

"Home-made" Ship Refit Planning The Recipe Misses Key Ingredients

A small ferry operator decided that the 'expensive' services of a firm of consulting naval architects and marine engineers was not needed to accomplish a one-for-one replacement of the twin medium speed diesel propulsion engines and other components of the propulsion system. The organization's maintenance staff and port engineer believed that they could work with suppliers to figure out what was needed, and to then instruct a shipyard what it was to remove and install. This was, essentially, catalogue shopping. Through discussions with the manufacturers of three major components, the organization selected the pairs of engines, torsional couplers, and reduction gears to be used as replacements for the older equipment. The replacements were provided as owner-furnished equipment. The operator planned to use the existing tail shafts and propellers.

When the older equipment and associated distributive systems were removed, the selected shipyard began to install the major replacement components. However, due to the limited size of the machinery space, the input flange of the torsional couplers could not mate with the output flange of the diesel shaft; there were interferences between those two elements of machinery. Delays were incurred while the owner's team contacted the engine manufacturer and the torsional coupler manufacturer to resolve the interferences.

A delay of several days passed, with an associated work stoppage, before an acceptable solution was proposed by the coupler's manufacturer. The solution led to the installation of the equipment, but future maintenance and servicing of the modified coupler would be more difficult than if the modification had not been necessary. The cause of the problem was a lack of dimensional checks in advance of ordering the equipment.

The installation of the new components was continuing when the classification organization made an appearance. "Where are the torsional vibration calculations?" the classification organization asked. Having 'missed' that aspect of renewing

Celebrating 40 years!

In May 2016 Fisher Maritime Consulting Group celebrated its 40th anniversary. Over a period of four decades, the firm has provided multiple forms of consulting services to ship owners, shipyards, government agencies, major suppliers, other consultancies, subcontractors, financial organizations and law firms from over 24 countries on five continents. The staff regularly provides analyses of shipyard projects that have not met performance expectations (e.g., budget overruns, quality deficiencies, late completion). The firm often prepares either shipyard claims presented to the owners, or rebuttals of shipyard claims on behalf of ship owners. Supplementing those efforts, we also provide expert witness services for contract disputes (ship construction, repair, design) as well as for collisions, allisions, and other subjects.

Along the way, the staff has authored a number of significant publications distributed by professional organizations. The three training programs that were developed by Fisher Maritime have been presented over 400 times world-wide to more than 5,000 persons, with the most frequently requested program being "Contract Management for Ship Construction, Repair and Design."

Dr. Kenneth Fisher, the founder of the firm, remains as the active head of the organization, though other staff have longevity of over 25 years. Dr. Fisher is also called upon to serve as arbitrator and mediator for contract disputes, usually being the neutral chairman. The firm's website provides additional information about the services and the training programs, as well as access to many of the publications: www.fisher-maritime.com.



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the propulsion plant, suddenly there was great concern that the ferry might not be able to operate at planned speed and propeller RPM. Further delay was incurred while naval architects and marine engineers were retained to perform the torsional vibration calculations to compare potentially hazardous natural frequencies to the intended propeller RPM. Fortunately, there was no conflict. But if there had been conflict, physical changes would have been needed to modify the torsional natural frequencies.

Other problems had arisen as well. The remote monitoring of the new equipment required analogue-to-digital converters for some of the sensors. The location of those separately-provided A-to-D converters had not been addressed in the technical specifications. The owner wanted the converters in the environmentally-protected engineer's control room; the shipyard wanted to place them adjacent to the equipment. The issue was the matter of how many cables had to be run all the way to the control room through watertight bulkheads and decks: two co-ax cables or 26 signal cables. This dispute was resolved with the aid of an outside mediator (Dr. Fisher) who, predictably, said: “Let's read the contract”. Since the placement of the converters was not addressed by the contract documents, the shipyard had a valid perspective that it would be allowed to use a least-cost solution that was compatible with the manufacturer's installation instructions. A change order was negotiated to achieve the owner's preference.

The Importance of Reviewing Draft Contracts

Dr. Fisher's summary analysis of this project was that it typifies attempts to save money on the front end of planning and executing a project. Such actions are short-sighted and rarely pay off, as they are most often the precursor to unexpected costs and delays later on, far exceeding the initial savings and having adverse schedule consequences. The use of well-experienced firms to perform a quality assurance review of draft contracts (including the specifications) minimizes those types of problems.

A decision to save costs on the front end of a project is an example of project mis-management, in which prayers and hopes are used in place of thoroughly-planned, logical and well-engineered solutions. The perspective of “We think this will work out satisfactorily” or “This should work out quite well” is never an adequate substitute for “This has been thoroughly engineered and double-checked by an appropriately experienced team of professionals.” ▲

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Owner's Mismanagement of Owner Furnished Equipment Obligations Shipyard Nominates Dates for Arrival

A constructive contract change develops when the owner's organization fails to adequately manage its contractual obligations after the contract was executed, thereby being late in providing information (including decisions), materials, equipment and/or services to the contractor on a timely basis.

The contract specifications clearly stated that the owner would provide the new steam table and bain-marie that was to replace the existing equipment in a passenger ship's galley. The specifications for the 30-day overhaul also cautioned the shipyard to not remove the old steam table and bain-marie until the new ones arrived, so that if the new ones did not arrive on time, the ship could sail with the old ones in place. The contract documents did not provide a specific date for arrival of the replacement galley equipment, but did require the shipyard to provide the owner with a detailed schedule that nominated the dates by which the shipyard wanted the replacement equipment. The shipyard nominated day 14 for the latest receipt of the replacement galley equipment; and the owner never responded to that nominated date.

The equipment arrived on day 26, only four days before the ship was to sail. The shipyard worked around the clock for three days to cut open the bulkhead for access (the equipment was too large to move through the doorways), dismantle other galley equipment that was in the way, remove and replace the designated galley equipment, reassemble the interfering galley equipment, restore and repaint the bulkheads, connect and test the new galley equipment. For the shipyard, having to undertake the galley work in such a hurried manner, all because the owner did not control his vendor to ensure timely delivery of the equipment to the shipyard, caused the total expended man-hours on that renewal to far exceed budget. This occurred because of the extraordinary overtime requirements, multiple shift requirements, concurrent use of multiple trades in the same spaces, causing production inefficiencies, non-productive stand-by time, and rework of already completed insulation and painting.

Note that sometimes the owner's failure to take timely action causes the shipyard to execute the work of a particular task in fragments, rather than in a continuous manner, such as when an owner timely provides the equipment for installation but fails to timely provide the vendor's technical representative who is supposed to be there to oversee installation. Having to send production workers to the site of the installation to first “land” the equipment and to come back later to install it creates an inefficiency of the total labor budgeted for that item. The owner is thus responsible for the extra, indirect effects of the inefficiency that was created by the owner's mismanagement of the arrival of both the equipment and the field service representative. ▲

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Rules-of-Thumb for Vessel Owners

Planning and managing vessel refits and upgrades

Here are Fisher Maritime Consulting Group's seven "Rules of Thumb" for vessel owner's to utilize when planning and executing shipyard projects for existing vessels. The objectives are to minimize the growth of cost and schedule of shipyard projects.

Rule No. 1—Professional Resources. Do not underestimate or underspend on considerable appropriate professional resources required for planning the job, writing the specifications, preparing drawings, and for repairs and conversion, ensuring the specs and plans are consistent with the existing vessel. (This is the wrong time to look for cost savings by using only the ship's crew, too-few professionals, or those who have little directly-relevant experience with your type of vessel.)

Rule No. 2—Engineering & Design. Never expect a shipyard to perform engineering and design that will result in an operationally-satisfactory vessel – that is the responsibility of the specification writers. (Shipyards always look for least-cost solutions at every opportunity that are more-or-less consistent with ambiguous specifications.)

Rule No. 3. Avoid Owner-Furnished Equipment — One of the quickest means of losing control of a project is to include OFE. (Besides placing a bigger burden on the Owner's project staff, the Owner becomes responsible for the consequences of late-arriving OFE; and expectations of cost-savings are not realistic.)

Rule No. 4—Shipyard Selection.

Select a shipyard based on its proven recent experience in the accomplishment of similar projects. (Avoidance of repositioning a vessel to a more distant shipyard should never be the basis for selecting a more-local but less experienced shipyard.)

Rule No. 5—Pre-contract Inspections. For conversions and upgrades, the extra costs of seemingly excessive pre-contract inspections will constitute a net savings. (Planners for ship conversion always make excessively optimistic assumptions about the condition of existing components when they are not given sufficient time for inspections.)

Rule No. 6. On-site Representatives. For conversions and upgrades, owners need more on-site professional representatives than for ship repair. (The small team appropriate for ship repair projects is never sufficient for dealing with the myriad of questions, decisions and inspections that arise during conversion and upgrades.)

Rule No. 7. Vessel Crew. Do not use vessel crew as owner's inspectors at the shipyard without first 'converting' them to professional inspectors. (Vessel crew members try to extract from the shipyard a vessel they want to operate instead of the vessel defined by the contract specs and plans.)▲ ©2016 Fisher Maritime Consulting Group



Planning and Contracting for Shipyard Projects

Defining Contractual Rights, Responsibilities and Obligations

"We have all heard of disasters involving ships, ships that have run aground, broken in half in severe storms, impacted vehicular bridges in fog, or even experienced fires. But there is another form of disaster involving ships; namely, contractual disasters, situations in which the shipyard and shipowner are both terribly harmed due to mismanagement of the shipbuilding contract." Trevor Blakeley, CEO, R.I.N.A.

When ship owning organizations begin planning a major shipyard project (construction, conversion, mid-life refit), the planning process should commence by initially focusing on the pre-contract elements of the project. Key to the success of the project is an appropriate selection of the consultancy that is going to prepare the draft technical specifications and the draft contract drawings. The selected consultancy, preferably, should be one that has recent, directly relevant experience.

It is recognized that the specifications and plans will be implemented through a contract between the owner and shipyard. An excellent technical plan from the selected

consultancy will not guarantee a successful project if the rights, responsibilities and obligations of the parties are not well defined and effectively managed. Fisher Maritime has been called upon on numerous occasions to prepare the bid packages and contracts that incorporate the specifications and drawings drafted by other consultancies. The special skills that Fisher Maritime brings to those projects is the comprehensive definition and smooth integration of the contractual rights, obligations and responsibilities of both parties. Often, as part of this process, Fisher Maritime also prepares a quality assurance review of parts of the technical specifications, using its knowledge of past contractual problems to "tighten" the specifications, minimize ambiguities, and eliminate internally conflicting language.

If your organization is embarking on a major shipyard project, send an email to Fisher Maritime inquiring how we can assist in setting up the project so that there is smooth integration of the bid, contract, and technical elements of the entire package. Please address inquiries to email@fishermaritime.com.

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the Maritime Industry
Mid-2016



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The Management of Shipyard Projects

Any project at a shipyard is certain to involve a complex relationship between the Owner's and Yard's organizations, as well as multiple supporting organizations. Cost controls, schedule impacts, changes, unexpected conditions aboard the vessel, engineering problems, and supplier delays, among many other factors, create a very challenging situation for all parties. To obtain more insights into the management of these many types of problems, consider reading the on-line articles and papers that are available at the Publications section of the Fisher Maritime website: www.fishermaritime.com

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Contract and Change Management for Ship Construction, Repair and Design. This 3-day course is designed for all members of the contract management team for ship owners, shipyards, design firms, vendors, subcontractors, regulatory agencies, whether commercial or government. Senior and middle management of all those types of organizations benefit from

the "lessons learned" approach to managing all contractual commitments.

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London, UK	Wed.-Fri.	Nov. 2-4, 2016
Tampa, FL, USA	Tues.-Thurs.	Dec. 6-8, 2016

The Port Engineer's and Owner's Representative's Course. This 3-day course is designed for shipowner's personnel who prepare specifications, who accompany the ship to the shipyard, and who arrange for new/growth/change work during contract performance. This course helps assure getting maximum value for money spent. Presented in-house only. Contact Fisher Maritime for details.

Shipyard Management of the Customer and Contract. This 2-day course for project managers, production supervisors, estimators and planners is the only training program specifically developed for mid-level managers of shipyards and subcontractors. Presented in-house only. Contact Fisher Maritime for details.