

We have extracted the following topics for planning Crosscut interaction with other panels and proposal development to help achieve key SIP and FY-08 special interest area topics. Collaboration via joint panel meetings, Crosscut involvement in project planning and conduct, Crosscut led projects that include shipyard production and engineering liaison, and other actions are suggested.

| # | SIP or FY-08 Special Interest Area | Industry Situation or Need | Crosscut Level of Effort Synopsis |
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| 1 | <p>Early Stage 1. Collaboration - NSRP Special Interest</p> <p>Focus on work organization and training</p> | <p>Design for producibility tools do not yet include sufficient work and job breakdown descriptions steps and key points for jobs to achieve shipbuilding and repair in terms of knowledge, skill and abilities.</p> <p>Production supervisors and team leaders are a wealth of ideas to improve job methods.</p> <p>Crosscut panel functions are not normally included in early stage research or project design-planning.</p> | <p>Develop a more extensive network of design, engineering, production, and management folk interested in people issues. (Crosscut Resources Center)</p> <p>Develop methods and collaborative practice to include approaches to organize, and manage supervision and work teams beginning in the early design phases by concentrating on work breakdown details.</p> <p>Implement methods to determine and close technical and process skill gaps. Optimize design and processes for cost-time-quality-safety in people functions: automation, material handling, machine-aided, and manual craftsmanship.</p> <p>Suggest MITL/Panel Chair one-day conference with consideration of developing NSRP ASE RA project</p> |
| 2 | <p>Design for cost: long term strategic sourcing - NSRP Special Interest and SIP</p> <p>Focus on workforce pipeline and recruiting sources</p> | <p>Industry lacks coordinated strategic workforce development system. Practice is to “steal” workers for small cash raise. Many strong shipbuilding areas are in heavy competition with other industries for good workers.</p> <p>Looming retirements exacerbate situation.</p> | <p>Continue and expand efforts to research best practices to recruit new employees through media-marketing, career day, shipyard-college connections, and additional inter-shipyard consortia efforts. More emphasis on alternate careers for women, minorities, legal immigrants. Emphasis on developing a clear and agreed generic career path.</p> <p>Develop methods to attract welders from high unemployment areas in non-shipbuilding areas.</p> <p>Proposed Panel Project – Gebhardt lead. This project can be expanded to a multi-year ASE-RA project to get enduring results.</p> |
| 3 | <p>Design for cost: long term strategic sourcing - NSRP Special Interest</p> <p>Focus on incumbent workforce retention</p> | <p>Turnover is high in some shipyards. Cost of turnover is nominally the annual wage per person in lost productivity and cost of preparing the replacement.</p> | <p>Plan and conduct organization culture assessment and improvement. Teach “older generation” and emerging supervisors/managers to be better job coaches.</p> <p>Find best ways to include temporary and teaming</p> |

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| | | Influence of immediate supervisor is major factor in retention. | <p>shipyard workers in high-performance teams. Raise morale so incumbent shipbuilding and repair employees are more active in recruiting and retention efforts.</p> <p>All panel or joint panel meeting presentation and workshop</p> |
| 4 | Commonality and Standardization, Workforce interoperability for virtual shipyard - NSRP Special Interest | The industry does not have agreed job terminology, work breakdown standards for common jobs, or skill portability (usually requires time consuming and costly recertification). | <p>Crosscut and ship production panels collaborate to revitalize skill standards database. Conduct intentional pilot and development programs with shipyards working now in consortia or teaming business relationships then share best practices</p> <p>Special joint panel project to be designed</p> |
| 5 | Process excellence - NSRP Special Interest Role of supervisors in processes | Missing a generation, need to train new supervisors and leaders. Key skills: How to do on-the-job instruction How to improve job methods How to foster good job relations | <p>Adapt proven WWII Training Within Industry program (TWI) for shipyard use as a supervisory benchmarking and improvement tool.</p> <p>Proposed Panel Project – Gebhardt lead. This project can expand into an NSRP ASE RA effort to develop improved methods for job breakdown for both training and job method improvement (core of lean) and improved methods to develop local programs for training resulting from new technology/tech transfer and people-technical problem solving</p> |
| 6 | Commonality and standardization – Modularity - NSRP Special Interest Focus on area management of modular or zone work | Work organization remains too hierarchal in some shipyards. Global best emphasize area management where multi-skilled high-performance teams use best technology available to achieve better cost-time-quality-safety results. | <p>Design and conduct pilot projects that achieve improved area management. Key is modular/zone: identity, worker relationships, and open, rapid access to information.</p> <p>Special joint panel project to be designed: PDMT, Production Processes, Business Processes, Facilities-Tooling and Crosscut</p> |
| 7 | Education and Training (SIP) – Focus on Entry level workers | <p>Shipbuilding and Repair industry has little common entry level curriculum for use by community colleges and technical high-schools.</p> <p>Many shipyards do not have formal or internal apprentice programs.</p> | <p>Continue efforts to build collaborative relations between shipyards and community colleges. Basic concept is to use DACUM process (Developing A Curriculum) that matches educators with shipyard subject-matter experts. Curriculum that is not proprietary or classified can be</p> |

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| | | | <p>uploaded from shipyards to community colleges, then cross-loaded to other colleges for download to learners in other areas.</p> <p>A generic apprentice program system can be developed.</p> <p>Proposed panel project – Tidewater Community College lead</p> |
| 8 | <p>Education and Training (SIP) –</p> <p>Focus on curriculum design and delivery for industrial learning</p> | <p>Better use of modern instructional design and delivery methods and technology to accelerate learning for new and incumbent workers</p> | <p>Focus methods on individual, group/team and social (culture) learning. Develop and teach methods for learning different content such as facts, concepts, rules and procedures then apply them in technical and leadership/coaching.</p> <p>Proposed Panel Project – Boutwell lead</p> |
| 9 | <p>Education and Training (SIP) –</p> <p>Focus on senior, experienced worker knowledge capture and re-use</p> | <p>Aging workforce contains much process knowledge in their minds and habits. Industry has no formal program or technology to capture, store and share this information and knowledge.</p> | <p>Crosscut will coordinate with Aptima, Inc who is developing a proposal for Phase II implementation of Navy SBIR 05-161. Coordination will link the human systems engineers with shipyards to focus SBIR work on real, practical value addition and not simply theory.</p> <p>Gebhardt coordinating with ONR and Aptima, Inc.</p> |
| 10 | <p>Education and Training (SIP), Process Excellence and Modeling-Simulation tools – NSRP special interest area</p> | <p>Software capable of describing a whole product model is available. The database for the product model can be used for training workers, such as shipfitters, supervisors and work teams because of animation, rendering, and multiple views of ship structure. Virtual systems such as Second Life allow integration of product model detail for team learning.</p> | <p>Crosscut will write a white paper for circulation to other panels and ECB on potential for simulation/modeling to help align production-business-workforce systems in shipyards.</p> <p>Small pilot project is in progress teaming Alaska Ship and Drydock with University of Alaska Distance Learning and Super Computer center. Shipyard is partially modeled; plan to use in training is emerging.</p> <p>Gebhardt will coordinate.</p> |
| 11 | <p>Design for Cost: NSRP Special Interest Item.</p> <p>Adapting NSRP to better use non-Navy funding for recruiting, education and</p> | <p>NSRP funding may best be used for shipyard technical improvements. Policy to use but not commingle funds from other sources can be developed. Sources include: US Department of Labor High Growth Initiatives and Employment</p> | <p>Develop rationale and technique that helps individual shipyards and local regions gain access to and use these sources.</p> <p>Greater leverage is to develop new policy that allows</p> |

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| | training. | and Training Administration; US Department of Education Vocational Education; US Department of Commerce NIST – Manufacturing Extension Program; OSHA Susan B. Harwood scholarship program; National Science Foundation Advanced Technological Education program and others. | <p>NSRP/Crosscut and Ship Production Panels/SNAME to manage larger, national, generic projects that help the entire industry. National Association of Manufacturers and Shipbuilders Council of America are interested in collaboration here</p> <p>Gebhardt will write white paper for NSRP Staff, MITL, Panel Chair considerations.</p> |