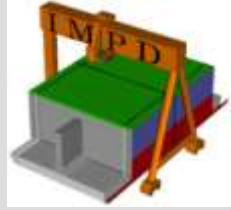


## NSRP

**Ship Design and Material Technology Panel  
Seattle Meeting June 22 and 23, 2011**

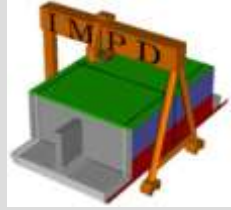
# SHIPYARD'S REQUIREMENTS FOR DESIGN AGENTS/MARINE CONSULTANTS

**Thomas Lamb  
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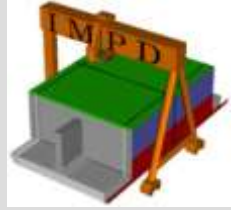
## THOMAS LAMB BACKGROUND

- Over 50 years in shipbuilding industry.
- Worked mainly in shipyards but also for periods in marine consultants.
- From Shipwright apprentice to Naval Architect to Vice President Technical.
- Never used a design agent until I came to USA in 1966.
- In US shipyards I have used most of the large design agents many of whom are no longer around.



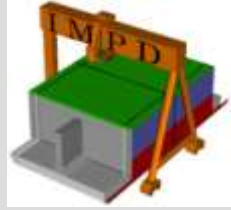
## INTRODUCTION

- How many of your companies use design agents?
- Of those, how many of you are completely satisfied with the performance of the design agent?
- How many of your companies have a formal document that transfers important shipyard information and shipyard requirements to design agents?



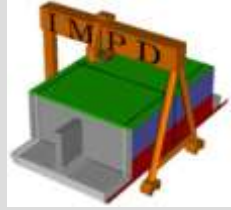
## INTRODUCTION (Continued)

- Of over twenty experiences with design agents I was only 100% satisfied once and that was just for the technical aspect with one design agent who is no longer in business.
- Even in this case they were late delivering the work and they went way over budget and we had to bale them out.



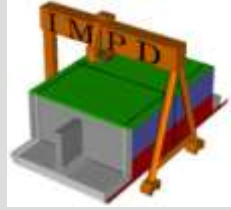
## BACKGROUND (Continued)

- A number of shipyards have complained to me about how dissatisfied they are with working with design agents.
- It seems that we have almost the same problems today as we had in the past.
- My own experience with design agents over the years include:
  - Over budget,
  - late delivery,
  - incomplete work,
  - deliverables unsuitable for Production Workers
  - some even would not do what I wanted them to do



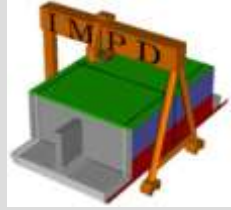
## BACKGROUND (Continued)

- Design agents often tell me the shipyard is not definite and detailed as to what they want. They do their best to satisfy the customer. But it is often not until a lot of the work has been done and some deliverables submitted to the shipyard that they are told what the shipyard really wanted.
- Some shipyards take the attitude (especially those with very small in-house engineering capability) the design agent is the design and engineering substitute department and they should know what we need and want.



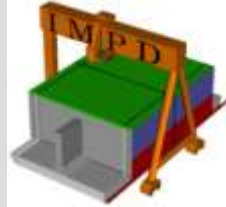
## BACKGROUND (Continued)

- Why is this and who is to blame?
- I believe it is because of lack of communication.
- So both parties are to blame.
- It is the shipyard's responsibility to clearly describe their requirements and expectations from the design agent.
- It is the design agent's responsibility to keep asking the shipyard its requirements until clear.
- Especially as the extent of what is now considered engineering has significantly expanded



## BACKGROUND (Continued)

- I was faced with this situation in 1972 and was determined to preventing it happening again to any project I was associated with.
- So I developed Shipyard Specification (what today may be considered part of a Shipbuilding Policy/Build Strategy) and General Purchase Requirements for Design Agents, including a very detailed list and check-off sheets (Next Slide). I also developed and used a drawing Planning & Control Sheet shown in next again slide
- The Shipyard Specification was a complete description of the Shipyard and its capabilities as well as a description of how I wanted the Engineering to be prepared.



# BACKGROUND (Continued)

# DRAWING CHECK OFF LIST

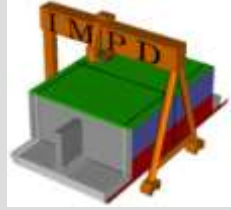
DRAWING CHECK OFF LIST				
WO/CC NO:	DWG. TITLE:			
NAVSEA DWG. NO:				
PREPARED BY:	CHECK BY:	PREPARED BY:	CHECKER:	RE-CHECK:
	DATE:			
<b>ENGINEERING REQUIREMENTS - SYSTEMS - PIPING</b>				
<b>TECHNICAL ADEQUACY</b>				
Are signed & dated calculations to support design provided?				
Are all specified design criteria met?				
Has system design been integrated with other systems?				
Are specified shock requirements met?				
Are specified noise requirements met?				
Are specified tightness (integrity) requirements met?				
Does the design incorporate allowance for thermal and stress expansion and contraction?				
Are flow velocities and pressure drops shown?				
Are hoses of sufficient length for deflection?				
Are interface requirements with other systems met?				
Are all applicable portions of contract specifications met?				
Are all applicable BAT standards identified?				
<b>DRAWING ADEQUACY</b>				
Is piping arrangement IAW design diagrammatic?				
Are bulkheads correctly numbered?				
Are all compartments identified?				
Are take down joints provided as required?				
Are insulation and lagging requirements met and shown?				
Are correct materials used (MIL-STD-777D)?				
Are correct fasteners used?				
Are torquing values given when required?				
Are drains provided in low points of piping?				
Are vents provided in high points of piping?				
Are specified pipe slope requirements met?				
Is latest certified equipment information used?				
Are equipment connections correct?				
Is gage piping and instrumentation provided?				
Is operating gear provided where required?				
Are directional flow arrows shown?				
Are bridge wall markings for globe and angle valves shown?				
Are horizontally mounted swing check valves arranged in fore and aft orientation?				
Are valves properly indicated NC or NO?				
Are damage control & closure classifications shown?				
Is spot facing for bolt heads and nuts shown?				
Are all pipe sizes shown?				
Are all pipe transition sizes shown?				
Are all joints requiring special mating flanges shown?				
Are relief valve pressures indicated?				
Are regulating valve pressures shown?				
Is the location for remote operators shown?				
Are all valve extensions shown?				
Are capacities of system tanks, receivers, etc. shown?				
Are the system cleaning requirements shown?				
Are the system test requirements shown?				
Is a symbol table provided?				
Is an equipment list with materials shown?				
Are pump performance curves shown?				



# BACKGROUND (Continued)

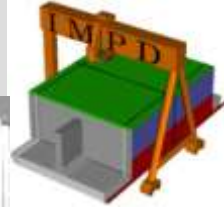
# DRAWING PLANNING & CONTROL SHEET

FORM 4.1		DRAWING PLANNING & CONTROL SHEET		
JOB NO:	EVENT	DATES		
		SCHED	ACTUAL	
WO/CC NO:	START			
NAVSEA DWG NO:	COMPLETE			
DWG TITLE	CHECK			
	RELEASE FOR APPV.			
DRAWN BY:	DATE:	APPROVAL		
CHECKED BY:	DATE:	ISSUE TO YARD		
DRAWING SCOPE				
SECURITY CLASSIFICATION:				
AUTHORITY:				
TYPE:				
SHOWING:	ABN: YES <input type="checkbox"/> NO <input type="checkbox"/>			
SHEET SIZE:	PARTS LIST: YES <input type="checkbox"/> NO <input type="checkbox"/>	PART NUMBERS: YES <input type="checkbox"/> NO <input type="checkbox"/>		
SCALE:				
APPLICABLE SHIP SPECIFICATION SECTIONS OR CDRL ITEM				
APPLICABLE MIL SPEC/STDS, NAVSEA DDS OR DRAWINGS				
REFERENCE DRAWINGS				
TECHNICAL/DESIGN INFORMATION REQUIRED				
ITEM	ORIGINATOR	REQD DATE		
MAJOR EQUIPMENT INVOLVED				
ITEM	PURCHASE SPEC NO.	YFI REQD DATE		



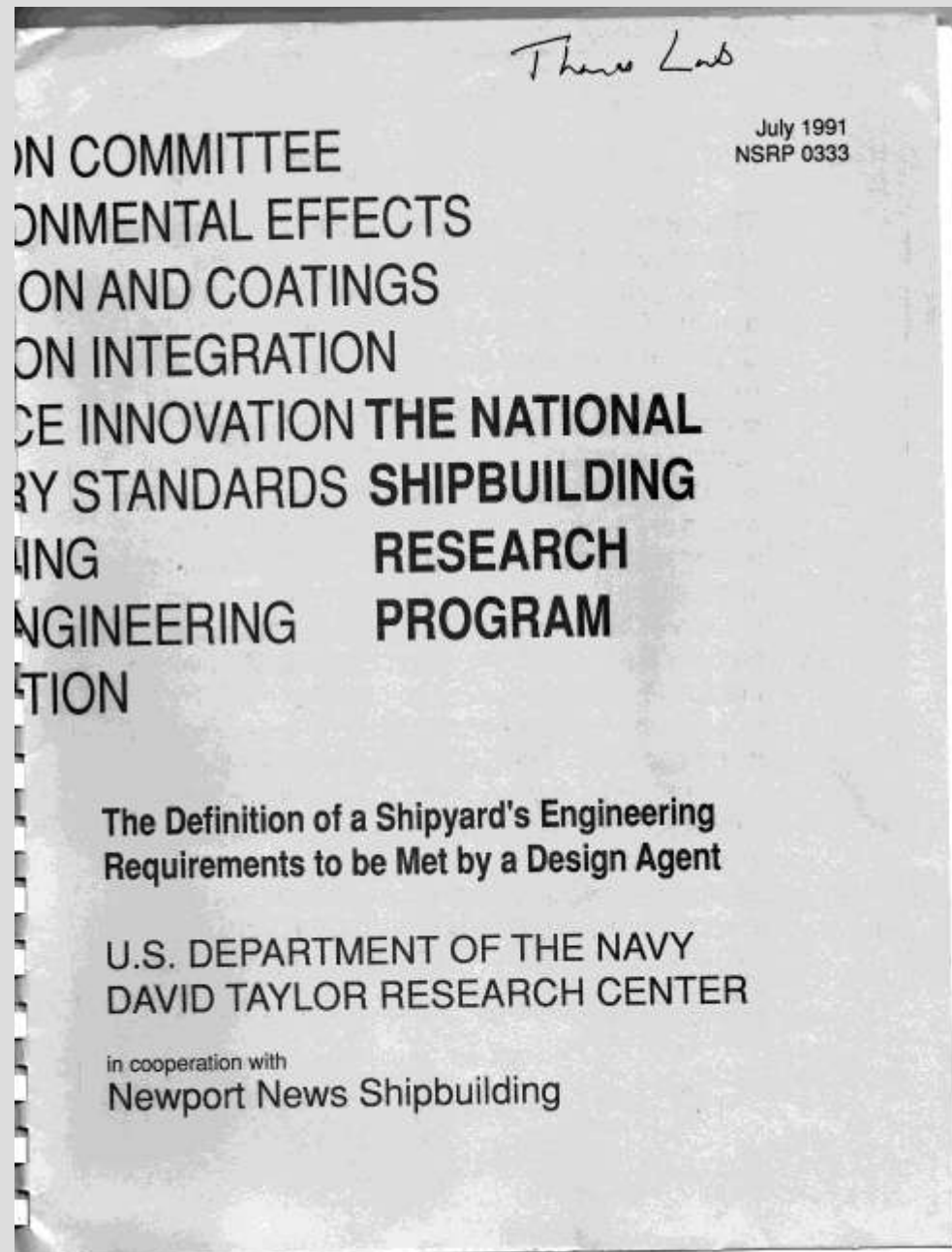
## BACKGROUND (Continued)

- In 1987 I proposed that the subject be an Project Proposal in the then NSRP 04 Design Panel.
- It was approved and a team led by Jim Wilkens were awarded the project.
- The final report on the project was issued by NSRP, **THE DEFINITION OF A SHIPYARD'S ENGINEERING REQUIREMENTS TO BE MET BY A DESIGN AGENT**, NSRP 0333, July 1991. It covered survey with 8 shipyards (including the one I was at) and 5 design agents.
- I shared my experience over 15 years with the team



# BACKGROUND (Continued)

## NSRP REPORT

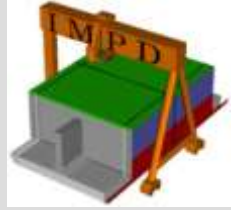




# BACKGROUND (Continued)

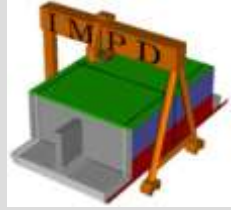
## NSRP REPORT CONTENTS LIST

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5.2	Questionnaire Structure- Second Level
5.3	Questionnaire Instructions
5.4	Questionnaire Follow-up
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6.1	Responses
6.2	Additions
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7.2	Required Data
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8.6	QA Plans
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9.3	Current Contract Review
	Appendix A Tabulated Summary of Questionnaire Responses
	Appendix B The Engineering Support Services Contract Checklist



## BACKGROUND (Continued)

- As I left the shipbuilding industry in 1995 to join the University of Michigan I had no way to know if the approach was developed by any shipyard, if the report was well received or if it is just collecting dust on many shelf or in many file cabinets.
- However, recent discussions suggests that it is not being used at this time.
- I have been told of one design agent that refused to prepare production oriented work station drawings – would only provide the traditional systems drawings.



## BACKGROUND (Continued)

- I suggest it would be worthwhile for both shipbuilders and design agents to dig it out and look at it in detail.
- Of course the requirements would have to be updated to reflect modern shipbuilding methods and the resulting engineering changes, such as engineering production documentation being prepared to support block construction, advanced outfitting and zone outfitting.



## CONCLUSION

- It appears that there is still general dissatisfaction of design agent performance at least from some shipyards point of view.
- The major problem in the past has been because of incomplete communication of the shipyards needs and the design agents submissions and it is probably still the cause.
- Even though the shipyard has the responsibility to clearly describe what it needs and expects from the design agent, the design agent has the responsibility to make sure that it gets it from the shipyard.