advance—probably at the time of bidding the project—the entire set of requirements for the testing that is necessary to achieve commissioning deemed applicable by the vendor, classification and flag-state authorities. These requirements include: (a) identification of what other ship systems have to be up and running before these commissioning tests can be accomplished; (b) description of the minimum status of the OFE's compartment completion when the tests are conducted; (c) specially purchased or rented equipment needed for the tests; (d) number of craftsmen of each skill needed to support the vendor's technical representative during the tests; (e) expected duration of tests; (f) identification of what other work can not be on-going at the time due to possible interferences with the tests; and (g) other requirements unique to the type of OFE (e.g., fluids for flushing hydraulic systems).

If the owner's team cannot provide that information to the shipyard in advance of contracting, there will almost certainly be growth of the project in both schedule and cost. This will come about because the shipyard will not have been able to allow for such contingencies in its competitive bid unless all the bidders were told what contingencies to include in the bid price and schedule. On the other hand, if the equipment is provided by the shipyard, the owner is not bearing the risks of growth or delay due to those potential problems.

Warranty

When an item of equipment is provided by the owner, there are two sources of warranty: the manufacturer's warranty on the item itself, and the shipyard's warranty on the workmanship of installation. While not a major concern, the existence of two sources of warranty places a burden on the owner to figure out which party to call. If the wrong one is called, the owner could be facing an expensive service call invoice from that party, and incur a delay in getting a warranty visit from the correct party.

Summary

The use of owner-furnished equipment in a ship construction or conversion project effectively transfers to the vessel owner responsibility for the consequences of problems that arise from the risks associated with that procurement decision. When a vessel owner has decided to use OFE in the project, a careful and continuous monitoring of all the potential sources of problems, as described above, can effectively minimize, if not avoid, the consequences arising from such risks. ▲

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Fundamentals of Shipbuilding Contracts:

This paper is an instructive tutorial for all persons involved in the development and/or management of contacts for ship construction and conversion. To view or download this helpful tool at no charge, look on the 'Papers' page in the Publications section of the Fisher Maritime website (www.fishermaritime.com). From the dropdown menu select ***Fundamentals of Shipbuilding Contracts*** and choose how you would like to view or print the publication.

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C&CM: Contract and Change Management for Ship Construction, Repair and Design. This 3-day course is designed for all members of the contract management team for ship owners, shipyards, design firms, vendors, subcontractors, regulatory agencies, whether commercial or government. Senior and middle management of all those types of organizations benefit from the "lessons learned" approach to managing all contractual commitments.

		2010
Annapolis, MD	Tues.-Thurs.	Mar. 23-25
London, UK	Wed. - Fri.	Apr. 14-16
Atlanta, GA	Mon.-Wed.	June 7-9
Sydney, Aus.	Wed. - Fri.	July 21-23
Melbourne, Aus.	Tues.-Thurs.	Aug. 3-5
Auckland, N.Z.	Mon.-Wed.	Aug. 9-11
London, U.K.	Wed.-Fri.	Oct. 13-15
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