

Contractual Information Flow

Content, Form, Timing and Purpose

Shipyards projects, whether for repair, conversion or new construction, entail a considerable number of exchanges of information between the contracting parties. Nearly all of these 'information flows' are anticipated and addressed in the contract documents. Often, however, the full set of obligations pertaining to those information flows are not completely addressed by the contract documents, leading to misunderstandings or other undesirable results. When contract documents, including specifications, are being developed, it is important to bear in mind that there are four components of information flow to consider, each of which is discussed in more depth in the following sections: (a) content; (b) form & format, (c) timing; and (d) intended use.

Information Content

Information content is a fairly easy concept to define. The basic question that covers content is "What information is going to be transmitted to the other party." However, deciding on content is not without its pitfalls. For example, be wary of content conveying information exclusively by the use of colors. Many junior designers and engineers are proud of their ability to convey information using color. With the wide availability of color printers and monitors throughout the industry, it is easy to give in to the temptation. However, one must be sure that the information being conveyed will survive black-and-white copying.

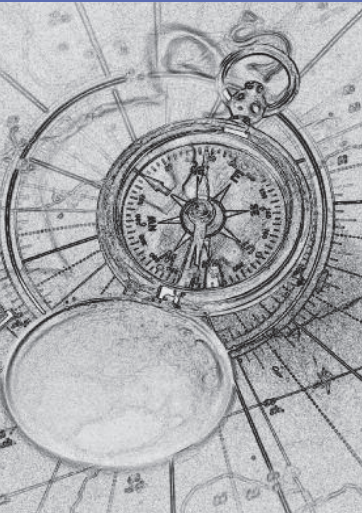
Consider the following example that illustrates this point: A ship was being converted and reflagged. Part of the work required installation of several new bulkheads of differing fire ratings. The designers indicated the fire rating of each bulkhead through color coding—blue, red and green. When the shipyard received this information, it made black-and-white copies and handed them to the production department so they could begin installing the bulkheads. On the copies, all

of the bulkheads appeared to be rated 'A15' since they were all gray. The error was not noticed until the Coast Guard's inspection of the vessel toward the conclusion of the project. In the end, the shipyard had to complete a number of last minute modifications at significant cost and also deal with the associated project delay.

Information Form & Format

When considering form and format, modern information flow centers on questions such as "In what form will the information flow?" and "Should the information be transmitted by hard copy or electronically?" In the present age, keep in mind that simply specifying 'electronic' is also no longer sufficient. For example, after contract award one shipyard requested electronic copies of the contract drawings. The owner's design team obliged by sending the drawings electronically in portable document format (PDF). The shipyard anticipated receiving the drawings in a form that would be amenable to using them in computer-aided design format (CAD) so they could use them as jumping off points for their detailed design development. However, format had not been addressed in the contract. When the shipyard later requested CAD files, the owner's design team refused to turn over the documents in that format over fear that they would lose control of changes to the design.

Also worth bearing in mind during this discussion is the fact that there will likely be a least two contracts involved in a given ship construction project. There will be the contract between the ship owner and the design firm, as well as the contract between the ship owner and the shipyard. As one can see, consistency in the form of information between contracts is essential to avoid issues downstream. For electronic information, the defined format should also specify the particular application and version with which the information should be compatible.



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Information Flow Timing

Consideration of information flow timing is best addressed by asking the question, “If there's going to be information flow, when should it occur?” For example, specifications will often state that the shipyard must provide megger readings for all the newly installed electrical cables. While this may be desirable information for the owner, in a recent contract, there was no statement as to when it should be transmitted. Later on, the shipyard began installing the cables and taking the required megger readings for this first batch of cables. However, the owner did not promptly collect the readings. As the project progressed, the shipyard stopped taking megger readings as a cost saving measure. Subsequently, as the ship was getting ready for trials, the owner's project team noticed that they had only few megger readings on file. When the owner requested the readings from the shipyard, the shipyard replied, “We have some here. As for the rest of the megger readings, don't worry about it—energizing the circuits is equivalent to taking megger readings.” This all comes about because the owner had not specified when the megger readings should be delivered, nor did they track the receipt of readings on their deliverables checklist.

Intended Use of Information

The impact of a transferred element of information's intended use is best described by the question, “What is the intended use of the information that is going to be transmitted to the other party?” Often times during our firm's quality assurance review of design packages, we find that the lines plans have been developed by the owner's design team, as well as the powering plans and speed. Subsequently, each of these three items is incorporated into the draft contract or specifications. However, imagine for a particular example that the contract documents state that the shipyard shall install a 12,000 horsepower (HP) power plant for a particular lines plan for a 22-knot service speed. In this example, who is guaranteeing that 12,000 HP will produce the requisite speed for this particular lines plan? The owner has to decide whether the shipyard should be responsible for speed or for the 12,000 HP because the two may not be exactly consistent. In terms of intended use, consider why the shipyard should be given the speed information. Will speed be a contractual requirement, or an assumption for planning and testing purposes?

Alternatively, the owner may say that for bidding purposes, the shipyard should assume a 12,000 HP power plant. However, before the shipyard builds the ship, the owner will require the shipyard to do model tests to ensure that the design will achieve the desired speed. Should the tests find that more than 12,000 HP will be needed; a change order will then be

negotiated to make sure that the ship achieves this speed.

Another example of entities failing to consider information's intended use centers around a shipyard that was building an Antarctic supply ship. The owners knew that the draft of the ship couldn't be more than a certain amount. However, they also wanted to carry a full load of supplies to some ports in the Antarctic at a certain time of year. When all was said and done, the ship exceeded the draft, which meant that from time to time another vessel would have to be chartered to make an extra voyage to the Antarctic—a very expensive proposition.

The owners later assigned this author's firm to determine if the shipyard was responsible for the excessive draft of the vessel. However, when the contract history was examined, it was found that the shipyard was only required to report the light ship weight as they developed the ship. The responsibility for reporting the draft actually rested with the owner's naval architect. Compounding matters, the increased draft came about because of change orders during vessel construction from many of the project's stakeholders. These changes increased the light ship weight and, consequently, the draft. The shipyard's responsibility was not to report the draft, only the light ship weight. However, the owner's team did not follow through with its own analysis of draft based on the available hydrostatic curves. The problem was that the technical specifications did not assign the shipyard to use the combination of weights and hydrostatic curves to determine the draft.

Summarizing Information Flow

These descriptions and examples demonstrate that it is essential that the contracting party requiring information flow from the other party define, within the contract documents, all of the key elements of such information flow. The lack of inclusion of clear definitions of content, timing, form, format and intended use of the information creates unnecessary risks that may be harmful to the outcome of the project.▲

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Rules-of-Thumb for Vessel Owners

Planning and managing vessel refits and upgrades

At the May 2013 meeting of a committee of the US Maritime Law Association, Dr. Kenneth Fisher of Fisher Maritime Consulting Group described seven **Rules of Thumb** for vessel owners to utilize when planning and executing shipyard projects for existing vessels. The objectives of the following succinctly stated seven rules 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.)▲

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LESSON LEARNED #57:

Promises, Prayers and Performance

A shipbuilder accepted a contract for the construction of a vessel with a fairly short delivery date that would 'challenge' the ability of the shipyard to produce all of the steel modules within the necessary schedule. The shipyard subcontracted the construction of several bare steel modules with a second shipyard that represented it could achieve completion of the modules within the allotted time. Upon commencement of the project, it was learned that the subcontractor shipyard had laid off most of its production workers due to market conditions, and could not re-establish production rates quickly enough to meet the module delivery dates. The late completion of those modules had significant schedule and cost impacts on the completion of the vessel.

The lesson learned: This is an example of mis-management; that is, making decisions based on hopes and prayers rather than fact-gathering and careful analysis. At times, a promise from another party appears to be the solution to a developing problem, thereby encouraging the blind acceptance of that promise. Organizations should not allow another's unsupported promises and their own prayers to be a basis for a 'solution' to challenging problems when effective performance is at risk.

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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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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.