



Consulting Naval Architects and Marine Engineers, Project Managers

Management of Shipyard Projects:
Insights and Lessons Learned

Introduction

This is a collection of articles selected from the newsletters *Upright & Afloat* published by Fisher Maritime Consulting Group. Most of these articles (#'s 1-27) are intended to convey to the reader the costly lessons learned by others in the maritime industry in association with projects being undertaken by shipyards on behalf of ship owners. Hopefully, the availability of these "lessons learned" will enable the readers of this compilation to avoid having to re-learn such lessons at great expense to any of the involved organizations. Several of the articles at the end of this compilation introduce the reader to the availability of the services of Fisher Maritime Consulting Group.

January 2008

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1 -- Contracting Strategies Central to Success of Project

$$(\text{ Good Ship Design }) + (\text{ Poor Contract Strategy }) \\ = \text{ Unnecessary } \times (\text{ Compromises } + \text{ Delays } + \text{ Costs })$$

Well-designed ships often become poorly executed shipbuilding projects due to lack of a comprehensive contracting strategy. The contracting strategy should take into account the resource limitations of potential shipbuilders and a realistic view of the on-going capabilities of the ship owner.

The reality of many recent shipbuilding and ship conversion projects is that the shipbuilders do not have substantial in-house engineering and design capabilities. When faced with such obligations, they subcontract them out as best they can manage. This means, then, that there are multiple layers of contract between the ship owner's staff on one hand, and the team that is translating the owner's design concepts into configurations, equipment selections and details, on the other. Thus, whenever trade-offs occur during design development, whether large or small, they are made out of sight of the owner. A well-developed contracting strategy can be developed to avoid that situation and thereby improve the value of the final product without increasing costs.

It has also been observed, more often than expected, that ship owners may undertake to provide detailed information pertaining to owner-provided equipment, but fail to do so on a timely basis. This may lead to project delays

and extra costs. Again, an appropriate contracting strategy developed for the particular project will go far to eliminating those risks.

Contractual overruns of both schedule and costs have been seen to occur when shipyards want the structural design completed rapidly to enable physical work to commence (and thus cash flow) while the design team has not yet finished the remainder of the design. This leads to unnecessary design compromises later when it is realized (for example) that the structural layout and design should have taken into account the distributive systems. An example of this led to a very costly change to increase deck heights in a deckhouse after physical construction had already begun -- all because the structural design was completed before the distributive systems were considered. By the time the problem was identified, it was too late to redesign the structure to take those systems into account. Another example involved reconfiguring a deck and relocating a davit when it was realized that the rescue boat could not be launched from the intended location. This occurred because the structural design was finalized before equipment selection.

In many newbuilding or conversion projects, commercial shipbuilding contracts can no longer simply give the shipyard the responsibility

to complete the design from the contract plans and specifications. The risks of unwarranted design compromises, construction delays and extra costs cannot be tolerated by either the owner or the shipyard. Thus, a comprehensive contracting strategy needs to be developed for both the design and construction, especially for relatively-unique vessel designs and for nearly all conversion projects.

A Fisher Maritime client wanted to contract for a new specialty vessel for use in the offshore industry. Fisher Maritime realized that very few organizations had the capability to execute the design, so that it was too risky to allow the shipyard to choose the designer as a subcontractor. Accordingly, Fisher Maritime arranged for competitive bids from the few qualified design firms to complete the design, including classification approvals and details of all distributive systems, before the shipbuilding contract was executed. This process gave the

owner much greater opportunity for input into the design since the shipyard's price was not based on its own interpretation of the anticipated design. Fisher Maritime translated the strategy into reality by developing the engineering/design contract (professional services agreement) as well as the ship construction contract.

The key observation is this: the success of a project is just as dependent on good contracting strategy as it is on good ship design. One without the other inevitably leads to a compromised outcome. Ship owners are urged to contact Fisher Maritime to work out a comprehensive strategy, for both the design contract and building contract, that will meet the needs of the owner while minimizing risks of unwarranted design trade-offs, delays, extra costs, and disputes over interpretation of the intent of the design.

2 -- The Second Translation of Technical Requirements

Understanding Both Purposes of Specifications

Technical specifications are an everyday fact of life in the repair, conversion and construction of ships and offshore equipment. The ultimate purpose of specifications is to describe through words (and the associated drawings) what the customer wants the contractor to accomplish.

In vessel repair, unless there is a specification, the contractor cannot know what the customer really wants, aside from the generic vessel repair specification, "Its broke. Fix it." For new vessels, the generic specification is equally vague: "Build it to last forever and easy to operate." While these generic specifications may sound extreme, they present to a potential contractor the same problem that many other, more detailed specifications inadvertently create as well.

The contractor is expected to "translate" specifications for vessel repair, conversion or

construction, from the written descriptions of words and drawings, into three dimensional, tangible hardware. After all, that is what is ultimately needed – a repaired or converted or new vessel that is tangible hardware. That is, the contractor has to translate the specifications from paper into hardware.

But what is often overlooked is that customers also want from the contractor another form of translation of the specifications. Namely, the customer wants, in advance of the work, a fixed price for the described work. This means that the contractor has to accomplish this other form of translation before commencing the tangible work. This is the quantitative translation.

In order to be meaningful, a fixed price for the contract work, agreed upon in advance, has to include all the anticipated work. Thus, the contractor has to be able to reliably translate

the specifications into estimated quantities of man-hours, material costs, subcontractor costs and schedule days. Only when the specifications are sufficiently clear can such quantitative translations be reliable, and thus included in the fixed price bid.

Thus there is burden on the writers of specifications to provide to contractors sufficient information to enable a quantitative translation, so a firm, fixed price can be negotiated and relied upon. Negative examples of specifications -- ones that cannot be reasonably translated into quantities -- include these. None of these examples are fictitious, but we'll keep the identities confidential to prevent embarrassment.

(a) "Vee and weld eroded bottom plate welds as considered necessary" [tug boat]. (b) "Repair or replace seals and bolts as needed" [work boat]. (c) "Furnish and install suitable lighting in all passenger-occupied spaces" [crew boat]. (d) "All work necessary to accomplish the specified work shall be deemed specified whether specified or not" [fisheries vessel].

How many man-hours and how much material costs should the contractor have included in its budget for each of those items? Obviously, a contractor cannot know whether it is 10, 100 or 1000 man-hours or any other approximate number.

The specification writer has to keep in mind that when asking for a fixed price bid, the

contractor has to first translate the specifications into reasonably close quantitative estimates of man-hours, material costs, subcontractor costs and schedule days. Only later does the contractor translate them in to tangible hardware. Accordingly, specification writers should re-examine their writings, before sending them out in a bid package, to ensure that the specs can be quantitatively translated.

Often, specification writers are too familiar with their own specifications to see that they cannot be reasonably translated into those forms of quantities. Fisher Maritime routinely provides quality assurance and risk-minimization reviews of major specifications, for conversions and newbuildings, to ensure that all the ambiguities and vagueness are identified and corrected before the bid package is released to potential contractors.

In addition to ensuring that the specifications can be quantitatively translated, other forms of ambiguities are resolved by the quality assurance review. A major form of ambiguity that is often overlooked by persons drafting specifications is the identification of the standards by which the workmanship and/or materials will be judged acceptable. Contact Fisher Maritime while you are developing your specifications to find out how such a quality assurance, risk-minimization review can be economically arranged.

3 -- Unusual Contracting Brings Risks to Owners and Builders

Risks Also Incurred By Subcontractors and Design Firms

The most costly lessons learned by both ship owners and shipyards occur when they venture into territory that is new to them or try to greatly accelerate traditional activities. Significant cost and schedule overruns are the predictable result of contracting decisions based on hopeful outcomes instead of being based on a careful analysis of capabilities, experience and risks.

Typical high-risk situations occur when, for example, owners are purchasing their first large vessel after owning smaller vessels of the same type, with some of the risk being shared by the builder. Similarly, organizations (both owners and contractors) that undertake major conversions, such as a VLCC to an FPSO, are in a high-risk situation unless substantial pre-contract preparation is made and unless the roles of

the owner's marine interests and production interests are suitably coordinated.

Shipyards that accept fast-track construction or conversion projects predicated on significant owner-provided engineering have often found that the owner's delayed engineering output impacted the shipyard's engineering as well as the anticipated production schedule.

Subcontractors that take on an assignment several times larger than any prior job also face considerable risk of overruns unless greatly expanded management resources are provided. Design firms that accept assignments from a new category of client also incur risks of misunderstandings, under-budgeting and time extensions.

Shipyards that subcontract engineering to design consultancies must be sure those designers have the shipyard interests in mind when developing the details (least cost solutions consistent with all contract requirements) and that the designers do not inadvertently improve the vessel's design details at the shipyard's expense.

Those are only examples of many high-risk contracting situations in the maritime industry.

Perhaps the two highest risk types of projects, for both owners and shipyards, are major conversions of any kind and projects relying on a lot of owner-furnished equipment

("OFE"). These risks exist in conversions because the starting point for conversions is often ill-defined, although the end-point of the conversion is well-defined unless the owner starts introducing many changes as the conversion progresses. The highest risks that arise in conjunction with OFE are those of system integration involving products from multiple vendors.

To minimize all forms of project and contract risks, organizations should maintain a high level of contract management ("CM") training specific to the industry for all their involved personnel, not just the front-line staff that interacts with the other parties. Shipyard estimators and purchasers benefit just as much from the CM training as do the project managers. The ship owner's technical staff need to understand the impacts of their role in on-going projects just as much as the owner's representative. No profession in the marine industry is exempt from the need for continuing industry-specific project and contract management training.

To arrange an in-house training program on Contract Management for Ship Construction, Conversion and Design, see the general syllabus on Fisher Maritime's website, but allow for modification to suit the needs of your organization. After selecting several possible sets of dates for the three-day program, contact Fisher Maritime to schedule the in-house training program.

4 -- Identifying All the Contract Deliverables

In ship conversion and construction contracts, the owner routinely expects the shipyard/contractor to provide numerous "deliverables" in addition to the ship itself and spare parts. Fisher Maritime's considerable experience with "difficult" or conflicted ship conversion and newbuilding contracts has revealed that ship owners often do not adequately address all of the expected deliverables, leading to conflicts or disputes with the shipyards/contractors.

These deliverables may be any of: detail or working drawings, engineering analyses/reports, test agendas and reports, megger readings, condition-found reports, updated schedules, equipment selection reports, regulatory approvals, classification approvals, tonnage certificates, regulatory certifications, tank tables, trim and stability reports, equipment and/or system manuals, placards, and as-built drawings, among others. Some of these deliverables

are expected to be on paper only, and others may be expected on computer diskette, too.

Ship owners have to appreciate that a shipyard incurs considerable, real costs to achieve the production of all those non-hard-ware deliverables. If the owner wants to avoid surprises and/or disputes, the necessity of the shipyard's development of those deliverables has to be clearly addressed in the bid package. Absent clear requirements for those deliverables in the bid package, bidding shipyards may not create adequate budgetary allowance for the development of them. The owner then risks

getting an incomplete or insufficient deliverable, or none at all in particular categories.

For both ship owners and shipyards, Fisher Maritime routinely reviews draft contracts (agreements, specifications, plans) for completeness and consistency as well as to eliminate ambiguities. One of the items always focused upon is that of the identification of all the deliverables. If your organization is either preparing a contract or bidding on one, get Fisher Maritime involved to minimize the likelihood of misunderstandings or disputes.

5 -- Remaining Responsible -- General Disclaimers Don't Work

A September 2007 US District Court decision reminds contracting parties to keep focused on their responsibilities. For many participants in the marine industry, it can be a firm reminder that broad disclaimers cannot be used to transfer responsibility. There often is an attempt by ship owners and their design consultancies to try to have the shipyard be responsible for many aspects of the design of the ship that is being constructed, despite the fact that the owner's team has put together a lot of design information pre-contract. This court decision should serve to remind all parties that they cannot 'disown' any errors or inconsistencies in their design efforts if those design efforts are part of the information package that is included among the contract documents. Here are the relevant details.

A U.S. ship repairer took on a conversion contract for a vessel owned and operated by a federal agency. Upon conclusion of the conversion, the shipyard filed suit against the agency alleging, among other problems, that extra costs were incurred in accomplishing the work because the government-provided drawings were inaccurate and not coordinated with one another. Regarding the issues pertaining to the drawings, the court focused on part of the

contract.

The court's decision first cited this wording from part of the ship conversion contract: *"The Government does not guarantee the correctness of the dimensions, sizes, and shapes given in any sketches, drawings, plans or specifications prepared or furnished by the Government. The Contractor shall be responsible for the correctness of the shapes, sizes and dimensions of the parts to be furnished hereunder, other than those furnished by the Government."*

The court then stated: *"The Court finds that this provision does not affect the disposition of the case because it is a general disclaimer and does not relieve the Government of its obligation to provide adequate drawings and specifications."*

This is not a new interpretation by the Court; it is a reminder of a well-established principle. Simply stated, when a designer (on behalf of the owner) puts into writing (or electronic files) information that will be used by shipyards for bidding purposes, all of that information has to be consistent with all other contract requirements. The correctness and reliability of that information cannot be disavowed by a broadly-worded disclaimer.

6 -- Design Completion Responsibility -- Whose Naval Architect?

Naval architects and marine engineers sometimes develop contract plans and specifications for vessel owners. Under many contracts, once the agreement is signed, the constructing shipyard or boatyard then completes the design process to a point adequate for regulatory approvals and vessel construction using its own design staff. The owner's naval architect continues to advise the owner and perhaps even review the contractor's detail plans on behalf of the owner.

Sometimes, however, in an attempt to achieve a more efficient design completion process, the yard wants to use the owner's naval architect to finish the design. The yard promises the owner that it will work out smoothly. The owner's naval architect, wanting to see the project develop as envisioned, agrees to also work for the yard.

Our advice: Don't let the owner's naval architect also work for the yard unless you are anxious to see litigation develop involving the owner, the yard and the naval architect.

When a naval architect tries to serve two masters on the same project -- the owner and the yard -- a contractual disaster awaits all the parties. The yard will say that extra work developed because the naval architect was assisting the owner. The owner will say that it wasn't extra work, but was always required by the basic contract workscope. The naval architect won't get a chance to say anything, because he doesn't know which master to serve at that

time.

So the parties call in their attorneys -- and the smarter or quicker-acting party will call in Fisher Maritime as its expert consultants.

From the yard's point of view, the savings to be gained by using the same naval architect for the detail design that prepared the contract design may be attractive. But there are significant risks of extra costs creeping into the project because the naval architect -- who is now supposedly working for the yard -- inadvertently may be trying to perfect the project, not appreciating which party is supposed to pay the cost of achieving perfection. The inevitable confusion and the extra outlays by the yard could be avoided if the yard stuck with its plan of action to hire its own naval architects, not the owner's.

The lesson learned is this: Avoid creating a basis for litigation. Owners and their naval architects should stick with their plan of action, that is, work together as a team until the project is completed. The idea of the naval architect also working for the yard may be couched in technical terminology and promises of design efficiency. But in reality, the naval architect is changing allegiances in the middle of what may be a skirmish. This is provocative action which both the yard and the owner may exploit to their advantage if there is any hint of a dispute between them once the contract work is underway.

7 -- Amateur Contracts a Cause of Disaster

Ship construction, conversion and repair contracts developed by persons who lack substantial experience with the marine industry are the ones most likely to result in contractual disasters, in which the owner and shipyard clash over responsibilities, costs, schedule and vessel performance. The shipbuilding industry has

encountered such contracts on a much-more frequent basis than might be imagined. These situations require the assistance of "disaster-relief" professionals in the form of consultants experienced in "stabilizing" the contractual performance of the parties to avoid post-delivery litigation. If contractual relations have deterio-

rated too severely, however, these amateur contracts may become the focus of post-delivery litigation, requiring both the specialized consultants as well as attorneys. It would have been far more cost-effective to use professionals skilled

in shipbuilding contracts to develop the contract, rather than saving some costs at the commencement of the project and paying many times over for that mistake later.

8 -- Definitions vs. Controversy in Ship Repair and Construction

Which do you prefer?

The question in the title of this article is, of course, almost nonsensical. Given an opportunity to choose between definitions or controversy, professionals in the marine industry would (we like to think) chose definitions over controversy. But examination of many ship repair, conversion and construction specifications leads to the observation that, perhaps inadvertently, controversy has been selected instead. Here are some examples and lessons learned.

Electronically Transmitted Drawings: A shipyard, commencing to construct a large vessel, arranged with the vessel purchaser's staff to receive electronically the entire set of contract drawings, from which the shipyard would proceed to develop the design details as needed for construction. The drawings were duly received electronically. But the format of the drawings was not as a CAD file, which could be utilized by the shipyard. The drawings were PDF files, which are essentially just 'pictures', not files that can be altered. Those 'electronic' files were no more useful than if the shipyard had received paper printed drawings. Lesson to be learned: Define 'electronic' with greater precision, so there is no misunderstanding as to the form in which the information will be transmitted and received.

Renew: Due to grounding in a channel, the rudder of a ship was damaged. The repair specification called for the shipyard to "renew" the rudder. What is meant by "renew"? The ship owner's representative rejected the shipyard's repair of the rudder, stating that "renew" meant to build a new one; whereas the shipyard said

renew meant to make the old one like new by repairing it, making new only the damaged portions. Perhaps the ship owner's idea would have been better expressed by stating that the shipyard was to "replace the rudder with one of all new materials."

Pressure Test of Hydraulic Piping: A hydraulic piping system was installed, with the specifications calling for a pressure test to confirm the integrity of the piping joints. However, that specification did not define the nature and type of test. A dispute arose as to what medium was to be used to create the pressure: air, water or hydraulic oil. A naive owner's representative argued that hydraulic oil should have been used. But the shipyard pointed out that if there was any leak, it would be detected (unfortunately) by seeing oil spray onto nearby fittings and equipment (hopefully without a resultant fire). On the other hand, if water is used for pressure tests, contamination of the subsequently used hydraulic oil may result. Perhaps a combination of air test (with soap solution on the exterior of joints) followed by an oil pressure test may be the preferred solution. Other possibilities exist, too. More to the point, a specification requiring tests should indicate the testing mechanism. Otherwise it can be expected that a contractor will select the least-cost solution for the test.

Generator Load Test: A specification called for the replacement of a ship's service diesel generator, with subsequent testing to confirm proper operation and controls. The means and extent of testing were not defined. After installation, the shipyard sought to test the

SSDG using ship's equipment for the electrical load. The vessel's chief engineer as well as the port engineer would not allow that; they expected that the shipyard would use a test load bank instead. The shipyard pointed out that because the specification did not mention a load bank, the rental of one was not included in the bid. This problem involving both cost and delay would have been avoidable if the means of the test was defined. Again, this was an opportunity for the ship owner to appreciate that the contractor would select a least-cost solution unless the specification clearly required otherwise.

What is New? A shipbuilder committed to constructing several new vessels, each of which was to include an item of special equipment. The vessels were produced, including the items of special equipment; but the vessel owner complained that those items were not new. The shipbuilder pointed out that the items were new, as evidenced by the fact that they had never been used, never installed on any other vessel, and had arrived at the shipyard in their original packing crates. The problem, as perceived by the owner, was that they were manufactured over 20 years earlier, but had never been sold by the supplier, only warehoused. To exclude the possibility of such event recurring, an owner can specify that all materials and equipment being used "shall be new and manufactured not more than [number] years prior to installation."

Interpretation of Rules: Some ship owners want to obtain the benefit of having their new vessel constructed to the standards of a classification organization, but do not wish to pay the fees of the organization that are incurred in granting the vessel classification status. In those instances, the construction specification states something like, "All workmanship accomplished and all materials and equipment supplied and incorporated into the vessel shall conform to the classification rules of the [name of classification organization]." But without the direct involvement of the classifica-

tion organization, the debate that inevitably ensues, of course, centers on whose interpretation of those rules will apply: the shipyard or the owner? This form of dispute is completely predictable when an owner attempts to get something for nothing. Even if the owner does not intend to maintain the vessel in class after delivery, there is nothing barring the construction and delivery of it in class, as determined by the classification organization. This assures a certain level of design, workmanship and material selection consistent with classification rules, but requires that the classification organization be duly involved during construction and delivery. Simply, there is no short cut to obtaining the benefits of classification.

Oxymoron: Ambiguous Specifications: Grammatically, the phrase "ambiguous specifications" is an oxymoron, because the components of the phrase are inconsistent; something that is specific cannot concurrently be ambiguous. Yet, numerous repair, conversion and construction specifications have been ambiguous, causing disputes, costly 'fixes' and substantial delays to completions of the projects. Some ship owner's representatives express the attitude, "I know what that specification means because I wrote it." This, of course, does not alter the fact that the specification as written is ambiguous; it simply confirms that it has to be interpreted. The shipyard already knew that, and planned to achieve its interpretation of the specification using a least cost solution. The remedy at that point, if essential to the owner, is a costly and perhaps project-delaying change order.

Specification Quality Assurance: For major shipbuilding and offshore construction and conversion projects, significant contract price growth can be minimized by subjecting the proposed contract specifications and drawings to an independent quality assurance review process. Fisher Maritime, having reviewed hundreds of specifications and having helped resolve many disputes arising from ambiguous specifications, provides a unique service to the marine

industry. A thorough review of proposed contract documents is undertaken to identify ambiguities, incomplete items, and inconsistencies in order to assure a less-troublesome contractual relationship than may otherwise develop. Starting with the initially proposed contract documents, Fisher Maritime will return to its client a marked-up set of documents, indicating suggested alterations and identifying areas needing more definition or selection of possible choices before the contract package is finalized. Contact Dr. Kenneth Fisher at Fisher Maritime for more details, cost estimates and examples of this service: kfisher@fishermaritime.com.

Improving Shipbuilding Specifications: If your professional responsibilities involve specifi-

cations and projects for ship conversion or construction, Fisher Maritime has three papers that can improve your capabilities and enhance your insights. Each of these papers have been approved and published by SNAME or RINA. They are: (a) Shipbuilding Specifications: Best Practice Guidelines; (b) An Owner's Management of Ship Construction Contracts; and (c) Responsibilities Pertaining to Drawing Approvals During Ship Construction and Modification. The three of them can be can be ordered at minimal cost from Fisher Maritime. Merely send an email with the subject line "Three Papers" to Fisher Maritime (email@fishermaritime.com) and we will send a two-page PDF file description and order form.

9 -- Sisters, Not Twins -- A Source of Specification Errors

A common source of specification errors is the mistaken assumption by developers of the repair specifications that ships are identical twins. That is rarely correct. Sister ships are just that: sisters, but not identical twins.

When contract specifications and/or contract plans for a vessel's modification are prepared on behalf of the owner, they are often based on the configuration of a sister vessel. Later, during contract performance, the shipyard calls to the owner's attention the fact that the specifications and/or plans do not match the ship, thereby leading to an unexpected extra cost.

In the construction of multiple ships under a single contract, the shipbuilder is obligated to ensure that the major features and other contractually-defined features of the ships are the same. The contractor is given the right to determine all the lesser features as long as they are consistent with the contract documents. Consequently, due to production anomalies,

design developments, and the passage of time, the secondary features of sister ships are often different from each other, but still consistent with the contract.

The placement of auxiliary or minor components may be different; the brand name or model of equipment items may vary; the location of bulkhead penetrations for piping or cables may be altered; the routing of cabling, ducting, and/or piping may have been altered; secondary features of alarm, control and monitoring systems may not be consistent. These are some of the sources of disputes that Fisher Maritime has observed in ship repair and modification contracts.

Consequently, our advice to developers of specifications is this: To avoid unexpected extra costs, base your contract specifications only on the ship being modified, not on a sister ship for which such details probably are different.

10 -- OFE in a Design-Build Contract -- Confusion All Around

A client ship owner needed four test-bed vessels for its specialized equipment. The general design of the vessels was not important, as long as certain vessel performance criteria were satisfied and, more importantly, as long as a pair of unusual owner-furnished equipment sets (“OFE”) were incorporated and installed in a precisely-defined manner in each vessel.

Several contractors bid the job, and one received a contract. The ship owner accepted the shipyard’s proposed design. The shipyard had to complete the design, incorporating the OFE. Other design criteria had to be satisfied as well, including certain marine safety regulations.

Almost predictably -- especially after awarding the contract to the lowest bidder who left an additional 20% of the contract price lying on the table -- contract disputes arose. The shipyard claimed that because the requirements for installation of each set of OFE equipment could not be fully appreciated from the bid package, additional funds and time were needed to achieve the installations. Moreover, the shipyard contended, the eight sets of OFE arrived in varying forms -- some sets of OFE required more preassembly than others. (The

organization that prepared the OFE for the ship owner worked to a different contract, and was not obligated to prepare and ship them identically.)

The lesson to be learned here is that the pre-contract OFE detail should be sufficient to ensure that the bidding shipyard fully appreciates all of the installation requirements. Also, varying delivery forms of eventually-identical items of OFE indicates that the OFE acquisition is not well-controlled by the owner -- a contractual weakness that can only harm the owner.

Analyses of several dozen shipbuilding contract disputes consistently reveals that whenever there is OFE for newbuildings, there are likely to be major disputes over its form at arrival, the schedule for OFE delivery, the requirements to install it, its integration into systems and/or the associated testing requirements. For new ship construction, owners should approach the use of OFE with extreme caution. Any anticipated savings through direct acquisition may not be worth the risks of extra shipyard costs and litigation.

11 -- Owner Furnished Equipment -- Opportunities for Contract Risks

The provision of equipment by vessel owners for incorporation into ship construction or conversion projects creates multiple opportunities for contractual difficulties. The avoidance or those difficulties requires that each of the potential forms of those risks be adequately addressed in the contract package. The risks of owner-furnished equipment (OFE) arise in association with each of these topics:

- time of OFE delivery;
- place of OFE delivery;
- exact content of the OFE
- form of OFE at time of delivery;
- responsibility for vertical integration

of OFE;

- responsibility for horizontal integration of OFE;
- requirements for testing, commissioning and grooming of OFE;
- warranty claims and warranty administration.

Integration addresses fit of the OFE in terms of the physical layout, structural adequacy, electrical service, mechanical connections, fluid services, electronic controls, monitoring, alarm systems and testing. Vertical integration specifically refers to ensuring the fit of the OFE into the existing ship or into the

portions of the ship being provided by the shipbuilder. Horizontal integration specifically refers to ensuring the compatibility of multiple OFE components with one another.

Because the contractor or shipyard is not automatically vested with integration responsibilities, the contracting party that has such integration responsibilities has to be clearly identified in the contract documents, and has to be given authority to seek necessary alterations if there is not a good fit in all those areas.

Fisher Maritime has often been called upon to assist in troubled contractual relationships when, the owner alleges, the shipyard is creating difficulties over the OFE. Sometimes our analyses result in the appreciation that the ship owner did not clearly nominate the shipyard to be the OFE integrator, thus causing the integration process to have been overlooked. Fisher Maritime then has developed recovery plans to minimize the impacts of the late-assignment of integrator responsibilities.

In one matter, the owner provide a complete propulsion system (diesel generators, motors, thrusters, power management system, etc.) for a dynamically-positioned vessel conver-

sion project. The OFE vendor's testing and commissioning requirements had not been communicated to the shipyard. Major schedule problems developed at the end of the conversion project when the owner's vendor required far more time for testing and certification (several weeks) than the shipyard had been told to allow (several days).

Fisher Maritime was called in by the shipyard to help develop a revised schedule that minimized the total delay. Fisher Maritime then developed an assessment of the impacts on both cost and schedule that resulted from having overlooked the commissioning requirements for the OFE. That analysis was used to negotiate a resolution of the responsibilities for those costs and delays.

Organizations planning to incorporate major OFE items into a vessel construction or conversion project should consider having Fisher Maritime review the planned acquisitions and deliveries to ensure minimization of the risks associated with OFE, and to make certain that they are wholly compatible with the shipyard's contractually-defined responsibilities.

12 --Equipment Integration and Interfaces

Contract Mismanagement by Assumptions

A multi-million dollar ship conversion project had gone considerably over budget and over schedule, with the shipyard and ship owner each alleging the other to be responsible. The project involved significant participation by several specialized subcontractors, who also provided key elements of new equipment, all working under the direction of a small contracting shipyard whose general manager was also the project manager.

The work that primarily caused cost and schedule overruns was the integration of the subcontractor-supplied equipment as well as the last-minute development of electrical, electronic

and mechanical interfaces between the new items of equipment. The existence of the problem was realized late in the project when the subcontractors complained that they were being asked to perform greater workscope than included in their bid proposals.

The shipyard issued purchase orders in response to the subcontractors' bid proposals, which in turn were based on the prime contract specifications. The subcontractors' bid proposals, adopted verbatim by purchase orders, did not adequately address the equipment integration process, including the supply of interfaces with other equipment. In other words, the sum

of the parts (from the subcontractors) did not equal the whole requirement of the prime contract -- but the shipyard did not otherwise plan for that shortfall.

Upon analysis it was observed that the fundamental cause of the problem was that, during the bidding stage, the shipyard assumed that the subcontractors were bidding on the entirety of the workscope related to the equipment they were to supply. Instead, the subcontractors' bid proposals addressed only those elements that were independent of the work of other subcontractors.

Component and system integration, installation and testing are often found to be areas that have been partially overlooked or incompletely addressed, especially when subcontractors and vendors are involved. To avoid such problems, Fisher Maritime's pre-contract reviews on behalf of shipyards ensures that the entirety of the prime contract's workscope is addressed and bid by the shipyard itself or its subcontractors. If your organization is bidding on a complex contract requiring multiple subcontracts, a pre-bid review by Fisher Maritime can minimize the likelihood of errors in the bid due to such oversights.

13 -- Color Coded Features -- The Vanishing Information

During the conversion of a vessel, a shipyard installed incorrect fire-rated bulkheads in several of the vessel's spaces, delaying the issuance of the flag-state Certificate of Inspection, as well as being costly to both parties. Fisher Maritime's analysis of the underlying facts revealed that the cause of the error was found to be vanishing information.

It was learned that the fire boundary plans supplied to the shipyard by the owner utilized different colors to delineate the different fire ratings required in several locations. The shipyard's project management office had photocopied the drawings in black-and-white, sending those copies to the purchasing and production departments. With all the fire boundaries now appearing as the same gray, the shipyard's subsequent use of these black-and-white reproductions resulted in a single (lower) fire-rating of bulkheads being installed throughout. This confusion in fire ratings was not discovered until well after the bulkheads and other outfitting had been installed, leading to

extra costs and delays to effect a correction.

There is a lesson to be learned from this experience. With the availability of low-cost color printers, and the ease of using different colors in drawings, charts and tables, the use of color-coded information appears to be a means of emphasizing the needed differentiations. But this is appropriate only when viewing the originals of those drawings, charts and tables. As soon as black-and-white copies are made, that differentiating information vanishes.

Accordingly, when color-coded information is presented, consider sending it back to its authors and asking for revisions to incorporate a differentiation of features that will survive black-and-white copying. This might mean using different forms of lines, gradients, fill patterns, or more extensive word-labeling. For those cases where certain constraints limit the application of these suggestions, it may be appropriate to include a highly visible notation stating that the document must be reproduced in color to ensure clarity.

14 -- Shipbuilding Specifications: Best Practice Guidelines

The development of Contract Specifications and Contract Plans for new ship construc-

tion is a challenge to the most seasoned professionals because those persons developing

them cannot be sure how the selected ship-builder will interpret any ambiguities in them. Based on numerous “lessons learned”, which lessons have undoubtedly been learned the “hard” way, a paper published by the Royal Institution of Naval Architects, authored by Dr. Kenneth Fisher, presents perspectives that should be borne in mind when developing those specifications and plans.

The differentiation between different forms of specifications is made, for example, to illustrate that responsibilities and risks are assigned to different parties for each different form of specification; and the developer has to decide in advance which party is to have which responsibilities. Similarly, for design development, the transfer of decision-making authority from the Purchaser's (i.e., owner's) architect-engineer to the Contractor's (i.e., shipbuilder's)

engineering staff is clarified in this paper, thus giving the developers of the Contract Specifications the opportunity to alter the point in design development at which that transfer of authority takes place.

Means of overcoming the often-encountered perils of owner-furnished equipment are also addressed through improved specification writing. Many other aspects of the development of Shipbuilding Contract Specifications and Contract Plans are also discussed in this paper. Published in the International Journal of Maritime Engineering, Royal Institution of Naval Architects, London, March 2004. A copy of the paper in an electronic PDF format can be obtained by sending an email request to: email@fisher-maritime.com with the subject "Best Practices."

15 -- The Flow of Contract Information – Content, Form & Timing

Many aspects of contracted worksopes for shipyard projects involve the flow of information between the parties, with the information being as diverse as drawings, engineering calculations, noise measurements, test results, steel-and-air temperatures, megger readings, classification comments on drawings, and many others. These requirements are presented in the project's specifications. In general, the flow of information requires a mutual understanding of the content, form and timing of the conveyance of the information, and sometimes the medium by which it is conveyed.

Specification writers often assume that the shipyard will understand why the owner's staff needs the information required by some of the specification items. Implicit in that assumption is the premise that the shipyard will provide the correct information in a form that is useful to the owner and, moreover, will provide it on a timely basis. However, while the shipyard anticipates expending the fewest possible resources on the development and communication of that information, the owner anticipates some-

thing else. Often the differences between the shipyard's plan of action and the owner's expectations for such communications become apparent in form and timing, as well as sometimes in content. When such misunderstandings arise, they are usually the responsibility of the specification writers' implicit assumptions, rather than explicit requirements for the information.

Avoidance of a misinterpretation, omission or delay in the flow of the information arising from a specification item often is essential, if not critical to the project. Because of differing perspectives between owner and shipyard as to the resources needed to address information flow, a specification should separately address the content, form and timing of the requisite information to ensure that the owner's needs for that item are fully and clearly communicated in the specifications.

Content: While technical content of information is typically well defined, most persons in the industry can cite examples where insufficient definition of the content of the information

has been the basis of disputes, large and small. For example, when a large change order during ship repair would impact vessel redelivery date, the parties agreed that the extent of the contract extension was “to be determined,” with no further description given. Later, in arbitration over that issue, the owner said a pre-completion formal schedule impact analysis was expected; while the shipyard said the extension was to be determined by the sequence of actual completion events, however it turned out. This is but one example of the necessity of defining the content of information that is to be communicated at some later time.

Form: Once the content of a given specification item has been nailed down, the next point to consider is that of form. Especially since the advent of computers and related technologies this point has become increasingly more important – and complicated. Paper or electronic? Merely using “electronic” may result in a non-searchable ‘pdf’ file. Instead, identify the application and the version of it by which the information can be effectively used. Example: As-fitted drawings were to be provided in both printed and “electronic form.” When the owner received the drawings as a ‘pdf’ file, the owner’s unhappy response was initially directed toward the contractor, but later toward his own specification writers. (The shipyard had asked for an additional fee to provide them in a more useable electronic format.)

Timing: When is the most appropriate time for the owner to receive the information? An example of that question not being explicitly answered in the specifications involved the conversion of a ro-ro to a training ship, requiring much more accommodation space. All design engineering was provided by the owner except that the shipyard was to accomplish the HVAC engineering and design. The contract did not require that the HVAC engineering be done before assembly of the new accommodation structure. So after the structure was mostly fabricated (to accelerate cash flow), the ship-

yard performed the engineering, only to learn that the HVAC distribution system would not fit. This led to the necessity of an extensive alteration in the configuration of the already fabricated deckhouse. If the engineering had been required to be accomplished pre-fabrication, a much less costly ‘fix’ could have been arranged. Lesson learned: get the engineering done before the construction begins. This is an example of why the flow of information (HVAC engineering) should include the timing of when it is to be accomplished (before fabrication of the deckhouse).

Regarding the medium for the transmission of information, Fisher Maritime’s recent review of a proposed ship construction specification noted that it required that a certain dynamic test result be ‘tape recorded.’ At a number of other places it specified that data be stored on ‘magnetic media.’ With the appreciation that the owner did not want to receive these documents on an outdated floppy disc or magnetic tape, it was recommended that these specifications be updated to identify a more modern (i.e., optical) means of data storage. This illustrates why the medium by which information will be conveyed sometimes needs to be defined, as well.

There are numerous opportunities for inconsistencies and incompleteness in specifications for shipyard projects. Often they may be largely avoided by having persons other than the specification writer independently reviewing the specifications. Fisher Maritime routinely provides specification quality assurance services, ensuring uniformity throughout the specifications. To assist owner’s during the contract development and execution processes, Fisher Maritime also has a number of other resources available including training programs and publications. Additional information pertaining to resources available from Fisher Maritime may be found by visiting our website at www.fisher-maritime.com.

16 -- Repaired During Construction: Is it 'New'?

When a vessel under construction, or major component of it, is seriously damaged before delivery, an owner may question whether the vessel that is delivered later is actually "new" or if it is less-than-new. Three recent incidents in which Fisher Maritime was called upon by the owners to answer key questions and give guidance for the outcome illustrate some of the considerations that must be addressed to determine if contractual requirements that the vessel be "new" are achieved.

In the first of the three incidents, a 73 m. platform support vessel experienced structural damage as well as machinery damage and misalignment during a launching casualty. Specifically, while being transferred from a building platen ashore to a launching pontoon, the vessel uncontrollably rolled off the end of the pontoon, shearing off the two thrusters and causing internal and external structural damage along its bottom from sliding contact with the edge of the pontoon as it slid into the water.

The second incident involved a 15 m. composite boat that slid out of its lifting sling as it was being transferred from a transporter to a cradle. It landed on the underside of the stern, resulting in damage to the rudder, propulsion train and supporting structure. The third damage-during-construction was a fire on a nearly-complete 60 m. custom steel yacht, causing complete loss of the internal distributive systems and joiner work, along with structural deformations from the heat of the fire.

In all three situations, the fundamental question was whether the damaged portions of each vessel practicably could be "renewed" or if they could only be "repaired" to a lesser standard. The heart of the matter is, of course, the contractual requirement that all materials and equipment be new when the vessel is delivered, except for reasonable use and exposure incurred during vessel construction and testing.

The acceptance of the vessel by regula-

tory and classification organizations as a "new" vessel is the first of several hurdles that have to be achieved. However, most of those organizations do not differentiate between new or repaired as long as the underlying intents of their standards and rules are achieved.

Another objective measure is the issuance of warranties by equipment manufacturers and material vendors. If they are satisfied that the equipment and materials they supplied are still "new," then the post-delivery warranty may still be applicable. However, if too much time passes before the damaged vessel is ready for delivery, some of the warranties may have expired before delivery is achieved. The lack of warranty period having the same post-delivery duration as if the vessel had not been damaged may contribute to an owner's perspective that the vessel is not the equivalent to being new. Fisher Maritime has recommended that a satisfactory solution may be that the shipyard purchases extended warranties from the manufacturers and vendors so the vessel owner benefits from the same post-delivery duration of warranties as if the damage had not occurred.

Steel that has been distorted by the damage is sometimes wedged back into position or is force-straightened by the shipyard. If that "working" of the steel during construction materially reduces its fatigue strength or fatigue life, it certainly would not be equivalent to new. In those situations, Fisher Maritime has recommended that the steel be replaced in large sections (no postage-stamp inserts, please).

Whenever structural distortions have occurred as a consequence of damage during construction, Fisher Maritime has recommended a fairly complete examination and testing of all piping and cabling that may have been affected by distortions. This is a condition that the owner may impose if he is going to accept the vessel as "new" even though significant damage occurred during construction.

The cosmetic quality of the finishes on the damaged, nearly-complete, high-value, custom yacht presented a special problem. The surfaces of nearly all the extensive, custom-manufactured, stainless railings were etched by the acidic tars and ash of the products of combustion. While they could be polished to a shiny finish, they would never be as smooth as when new, suggesting that they have to be replaced, not merely polished, if the vessel is to look "new" in all regards. Other cosmetic features were also impacted. The hull, house and bulwark sides are not merely painted. Instead, two layers of high-quality filler are used to create absolutely smooth finishes at every section and joint, followed by the application of several layers of finish to create a highly reflective appearance. Repairs to those surfaces, without complete renewal, present a cosmetic finish that is somewhat less perfect than the new finishes; but complete renewal of them is a very expensive matter that may not be justifiable from an insurance perspective.

Even if the damaged vessel is, after corrective action, accepted as "new" by the owner, there may be a contractual assessment of liquidated damages due to late delivery resulting from the damages and renewals. Thus, even if a shipyard recovers the extra direct costs to renew the vessel from the underwriter of the builder's risk policy, it may still have to pay liquidated damages.

In the end, when a vessel has been significantly damaged while under construction, there will have to be a common agreement between the owner, the shipyard and the builder's risk insurance interests as to the outcome. The owner may agree to take the vessel at full price or at reduced price if the repairs have been substantial, reducing the value of the vessel. If the owner no longer wants the vessel because it cannot be practicably renewed, the yard may offer it on the market while returning the owner's payments.

The standards for final acceptance of a vessel damaged during construction will vary for different categories of owners. The owner of a work boat that has been repaired during construction will not be as demanding as the owners of a custom yacht or a cruise ship that need extensive renewals. To the best of our knowledge, this is an area that is relatively undefined by prior legal precedents. Thus, thorough analyses of contractual and technical issues have to be integrated in order to ascertain what is technically accomplishable, what is practicably and financially feasible, and what is contractually appropriate. No one wants vessels damaged while under construction; but Fisher Maritime is ready to assist shipyards or ship owners in the development of those analyses when the need arises to assist in facilitating a workable agreement between the interested parties.

17 -- Contractually, is it a Good Deed or a Misdeed?

"No Good Deed Goes Unpunished"

Over the past 32 years, Fisher Maritime has helped scores of clients deal with difficult contractual situations associated with shipyard projects. Our clients have included ship owners, shipyards, major subcontractors, consultancies, government agencies, and navies. We have often observed that, during contract performance, some of the problems that arose were triggered by one of the parties doing a good

deed for the other party. Unfortunately, we have observed, good intentions sometimes backfire. This doesn't mean that good deeds should be avoided, only that the risks of them becoming misdeeds instead of good deeds should be assessed before embarking on them. In the spirit of helping others learn from the unfortunate outcomes of attempted good deeds, we offer the following vignettes. The consistent

theme that becomes obvious is this: Do not relieve the other contracting party of any of its contractual obligations without first assessing all the risks and consequences that may arise.

Use of Shipboard Equipment: A government agency's vessel was undergoing repairs, including hot work in the machinery space. The agency's representative complained to the shipyard that the space was not being adequately ventilated, allowing too much smoke and fumes to impair work and inspections. The shipyard agreed to increase the ventilation as required by the contract, but lacking sufficient equipment, sought to borrow the blowers from the vessel's bosun's locker. The agency allowed the blowers to be used, including the long spiral-wound hoses attached to them. On the second day of use of the blowers, the sparks from hot work ignited one of those hoses, and the fire spread. The damage to the vessel and project delays were significant. The agency tried to hold the shipyard responsible, since the fire was started by the contractor's hot work. But the shipyard considered the agency responsible, for not having alerted the shipyard to the fact that the hose was flammable, even though the agency knew the hose was going to be used in the presence of hot work. The agency replied by pointing out that the shipyard's fire watch personnel were ill-equipped to snuff out the incipient fire, allowing it to spread. The outcome was the shipyard's (and its insurer's) accepting the cost of repairing the damage, and the owner accepted the loss of the blower and accepted the delay as force majeure. Next time the agency should simply insist that the shipyard comply with its contractual obligation to supply all the equipment needed for proper accomplishment of the work.

Advance Material Purchases: As part of a 12-week vessel modification project, a shipyard was obligated to obtain special materials for integration into a shipboard cargo-handling system. Although the contract was executed about six weeks before the refit period was to commence, the contractor had not placed an

order for the materials by the time the vessel arrived. The contractor reported to the vessel owner that it was having trouble securing the materials, and requested the owner to obtain them on the basis that the owner's staff was more familiar with the equipment. The owner's staff then ordered the materials, but the lengthy lead time for their arrival delayed completion of the refit. The delay would have been avoided if materials had been ordered shortly after contract execution. But in agreeing to relieve the contractor of the obligation to obtain the materials, the owner's staff neglected to address the schedule impacts, resulting in the owner being responsible for the delay. Adding insult to injury, the shipyard sought additional fees for maintaining the vessel at the shipyard extra weeks while awaiting the owner-purchased materials. Next time the owner should monitor the shipyards' pre-arrival purchasing efforts whenever long-lead time materials are an essential part of the contract workscope.

Place of Delivery: A vessel owner was obligated to deliver to the shipyard's warehouse an overhauled replacement for a dredge's combination pump/motor. The 18-ton replacement unit was located at the owner's warehouse, on the other side of the river from the shipyard. Shortly before the replacement unit was needed by the shipyard, the owner's staff requested the shipyard to send a truck across the river to the owner's warehouse to pick-up the unit. The shipyard complied. But during transit from the owner's warehouse to the shipyard, a roadway accident caused the truck to roll into a ditch, resulting in damage to the replacement unit. Project completion was delayed more than a week while repairs were made to the unit that had been on that truck. The owner alleged the shipyard was responsible for not providing appropriate transportation. The shipyard responded that the owner was responsible for the delay since the pump/motor was late in being delivered to the shipyard's warehouse as required by the contract, which had not been amended when the shipyard agreed to send a

truck. Next time, the shipyard should politely insist that it looks forward to receiving the owner's equipment at the warehouse, per the contract.

Shipyard, not Storage Yard: A shipyard had contracted to convert a vessel into a floating restaurant. Upon completion, the vessel would be permanently moored at a pier undergoing modification to receive the new floating restaurant. The vessel conversion was completed prior to the pier being ready to receive the floating restaurant. The shipyard, temporarily having extra dock space available, agreed to keep the vessel at its dock, for a daily fee, while the pier was completed. Several weeks later, the restaurant vessel capsized at the shipyard's dock due to the accumulation of water in the bilges. This blocked the shipyard's dock, impacting other projects, until salvage was completed. The restaurant owner, not being a traditional ship owner, had not understood the need to continuously monitor the bilges. The shipyard considered its only obligation for the daily fee was to provide the dock to temporarily secure the vessel, but not to provide any form of guard service. The fundamental cause of this incident was that the shipyard offered to provide a service (keeping an idle, unmanned vessel at its dock) that it doesn't normally provide, without defining to the owner the limited scope of services it would provide at that time.

Fixed Schedule, but No Fixed Workscope: A shipyard, constructing a large public vessel, made a commitment to launch the vessel on a specific future date so that highly-placed public officials could be scheduled, far in advance, to participate in the launching, with TV and newspaper reporters present in large numbers. Some time after making that commitment, but still long before launching, the public agency requested numerous changes that had construction schedule impacts, but the launch date was not allowed to be altered. As the long-planned launching date approached, the vessel was far from ready for exterior hull painting. But in order to keep to the schedule of the

public officials, the shipyard could quickly paint only one side of the vessel (so the TV cameras would have a good view). This meant that the vessel had to be drydocked later to complete the hull painting, which drydocking had not been planned as part of the ship construction process. The extra costs were borne by the shipyard. Thus, the shipyard paid for doing the good deed of accepting changes without altering the launching date.

Expanded Skills means Expanded Risks: In the course of planning the replacement of the entire propulsion system in an older ferry, a shipyard retained a specialist subcontractor to perform the required lead-paint abatement in the hull before bringing in the new machinery. Just as the subcontractor was finishing its several-week assignment, the vessel owners decided that, in addition to the contractually required lead-paint abatement in the machinery spaces, the ferry's entire deckhouse should also be subjected to a lead-paint abatement. The subcontractor was already committed to another job elsewhere, and could not stay at the shipyard. Other specialist subcontractors were not timely available, either. The shipyard agreed, under pressure from the vessel owner, to send some of its own personnel for training to manage the abatement of toxic materials, and rented the special equipment, as well. Being the first lead-paint abatement job that the shipyard's own personnel directed and accomplished, it went far over budget and schedule. Moreover, it required the suspension and delay of much of the work originally planned. Only after lengthy litigation, did the shipyard get some compensation for that extra effort, but was never compensated for all of its direct litigation costs. Though Fisher Maritime assisted in settling the matter, it would have been beneficial and less costly if the shipyard had contacted Fisher Maritime for advice at the time that such substantial changes to the contract work were requested by the vessel owners.

Contractual Difficulties: Fisher Maritime hopes that your organization does not find itself

facing contractual difficulties similar to those described above. We work with organizations to plan and contract for major shipyard projects so that the likelihood of contractual difficulties is minimized. If you are planning a major project, please contact us to learn of the variety of support services we provide to make your entire

contracting process and project management run smoothly. If you find yourself facing contractual difficulties, utilizing our 30 years of experience in a wide variety of contract-related support services, we can help restore the project to a less-troubled status. Bon voyage!

18 -- The Risks of FPSO Conversions

Multiple Interests Lead to Challenging Coordination

FPSO conversions from VLCCs are particularly challenging due to the overlapping roles of multiple participants on each side of the contractual relationships. (FPSO = floating production/storage/off-loading.) Fisher Maritime has assisted several clients, both shipyards and their customers, in projects for the conversion of VLCCs into FPSOs. Our work has been in each of contract formation, assistance in contract management, and resolution of contractual disputes.

On the purchaser's side, there are three main groups, each of which wishes to have their perspectives be primary in the conversion from the owner's perspective. The marine group addresses the hull and machinery conversion; the exploration group focuses on the topside production/processing equipment additions to the vessel, and the operations group addresses the mooring system, turret, riser attachments, and accommodation requirements. There may be inconsistencies between the objectives of each group. Further, the need to coordinate the provision of owner-purchased equipment, the use of multiple subcontractors, consultants and engineering specialists makes the owner's management of the contracts more challenging than most other forms of vessel conversion.

On the shipyard's side, there also are multiple interests. The hull and machinery work, being within the shipyard's ordinary scope of work, is addressed in the normal manner. The topside production/processing equipment, being beyond a shipyard's normal scope of work but

appearing to be sufficiently close to it, creates challenges to the shipyard in its estimating and scheduling efforts, especially when the owner provided equipment has to be integrated into the shipyard's efforts. The turret, riser connections, and extensive mooring arrangements add further challenges to the shipyard's ordinary scope of work. The shipyard also engages multiple subcontractors, consultants and engineering entities to assist them.

The success of an FPSO conversion project is dependent on the coordination of the engineering, design, material procurement, equipment supply, production work and testing output of all those interest groups, regardless of which side of the contractual relationship they are on. Fisher Maritime has assisted participants in such conversions understand where conflicting requirements had to be resolved, where conflicting schedules had to be sorted-out, why one party or the other had to bear certain unanticipated costs, which party was reasonably or unreasonably interpreting specifications, and which party was ultimately responsible for delays.

Although FPSO conversions have many facets which are unique to such vessels, the fundamental principles guiding the resolution of potential disputes, as well as the pre-contract quality assurance and due diligence requirements, are essentially the same as for other ship conversion projects. As with all vessel conversion projects, the key to success is a well-defined specification package. Fisher Maritime

provides quality assurance and risk-minimization reviews of conversion specifications before

contract formation.

19 -- VLCC's for FPSO Conversions

The Risks of Multi-Type Assumptions

A vessel owner sold two VLCC's for conversion to FPSOs (floating production, storage & off-loading). Although they were each over 20 years old, they had been maintained in excellent condition. The seller warranted to the purchaser that each vessel would not need more than 100 tons of steel, and guaranteed payment for any steel work in excess of that amount that was attributable to the condition of the vessels. However, it was later learned that each conversion to the FPSOs required over 1100 tons of steel work, thus placing the seller in an unexpected predicament.

Fisher Maritime was retained by the seller to analyze why there was such a discrepancy. Following review of the owner's technical practices and the classification rules for both VLCCs and FPSOs, we were able to advise our client that the 100-ton amount was predicated

only on each vessel going through a classification Special Survey for the vessel to remain as a VLCC. In contrast, nearly all the 1100 tons of new steel was required to satisfy classification as an FPSO that would be on station 15+ years, not as a VLCC that is drydocked every 4-5 years. We then supported our client in subsequent negotiations to resolve that misunderstanding between the seller and purchaser of the VLCCs.

The lesson learned is that a reasonable expectation applicable to one vessel type undergoing conversion may not be a reasonable expectation applicable to the converted vessel type. This observation may also apply to emergency electrical requirements, fire-suppression systems, battery back-up requirements, redundancy of bilge systems, and other safety features.

20 -- Damage Due To Erroneous Docking Plans

Symptomatic of a Larger Problem

Erroneous docking plans lead to costly damage more often than most professionals expect. This is the result of surveys conducted at Fisher Maritime's Contract Management training programs. The docking plans were not always erroneous; but they weren't updated when modifications were undertaken at previous shipyard periods. The fact that the drawing no longer matches the ship is not limited to docking plans, but applies to many of the other as-built (or as-fitted) drawings as well.

When a ship owner is having minor modifications made to the ship, it always seems to be too costly to have drawings modified by the shipyard. The ship owning organization will

get the drawings updated later, it is usually planned and believed. But the updates never get done, of course, due to higher-priority work for the appropriate staff that could otherwise accomplish the drawing updates.

A ship begins to depart from the once-accurate as-built drawings with every minor as well as major modification made during the ship's lifetime. The potential benefits of the drawings for all future maintenance, repair and modification are lost to the owner. Any such work will then cost a lot more because the contractor that would otherwise rely on such accurate drawings will either (a) rely on inaccurate drawings and thereby incur extra re-work

costs to correct the work that was erroneously accomplished because of the errors in the drawings, or (b) have to develop its new work by on-site reverse engineering to know what is already there in order to proceed with the new work, with such reverse engineering being a source of delay and extra costs. Moreover, emergency repairs will certainly take longer when the drawings cannot be relied upon.

For ship repairs and maintenance, the recommended means of dealing with drawing issues is to ensure that the specifications for work items that will physically modify the ship include a requirement that the shipyard performing the modifications also update the relevant drawings; otherwise the gap between

drawings and the ship will continue to grow. If the drawing modification costs are not included in the workscope, then it becomes the owner's obligation to get the drawings modified at a later time to ensure that the drawings continue to match the ship. But since many owners' organizations do not follow-through with the drawing modifications after the ship leaves the yard, the gap between drawings and the ship is essentially guaranteed to grow. This is not a good way to manage the ship for future repairs and maintenance because, in addition to causing damage, it will cost several times as much later to make up for a lack of accurate as-built drawings than it would to keep them up to date in the first place.

21 -- False Economies Prove Costly

Fisher Maritime's analyses of more than 100 marine casualties and personal injuries have generally led to an inescapable conclusion: cutting corners on safety-related matters aboard ship can prove to be a very costly false economy. Among the most common corners which have been cut are (a) inadequate or insufficient handrails, (b) insufficient coverage with anti-skid surfaces, (c) inconsistency between signage and design features, and (d) thinking that a nonsensical manual does not indicate a nonsensical design. This last item arises when the vessel operator thinks that perhaps the manual is written awkwardly, but does not make any effort to see, objectively, if perhaps some design features of the vessel are the things that don't make sense. A low cost safety review of the

vessel and its manuals by should be part of a cost-effective claim mitigation program.

Meanwhile, in shipyard projects, equally false cost-savings measures are taken more often than is wise. An insufficiency of fire watch personnel, or not keeping the fire watch personnel around for 30 minutes after cessation of hot work, is often viewed as a savings. The lack of on-hand fire extinguishing equipment also is thought to reduce costs. But when a fire does break out, as it will once in a while, the savings on all the other projects are immediately overwhelmed by the direct and indirect, non-reimbursable costs that the shipyard incurs. More importantly, concern about personnel safety is an immeasurable consideration. (Also see the next article on Shipyard Safety Concerns.)

22 -- Shipyard Safety Concerns -- Put it in Writing

As a ship owners' representatives walk through the ships during on-going work at shipyards, they may observe conditions or situations that are not consistent with the contractually-required means of assuring safety to both

personnel and the vessel. A few words to the production supervisor often is sufficient to achieve a correction to that deficiency, at least temporarily. But more likely than not, a temporary correction is not sufficient; it has to

endure for as long as the shipyard's work continues, although that implementation has a cost impact on the shipyard. The challenge is for an owner's representative to effectively convince the shipyard to implement for the duration of the contract all the safety features that it contractually promised.

Fisher Maritime's expertise was called upon to help resolve a dispute centering on a vessel which experienced a significant fire stemming from hot work during the repair process for which there was inadequate fire watch and fire protection. During the ensuing litigation over responsibility for the cost and schedule impact of the fire and subsequent repairs, an owner's representative alleged that he had passed through the space before the fire occurred, asking for improvement in the fire watch situation and the greater use of appropriate fire blankets. The shipyard denied that they had been advised of those alleged deficiencies.

Orally calling safety issues to the attention of the shipyard is often believed sufficient. However, these conversations are often subject to differing recollections, especially as time passes, memories fade and unfortunate events occur. In order to ensure that the communicated concern is properly preserved, a safety issue which has been verbally communicated to the shipyard probably should be followed up immediately in writing to shipyard project management.

This process achieves four objectives. First, it ensures that the shipyard management, beyond the production staff, is notified immedi-

ately upon detection of perceived safety hazards. Second, there is no misunderstanding regarding the particulars of a given issue. Third, the issue has been preserved in the event of future disputes. Fourth and perhaps most importantly, knowledge of the existence of this contemporaneously-developed document puts pressure on shipyard management to implement for the duration of the contract all the safety features that it contractually promised.

An owner's representative may even find it useful to create a form in advance in order to easily record such important parameters as the nature of the issue, reference to particular contractual and statutory requirements, and identification of the location, date, time, person notified, and corrective actions to be taken, among other possible factors.

Dovetailing into this issue is the confusion regarding the intent of occupational safety and health regulations pertaining to ship repair, conversion, construction, and breaking. Those regulations have been promulgated to ensure the safety and protection of shipyard employees from unsafe working conditions. That is, those regulations exist to protect the shipyard employees, not the vessel, from unsafe working conditions. With this in mind, the owner may find that those regulations fall short of adequately protecting the vessel from unsafe conditions. Accordingly, many owners find it important to contractually define supplemental requirements that focus on the safety of the vessel above those regulations that focus on safety for shipyard employees.

23 -- Understanding Shipbuilding Contracts and Specifications

Fisher's Definitive Text Published by SNAME

In late 2003, the Society of Naval Architects and Marine Engineers released the latest edition of its notable book, "Ship Design and Construction" The 2003 edition includes the definitive text of "Shipbuilding Contracts and Specifications" written by Dr. Kenneth Fisher of

the Fisher Maritime Consulting Group. Other Fisher Maritime staff members and other SNAME members assisted Dr. Fisher through suggestions and comments.

The chapter methodically follows the



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course that commences once the decision to acquire a new ship is made, noting that multiple follow-on decisions are necessary. Many of those subsequent decisions are reflected in the technical specifications and plans which define the physical ship that will satisfy the requirements of the ship owner. However, many non-technical decisions are needed also, some of which involve: selecting a naval architectural firm to develop the technical requirements; the extent to which the design will be developed by the ship owner before the contract is executed; and the identification of qualified shipyards that will be invited to submit bids or proposals; and many other non-technical decisions. The ship owner's organization also must select: the means of financing the construction and mortgage of the ship; the basis of comparison of offers or bids from several shipbuilders; a shipbuilder from among the responsive bidders; the format of the shipbuilding contract; and other non-technical decisions that need to be made just to initiate the acquisition process.

Dr. Fisher's chapter goes on to demonstrate that there are hazards associated with each such non-technical decision, which hazards are in the form of risks associated with the

relevant experience of the naval architect, the locale of the shipbuilder, the applicable law, financial guarantees, and the relevant experience of the ship owner's staff that is managing the ship acquisition process, among other factors. The process of developing the contract for ship construction and the letting of the contract by the ship owner is, accordingly, an orderly sequence of risk evaluation at each step along the way, followed by action that minimizes the relevant risks or considers other factors if a slightly greater risk is found acceptable.

The four major sections of Dr. Fisher's 48-page chapter are: (1) Understanding and Defining Shipbuilding Contracts (18 sub-sections), (2) Formation of the Shipbuilding Agreement (32 sub-sections), (3) Formation of Contract Specifications and Plans (25 sub-sections), (4) Management of Contracts During Performance (11 sub-sections), and an Appendix listing and describing the 38 components of the five phases of contract management performance. The book was officially released by SNAME at the October 2003 World Maritime Conference in San Francisco. Copies of the book are available through SNAME (www.sname.org).

24 -- Ship Owner's Check List

An Owner's Management of Ship Construction Contracts is the title of a paper presented in London for the Royal Institution of Naval Architects' Newbuild 2000 conference in October '95. The paper provides a check list of the responsibilities of an owner during the various phases of acquiring a new vessel. Many aspects of the paper are also applicable to ship conversion and repair.

The paper first distinguishes five separate phases of an owner's contract management, and then identifies 38 separate functions that must be considered during contract management. The contractual opportunities to implement those functions are shown, and the

risks of neglecting them or of giving them only slight attention are discussed. The 38 functions include ones that are frequently either overlooked or insufficiently fulfilled, potentially leading to disputes between the contracting parties.

Besides creating the risk of contract disputes, insufficient fulfillment of these contract-related functions exposes the owner to receiving an unsatisfactory, late or over-budget newly-built, converted or repaired vessel. The vessel may be unsatisfactory for reasons of impaired quality, maintainability, performance characteristics or operating limitations relative to those anticipated by the contract documents. The perspective of this paper is not a theoretical

approach to contract management, but is based on numerous analyses of contractual problems and disputes experienced by ship owners. A copy of the paper in an electronic pdf format

can be obtained by sending an email request to: email@fisher-maritime.com, with the subject "owner's management."

25 -- Asserting & Defending Contractual Rights

#1 — A Shipyard: A shipyard called in Fisher Maritime when a client ship owner become unreasonable. The yard had employed a specialist subcontractor to undertake a complete lead-abatement of the entire interior of the hull of a large service vessel. The vessel was being completely re-engined, with every item of mechanical and electrical equipment in the hull being replaced with modern outfit. The interior hull lead-abatement program was just about complete with all new coatings applied to the interior hull, and the shipyard was starting to install the new propulsion, electrical and ancillary equipment, when the ship owner changed its mind. Namely, the owner wanted a comparable, complete lead-abatement program undertaken in all spaces above the main deck.

With the specialist subcontractor no longer available to accomplish the additional lead-abatement, the shipyard came to the owner's rescue and undertook the additional lead-abatement project itself. Not wishing to unnecessarily delay the project, the shipyard commenced the extra work based on the owner's commitment to negotiate a change order. This effort by the shipyard disrupted all of its planned work, its drydocking schedules, as well as significantly impaired the efficiency of the work which was continuing during the extra abatement program. When the shipyard proposed a price and schedule impact for the already-started work, the owner simply rejected it and refused negotiations. Despite the on-going dispute, the project was completed in such a manner that the owner wrote praiseworthy letters to the shipyard -- but still didn't want to pay full price or recognize the entitlement of delay. Fisher Maritime prepared the shipyard's formal claim. With our participation in a medi-

ated settlement, the shipyard received nearly all the funds for shipyard expenses and delays that were set forth in the claim developed by Fisher Maritime.

#2 — A Vendor: A major propulsion system manufacturer supplied a considerable amount of owner-furnished equipment for inclusion in a large vessel. The shipyard encountered significant delays and cost overruns, alleging that about half of those extra costs and delays were due to problems created by the ship owner's propulsion system vendor. Fisher Maritime was retained by the vendor to defend its actions, the quality of its equipment, and the completeness of the services provided in association with the equipment.

Fisher Maritime rebutted those portions of the shipyard's claim that the ship owner was attempting to pass through to the vendor. Fisher Maritime also developed the vendor's limited counter-claim. The failure of the ship owner's staff to ensure complete compatibility between its shipyard contract (including changes), on one hand, and its purchase contract with the vendor, on the other, was found to be a major factor which was beyond the control of the vendor. The ship owner's inability to effect consistent and complete communications between all three parties also contributed to the portion of the shipyard's claim that focused on the propulsion system vendor. By its active participation in a mediated settlement, Fisher Maritime was able to convince all parties to let the propulsion system vendor depart from the fracas without making any payments to the owner or the shipyard.

#3 — A Ship Owner: A vessel owner undertook a conversion project involving three

shipyards, five engineering organizations, and a number of vendors and subcontractors. When the project fell behind schedule due to a breakdown in communication between the various parties, the owner called Fisher Maritime to assist in regaining control over the project.

Fisher Maritime was required to immediately assess the status of the project from an overall perspective. It was readily apparent to Fisher Maritime that focusing solely on the primary shipyard's effort was precluding a complete assessment of the status of the overall project. To realistically assess the state of the project, each contributor's efforts, including the owner's, had to be scrutinized. A realistic assessment of the project was the first step in formulating a plan to bring the project under control.

Through a comprehensive understanding of where the weaknesses were with respect to satisfactory project performance, a plan was formulated to mitigate the damages being inflicted by those parties providing less-than-satisfactory project performance. The project ultimately was moved to a new primary shipyard in order to obtain better performance by removing uncompleted work from a host of non-performing parties.

#4 — A Supplier: A shipyard encoun-

tered significant problems applying coatings to a series of several new ships. The need to remove or repair and recoat a significant percentage of the coatings on the hulls, decks and bulkheads led the shipyard to assert a claim against the coating supplier, alleging the coating materials were defective products.

The shipyard had a fully-protected blast-and-coat facility in which much of the coating work was accomplished. Fisher Maritime's review of records led to the observation that nearly all of the alleged product failures occurred, however, to the coatings which were applied outside of the protected facility. Fisher Maritime also observed from a review of the supervisors' logs, the labor reports and other documents that the incidence of coating failures was clearly of greatest frequency during cold weather, and second-most frequent during hot, humid weather. Fisher Maritime's report identified the application of coatings onto steel that was colder than the air as a major cause of repeated occurrences of amine blush. Other sources of failures, in addition to temperature-related ones, were insufficient curing time between successive applications, and too much application to overcome shadowed areas. The matter was resolved by a negotiated settlement reflecting the shipyard's almost-complete withdrawal of its claim.

26 -- Specialized Contract Requirements for Super Yachts

The "Modern Yacht Conference" in Southampton, England in September 2003 was the forum for a presentation about how to contractually address the unique potential problems that have been arising in the design and construction of modern super yachts. Written by Dr. Kenneth Fisher of the Fisher Maritime Consulting Group, the paper identifies and addresses several emerging forms of risk and discusses how super yacht construction contracts can address those potential problems to minimize subsequent risks.

The paper, "Modern Contracts for Modern Yachts," illustrates that the expectations arising from relationships between designers, purchasers and builders within the modern yacht industry are significantly different from the comparable issues several decades ago. These differences often arise due to the yacht owner's participation in continued detailed design development after the contract has been executed. The differences also result from the expectations of the owners regarding comfort, amenities, interior finishing, vessel speed, and use of the latest technologies, as well as from the value of

owner-provided equipment and services that are incorporated into modern yachts. Such greater owner participation and expectations result in a greater array of risks that the contractor shipyard faces. In order to limit and contain those newer forms of risks, a modernized form of contract appears to be appropriate in order to

be more meaningful to the projects.

Copies of the Proceedings of the Modern Yacht Conference, including Dr. Fisher's paper accompanied by his screen presentation are available from the RINA in London (www.rina.org.uk).

27 -- Naval Architects Should be Indemnified Against Errors and Omissions

Professional errors and omissions insurance is commonly carried by our land-based brethren, the civil engineers. Naval architects designing vessels that are to be constructed sometimes do not carry this coverage; either they have no coverage or they may be a named insured under the shipyard builder's policy, since the design is part of the final product (the vessel).

In a recent product liability case, Fisher Maritime served as an expert in naval architecture and small craft design on behalf of a defendant naval architect. The incident centered around a fatality that occurred aboard a dinner/cruise vessel for which the naval architect assisted a shipyard with the design. In this situation, we demonstrated that the naval architect had committed no wrongdoing and was not responsible for the conditions which contributed to the fatality. However, lacking professional insurance, the naval architect had to pay for his attorney and related fees out of pocket. Had the naval architect been covered under the shipbuilder's policy or otherwise indemnified by the yard, the naval architect would not have had to face that financial burden.

In this litigious society, as attorney Bill DeGarmo once addressed a Maritime Product Liability conference, in our industry, it is not a question of whether or not you will be sued, it is just a matter of when you will be sued.

Since it is almost inevitable it will occur, attorney fees and costs will be incurred regardless of the final outcome which may find no liability on your part. Accordingly, steps should be taken to guard against the possible incurrence of such costs if and when you are named as a defendant in a lawsuit.

The lesson to be learned here is that naval architects must carefully review the terms of the design contracts they engage in, and if necessary, modify them to ensure that their insurance needs are covered. Business-wise naval architects, even one-man firms, often have a standard contract form for use in negotiating contracts with their clients, which form serves as a check list to ensure that all appropriate matters are addressed by the agreement executed between the parties. If the prospective vessel owner is the client, the contract can state that the vessel owner will not engage in a construction contract utilizing the architect's product unless the architect is indemnified under the builder's policy. Alternatively, if the builder is the architect's client, this can be addressed directly. Failure to address this issue most often does not create a problem. But when something goes wrong aboard the vessel in subsequent years, the naval architect may be named as a defendant, in which case he will regret not having arranged for such coverage.

28 -- Fisher Maritime Celebrates 32 Years

Finding why some things work out so successfully and others don't work out at all.

In 2008 Fisher Maritime celebrates its 32nd anniversary. Founded in 1976, it is a firm of maritime management consultants and analytical naval architects, marine engineers and marine technologists. It is widely known for resolving shipbuilding and conversion contractual problems and disputes, as well as for its expert witness services in many technical and operational areas of the marine industry. Having completed over 450 assignments during those years, Fisher Maritime has amassed considerable experience with clients on five continents.

As non-traditional naval architects, marine engineers and marine technologists, Fisher Maritime works in two primary areas. The first area is to provide project and contract management assistance and guidance to ship owners, shipyards and major subcontractors, especially when the contractual relationships are deteriorating.

The second and perhaps more interesting area is that the firm analyzes why, in the marine industry, some things work out so successfully and others don't work out at all. The type of problems they are asked to approach include contracts, general designs, detail designs, vessel operations, shipyard operations, economic planning, shipyard bids, shipyard planning, owner's specifications, contract plans and marine/facility environmental issues. The firm is focused on giving more high-level analysis to any and all ship or boat-related matters than is normally given in an engineering environment.

A major portion of Fisher Maritime's work is after-the-disaster analyses, including contract disasters and claims which result in extra costs and delays in shipyard projects, and physical disasters which result in property damage and/or personal injury. Fisher Maritime analyzes both types of disasters -- contractual and opera-

tional -- as well as provides advance planning in all areas to help clients avoid such potential disasters.

There is a theme common to every matter addressed by the firm. That theme is to seek what did not occur as planned; why did it not occur as planned; what should have been done to increase the likelihood that it would go as planned; and identify which party had responsibility to address the possibility that it might not work as planned.

The same form of analysis is used in advance planning to avoid possible risks. One of the more interesting aspects of this work is to identify potential risks that have little chance of occurring but, if they do occur, will have disastrous consequences on either a contract or an operation. By ensuring that the contracts and/or operational plans we develop for our clients have addressed such possibilities, the risks are reduced even further because we have gotten everyone watching out for them.

As an outgrowth of that work, Fisher Maritime developed and provides to the maritime industry several lessons-learned training programs. They include one for managing shipbuilding contracts (Fundamentals of Contract Management for Ship Construction), a second program is for conducting shipyard operations (Shipyard Management of the Customer and the Contract), and a third program is for the development and implementation of ship repair specifications (The Port Engineer's Course). Those training programs have been presented over 250 times in 14 countries to over 3500 representatives of more than 400 organizations coming from 24 countries.

A 20-page booklet describing over 60 of Fisher Maritime's more than 400 assignments is available upon request when a mailing address is provided via fax or email.



29 -- Emergency Response -- Restoring Contractual Relationships

A client ship owner was facing a small number of very large value change orders that appeared to be outrageously priced by the shipyard. Specifically, within the first two months during a major offshore conversion, two change orders totaling over \$4.2 million (about 20% of the initial contract price) were presented to the ship owner on a take-it or leave-it basis. Needless to say, the ship owner was extremely annoyed with the shipyard's change order pricing. Similarly, the shipyard was upset with the owner for questioning the price and administration of its change orders. The on-site relationship between the shipyard and ship owner quickly deteriorated on all matters, including the change order process.

Fisher Maritime was selected by the ship owner to stabilize the contractual relationship before further deterioration, and to then correct the misunderstandings that led to the nearly-irreconcilable situation. Working out of the ship owner's on-site office, Fisher Maritime's personnel brought a cool, professional approach to all the issues that were bringing the contractual relationship to the boiling point.

Within the next several weeks, Fisher Maritime analyzed and exposed the shipyard's erroneous pricing assumptions, leaving the shipyard no choice but to reduce the price on those two change orders to \$44,000 (one percent of their original value). The continuous back-and-forth process of discussing the factual and contractual information relevant to those two changes helped restore a working relationship between the ship owner and shipyard. FISHER MARITIME accomplished its task of restoring order by a cold, hard analysis of the facts as opposed to making self-serving, one-sided arguments for the sake of posturing.

Fisher Maritime routinely provides analysis of change order pricing issues. These analyses focus on contractual and technical facts rather than emotional and argumentative issues. Fisher Maritime's staff is comprised of professionals able to bring a quiet certainty to otherwise emotionally-charged project disputes. They have the requisite technical background and project management experience needed to stabilize the contractual relationships and rapidly defuse the most serious disagreements.

30 -- Lesson Learned: Use Fisher Maritime for Contract Preparation

A Fisher Maritime assignment involved project management and, later, litigation support on behalf of a ship owner embroiled in a major vessel construction dispute. Fisher Maritime had been engaged mid-way through the project to assist the owner's project management team in order to get the vessel completed as rapidly as possible without further delays and additional costs.

Once the vessel was delivered, Fisher Maritime reviewed and evaluated, in the challenge of litigation, the contract, specifications and plans along with the considerable correspondence generated by differing interpretations of owner and contractor. Senior consultants

from Fisher Maritime then presented expert testimony in the legal proceedings.

Subsequently, in preparation for another, larger and more-complex shipbuilding project, the owner obtained a draft contract as well as draft specifications and plans. As is often the case, each of these documents was prepared by different sources. The owner, already having learned a lesson, asked Fisher Maritime to prepare a review of the draft contract, specifications and drawings. The review revealed numerous inadequacies in the draft documents' language and inconsistencies between different documents. These were presented to the owner and the recommended corrections were imple-

mented, effectively eliminating a number of potential disputes before they ever had any chance to surface.

Maritime organizations do not have to go through such costly and burdensome learning

experiences to know to call upon Fisher Maritime for pre-contract reviews of the contract documents. Lesson learned: call Fisher Maritime if you are about to develop contract documents for a new or conversion project.

31 -- Arbitration Services

Fisher Maritime's senior personnel have provided arbitration services for a variety of contract disputes. These range from large passenger ship conversions to private yacht overhauls. Other arbitrations have included contract disputes between shipyards and their subcontractors pertaining to multi-ship Navy newbuildings as well as to single-ship commercial conversions. One arbitrated dispute involved a reinforced concrete vessel.

Fisher Maritime personnel are skilled arbitrators, having undergone training by the American Arbitration Association. We are able

to pierce through extraneous issues to identify the fundamental causes of the contract disputes. This is a result of our extensive consulting and expert witness services as well as arbitration experience. Because we also routinely prepare contracts and modify specifications to be consistent with the agreements, our personnel can identify each party's full set of contractual responsibilities.

Organizations needing arbitration services for shipbuilding or ship repair contract disputes can contact Dr. Kenneth Fisher at Fisher Maritime Consulting Group.

32 -- Two or More Words

If your current contract brings to mind two or more of these words or phrases, you need Fisher Maritime to assist your contract management team -- before more of the words become applicable.

- ◆ Disaster
- ◆ Inevitable
- ◆ Intransigent
- ◆ Unscheduled
- ◆ Mis-designed
- ◆ Never-ending
- ◆ Over Budget
- ◆ Unanticipated
- ◆ Overrun
- ◆ Out-of-Control
- ◆ Inconsistent Plans & Specs

- ◆ Erroneous Specs
- ◆ Inadvertently Omitted
- ◆ Non-functional
- ◆ Incomplete
- ◆ Disputes
- ◆ Late
- ◆ Too costly
- ◆ Claim
- ◆ Unrealistic
- ◆ Underbid
- ◆ Overlooked
- ◆ Litigation

Fisher Maritime's 32-years of experience providing such contract management support services are available. See the website, www.fisher-maritime.com.

33 -- An Ounce of Prevention

Just as a hurricane begins as small disturbances in the atmosphere, a shipyard claim may start forming without the owner being aware of it. Although curtailing the formation of a hurricane isn't possible yet, curtailing a full blown shipyard claim can be. Since hurricanes are not controllable, avoidance of its disastrous effects can only be achieved through early forecasting and positive action to brace for the storm. Sometimes shipyard claims may also seem inevitable. In fact, however, with appropriate management techniques, they are avoidable. The principles of claim avoidance are mainly the same as when dealing with a hurricane -- early detection of the conditions which breed them, and positive action right from the

get-go. It is in the interest of both the owner and the shipyard to avoid claims. Such claims typically result from a lapse in effective contract management by either or both parties. Fisher Maritime routinely provides, to both owners and shipyards, management consulting efforts to monitor the conditions which might breed a claim, and to recommend actions which can lead to the avoidance of one. If you are concerned about the possibility of a claim developing and appreciate the benefits of avoiding it, call Fisher Maritime to begin claim-avoidance procedures. This is what Fisher Maritime does best -- its primary mission is to develop and help manage ship conversion, repair and newbuilding contracts to avoid claims.



Marine and Offshore Shipyard Projects

When do you need Fisher Maritime Consulting Group?

When you need help with ...

<p>Contract Formation:</p>	<p>Fisher Maritime defines project-appropriate contracting strategies, as well as writes contracts, specifications, and complete bid packages for new construction, conversion, overhaul or repair. We also review and revise draft contracts and specs.</p> <p>Recent contract work included new construction on:</p> <ul style="list-style-type: none"> • Ice breaking research vessel • Off-shore construction and pipe-laying vessel • Self-unloading bulk carrier ITB
<p>Project Management:</p>	<p>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.</p> <p>Recent project: Multiple disputes between owner and shipyard about costs and schedule for conversion and re-flagging of a research vessel led to a breakdown in the project work. Fisher Maritime was installed by owner between its project staff and the shipyard to get the project moving ahead and completed, all within a renegotiated budget.</p>
<p>Dispute Resolution:</p>	<p>It takes many forms, from project-phase analysis through litigation. In every situation, we provide accurate assessments and incontrovertible analyses.</p> <p>Recent case: A platform support vessel lost all power while transferring drilling fluid to a moored drilling rig, causing multi-million dollar damage and downtime for repairs. Fisher Maritime analyzed the cause of loss of power to be the absence of certain design features on the PSV, resulting in a settlement in favor of our client.</p>
<p>Litigation Support:</p>	<p>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.</p> <p>Recent case: The alleged improper use of intellectual property rights by a vessel owner was challenged by a shipyard that had engaged in discussions with the owner, but was not awarded the contract. Fisher Maritime analyzed multiple design features to 'test' whether the constructed vessel had used the intellectual property of the first shipyard.</p>

For 32 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, ship owners, 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.

Call Dr. Kenneth Fisher, Capt. Richard DiNapoli or Mr. Bert Bowers: +1 973 660 1116



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