

# Surface Preparation & Coatings (SP&C) Panel 2020 MegaRust Update

Arcino “**Q**” Quiero, Jr. – SP&C Panel Chair

HII-Newport News Shipbuilding (NNS)

Robert Cloutier – SP&C Panel Vice-Chair

General Dynamics – Bath Iron Works (GD-BIW)

September 2, 2020 – Virtual



# NSRP Mission Statement

Manage and focus national shipbuilding and ship repair research & development funding on technologies and processes that will:

- **Reduce the total ownership cost** of ships for the U.S. Navy, other national security customers, and the commercial sector
- **Develop and leverage best commercial and naval practices** to improve the efficiency of the U.S. shipbuilding and ship repair industry
- **Provide a collaborative framework** to improve shipbuilding-related technical and business processes.

# NSRP SP&C Panel Member Shipyards (11)



# NSRP SP&C Panel Mission Statement

Surface Preparation & Coatings

## **Specs to Decks**

- Research, evaluate, develop, and sustain current and emerging technologies that will reduce cost and maintain or enhance quality
- Engage Suppliers, Applicators, and Specifiers of surface and preservation systems
- Facilitate Panel meetings to encourage broad and active participation
- Network with industry experts

# NSRP SP&C Panel Steering Committee

## Surface Preparation & Coatings

### Member Shipyards & NAVSEA:

- Austal USA
- BAE Systems Southeast
- Conrad Shipyard
- ✓ Fincantieri Marinette Marine – Sean Smith
- ✓ GD-Bath Iron Works – Robert Cloutier
- ✓ GD-Electric Boat – Mark Toscano
- ✓ GD-NASSCO – Angel Zepeda
- ✓ HII-Ingalls Shipbuilding – Conlan Hsu
- ✓ HII-Newport News – Arcino “Q” Quiero
- ❖ Vigor Shipyard Gabe Gonzales
- VT Halter Marine
- ✓ NAVSEA 05 – Mark Ingle/Howard Castle

### Panel Officers:

- SP&C Panel Chair – Arcino “Q” Quiero
- SP&C Panel Vice-Chair – Robert Cloutier
- Technical Warrant Holder (TWH) – Mark Ingle

# NSRP SP&C Panel Focus

## Surface Preparation & Coatings



- **Workforce**
- Specifications
- Surface Preparation
- Coatings Application
- Environmental Compliance
- QA & Documentation (e. g. Records)
- Embracing Innovation & Advancing Technology

# NSRP SP&C Panel Participants & Activities

Surface Preparation & Coatings

## Panel Participants Include:

- NAVSEA 05 (TWH)
- NSRP and Public Shipyards
- ManTech
- **MegaRust**
- SSPC/NACE (SPACE)
- Suppliers, Subcontractors, & Academia

## Work collaboratively with:

- **SSRAC – Virtual August 5<sup>th</sup>**
- **Corrosion CoP - Monthly**

## Two “Official” Meetings/Year:

- Programs & Projects Updates
- Technical Presentations
- Demos, Tours, & Workshops

## Sponsor Up to 3 Projects/Year:

- Funding – Up to \$150K
- Duration – 12 months ACF
- Immediate Impact:
  - Safety
  - Quality
  - Schedule
  - Costs
  - Specification

**ROI**

# NSRP SP&C Panel Projects

## Surface Preparation & Coatings

### Funded Project – 2020:

- Optimize Power Tools Surface Preparation

### Current Projects – 2019:

- Survey of Surface Prep & Coatings Automation
- Standardization and Digitization of Visual Inspection for Shipbuilding & Repair
- Primers with Extended AF Overcoat Window Surface Preparation
- **Certification Program – Shipbuilding Industry Surface Prep & Coatings Training**
- **Virtual Spray Paint Training System**

### Recently Completed Projects – 2018:

- ✓ Thermal Insulating Aerogel Filled Coatings
- ✓ Evaluation of Plasma Coating Removal & Surface Preparation

Completed in 2019

### Completed Projects:

2017

- ✓ Partial Blast of UHS Coated Tanks II
- ✓ Retention of Epoxy Type VI under Ultra High Solids (UHS)

### Completed in 2018

2016

- ✓ Boomlift Carried Environ. Enclosure
- ✓ Implementation of Paperless Paint

### Completed in 2017

2015

- ✓ Universal Primer & Surface Prep Process
- ✓ Partial Blast of UHS Coated Tanks
- ✓ Technical Guide for Inaccessible Void Coatings & Treatments

### Completed in 2016

2014

- ✓ Reducing Inspection Costs Using the Latest Digital Inspection Tools
- ✓ Cost Savings Comparison in Applying Polysiloxane vs. Silicone Alkyd Topcoats
- ✓ Paperless Paint Documentation II

### Completed in 2015



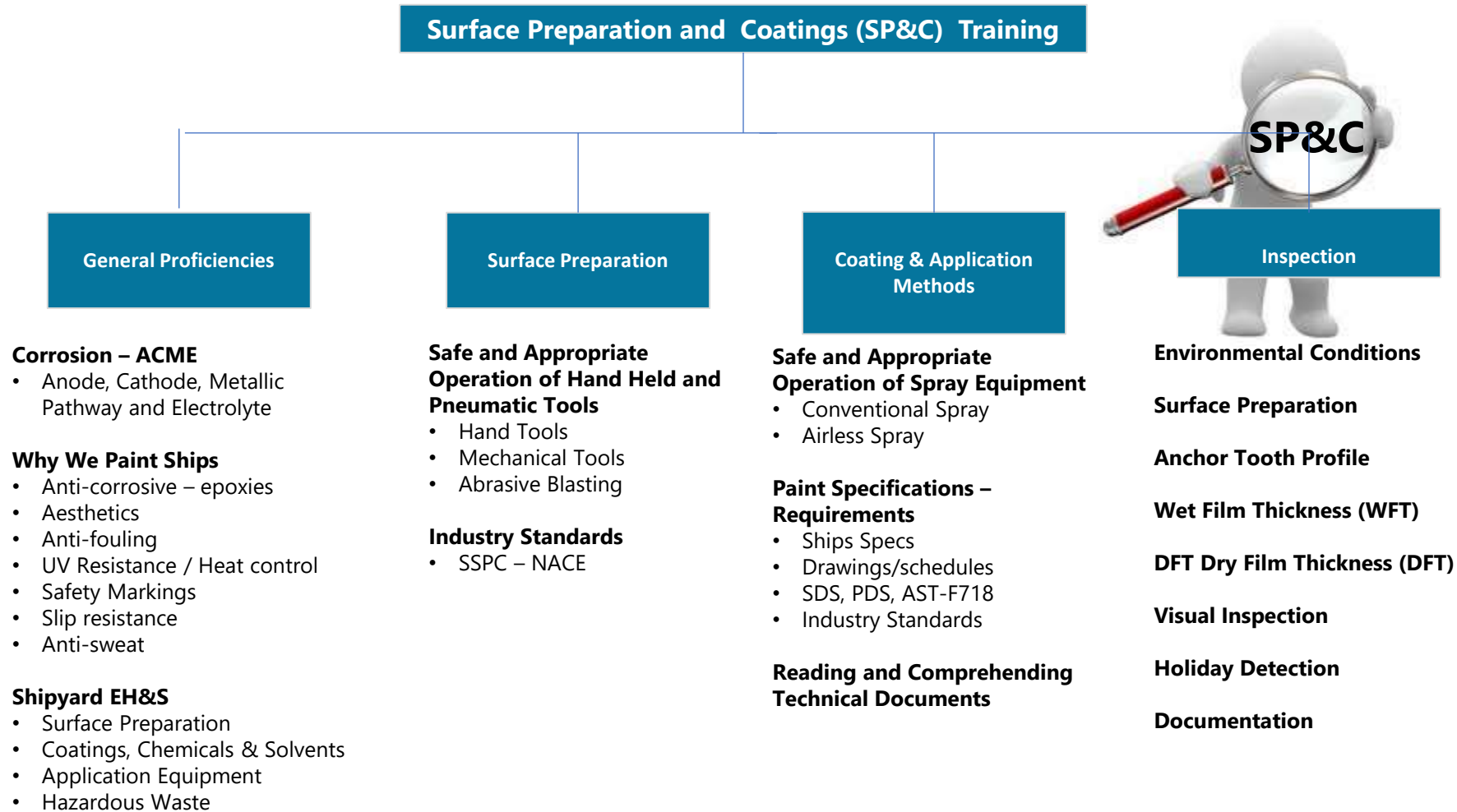
# NSRP SP&C Panel 2019 & 2020 Funded Projects

## Surface Preparation & Coatings

<b>Project Name</b>	<b>Panel</b>	<b>Prime</b>	<b>POP Start</b>	<b>POP End</b>	<b>Cost</b>	<b>Schedule</b>	<b>Technical</b>	<b>Comments</b>
Survey of Surface Preparation and Coatings Automation	SP&C	Elzly Technology Corporation	4/29/2019	10/30/2020				ECB OpCom approved 6-month NCE on 4/28/2020
Standardization and Digitization of Visual Inspection for Shipbuilding and Repair	SP&C	Elzly Technology Corporation	9/9/2019	8/31/2020				
Test and Evaluation of Primers with Extended AF Overcoat Window	SP&C	Excet, Inc.	5/9/2019	8/15/2020				ECB OpCom approved 3.5-month NCE on 3/18/2020
Certificate Program: Shipyard Industry Surface Prep and Coating Training	Joint - WFD, EH&S, & SP&C	GD - Bath Iron Works	5/14/2019	7/15/2020				ECB OpCom approved 3-month NCE on 4/13/2020
Virtual Paint Spray Training System (VPSTS)	Joint - WFD & SP&C	GD - NASSCO						Virtual Blast Training is a 2021 project proposal with WFD
Optimize Power Tool Surface Preparation	SP&C	Elzly Technology	1/23/2020	1/31/2021				

# Certificate Program – Surface Prep / Coating / Inspection

## Surface Preparation & Coatings



**Basic Training Concept**

# Certificate Program – Surface Prep / Coating / Inspection

## Surface Preparation & Coatings

### Training Package

- PowerPoint Presentation
- Instructor Notes
- Student Guide (Book)
- Lab Day Exercises
- Hands-on Criteria

### Training Structure

- 1 Week
  - Classroom – Hands-on
- 1 -2 Month
  - Include OJT – Proficiencies
- Apprenticeship Program
- Supplement with Shipyard course

## Deliverables



# VSPTS: Virtual Paint (VP)

Virtual Paint (VP) is a Virtual Reality (VR) training system that realistically simulates the application of paint droplets based on spray gun, coating material, parts, and spray environments. The VP paint engine provides performance feedback for film build, spray technique, time, and cost.

## VP Training Advantages:

- ✓ **Standardized Training Process**
- ✓ **Eliminate Resource Consumption**
- ✓ **Safe Classroom Learning**
- ✓ **Build Self-Confidence**
- ✓ **Non-biased Performance Results**
- ✓ **Easy Classroom Training**
- ✓ **Real-time Performance Results**
- ✓ **Self-Paced Training**



Painter	Start
instructor	2015/202 4:38:17 AM
Lesson	Total Time
Flat Panel	49 secs
Part	Coatings
1. Medium Precibus Panel	1
Score	Cost
99.77	\$10.06

**VIRTUAL PAINT PRODUCTS**  
Ranking 1 of 1 | Top Score: 99.77 | Avg Score: 99.77

Coating	Score	Cost	Secs	Obs	Spray Secs	Obs Part	TE	HC	Pulls	Remarks
1. Topcoat Red	99.77	10.06	49	5.15	20.60	2.99	% 50	% 64	23	0
	Good	Low	High	Mix Avg	Mix Min	Mix Max	DIFF	Speed	Pitch	Arc
1. Topcoat Red	% 99	% 0	% 0	3.75	1.45	7.95	12.56in	2.854s	14.25	12.98

Lesson Plan	Total Time
Lab 2	49 secs
Score	Cost
99.77	\$10.06

For more information contact:  
**Jeremiah Treubar**  
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Email: jeremiah@virtualpaintproducts.com

**NSRP | National Shipbuilding Research Program**  
**Title: Virtual Spray Painter Training System (VSPTS)**  
**Next Step: Submitted Virtual Blast Training Proposal**

# NSRP SP&C “White Papers” Proposal Process

## Surface Preparation & Coatings



## “White Papers” Proposal Process

- Team with NSRP Shipyard
- Submit to SP&C Chair & NSRP  
August 12, '20 12 Noon EDT  
[Arcino.Quiero@hii-nns.com](mailto:Arcino.Quiero@hii-nns.com)
- Solicitation information is available on NSRP's website:  
[www.nsrp.org](http://www.nsrp.org)

# NRSP SP&C Panel 2021 Project Proposals (10)

Project #	Prime / Lead	Prime / Lead	NSRP Yards
1	Elzly Technology	<b>Heat Resistance of Type VII Class 5</b> Evaluate the use of MIL-23236 TYPE VII Class 5 to meet certain Class 19 requirements when applied over a Type VI coating. The use of such a system in well deck overhead spaces would improve production and reduce waste. Testing will be coordinated with NAVSEA to ensure their concerns are addressed by the project.	<ul style="list-style-type: none"> <li>HII-Ingalls Shipbuilding</li> <li>Others TBD</li> </ul>
2	Elzly Technology	<b>"Meet Spot" – Demonstration of a Crawling Robot in a Shipyard SPC Environment</b> A current project investigating surface prep and coating automation identified the ability to work in small, complex spaces as a critical obstacle to be overcome. The proposed project will begin with a fully developed robotic technology, determine mobility, and payload capabilities. The project will serve as the next step in developing automated SP&C related capabilities in complex shipboard spaces.	<ul style="list-style-type: none"> <li>HII-Ingalls Shipbuilding</li> <li>Others TBD</li> </ul>
3	Elzly Technology	<b>Visual Guide for Non-Ferrous &amp; Stainless Steel Surface Preparation</b> The proposed guide would facilitate fair and consistent implementation of new requirements for preparation of non-ferrous metals and stainless steels. A guide will minimize rework and time spent adjudicating differences in interpretation of the specification.	<ul style="list-style-type: none"> <li>Others TBD</li> </ul>
4	Elzly Technology	<b>QA Data Integration to Streamline Coating Application</b> Evaluate QA data from multiple shipyards to identify opportunities to streamline coating application, reduce costs, and increase quality. Leverage technology for data-driven decision making within the Coating Quality community.	<ul style="list-style-type: none"> <li>HII-Ingalls Shipbuilding</li> <li>Others TBD</li> </ul>
5	HII-Ingalls Shipbuilding	<b>Utilizing Ship Product Model Information for Corrosion Control and Coatings</b> Ship product models do not include information on corrosion control and specific coatings. The data that is pulled from the model is duplicated and modified in other programs and Excel. Develop processes to reduce the amount of manual input and handling of ship product model data for corrosion control and coatings applications.	<ul style="list-style-type: none"> <li>HII-Ingalls Shipbuilding</li> <li>Others TBD</li> </ul>
6	HII-Ingalls Shipbuilding	<b>Improved Methods for Corrosion Prevention when Bonding &amp; Grounding Dissimilar Metals</b> Requirements and processes have been fully developed for corrosion prevention and bonding and grounding, however they conflict with each other. Current requirements sidestep the issue by giving precedence to bonding and grounding when necessary, resulting in inadequate corrosion protection and maintenance burdens for the shipyard and the Navy. Interact with NAVSEA to develop approved methods that cost effectively provide long-term corrosion protection meeting requirements.	<ul style="list-style-type: none"> <li>HII-Ingalls Shipbuilding</li> <li>Others TBD</li> </ul>
7	HII-Newport News Shipbuilding	<b>Corrosivity of Disinfection Materials upon Shipboard Metallic Materials</b> To assess how Shipbuilding metallic materials respond to common and novel disinfectants. <ul style="list-style-type: none"> <li>Corrosion / Embrittlement</li> <li>Kill Efficacy</li> </ul>	<ul style="list-style-type: none"> <li>HII-Newport News Shipbuilding</li> <li>Others TBD</li> </ul>
8	Entry Point International	<b>Temporary Protection of Shipboard Coatings and Finishes</b> Introduce new methodologies for temporary protection being deployed commercially in other shipyards in US, NATO, and Europe. To prevent delivery delays and cost overruns due to unforeseen rework of structural components and coating finishes. Evaluate cost and provide a working formula for shipbuilders that measures real cost of new approaches vs. legacy methods.	<ul style="list-style-type: none"> <li>HII-Ingalls Shipbuilding</li> <li>HII-Newport News Shipbuilding</li> </ul>
9	SurClean, Inc.	<b>Establishing Laser Ablated Profile on Steel</b> <ol style="list-style-type: none"> <li>To establish process parameters for laser ablated profile on steel replacing grit blast operations in manufacturing &amp; maintenance repair operations</li> <li>Address concerns of thermal distortion, "melting", using laser ablation</li> <li>Socialize findings &amp; set up PC Specifications</li> </ol>	<ul style="list-style-type: none"> <li>HII-Ingalls Shipbuilding</li> <li>HII-Newport News Shipbuilding</li> </ul>
10	RipJet	<b>Rapid Barnacle / Tubeworm Removal, Mitigation, and Prevention for Acceleration Response Rate for Ship Readiness</b> The goal of this project is to establish the feasibility of a large-coverage rapid-acting barnacle / tubeworm cleaning and prevention system, which identifies a clear path towards reduction of at least 50% in labor costs when compared to traditional diver-administered hull cleaning.	<ul style="list-style-type: none"> <li>Austal USA</li> <li>Others TBD</li> </ul>



# NSRP SP&C Panel *"White Papers"* 2021 Timeline

DATE	ACTION
✓ June 9, 2019	NSRP Panel Project Solicitation Issued
✓ July 8, 2020	SP&C Panel Chair <i>"White Papers"</i> Communication
✓ July 29, 2020	<i>"White Papers"</i> Quad Charts to SP&C Panel Chair
✓ August 5, 2020	<i>"White Papers Pitch"</i> – SP&C Panel Virtual Meeting
✓ August 12, 2020	Final <i>"White Papers"</i> Submitted to Panel Chair and ATI ( <a href="mailto:nsrp@ati.org">nsrp@ati.org</a> ) – 12 PM EDT Deadline
✓ August 14, 2020	Forward to Steering Committee for Scoring / Voting
August 21, 2020	Scoring by Steering Committee Back to Panel Chair
September 2, 2020	SP&C Pre-Recorded Update – During Virtual MegaRust
September 9, 2020	Panel Chair Forward SP&C Top 3 to ATI – 12 PM EDT Deadline
November 17-19, 2020	ECB Meeting / <i>"White Papers"</i> Proposals Scoring / NSRP Day at NAVSEA
Reference Material	<a href="#">Solicitation for Panel Projects</a>
Reference Material	<a href="#">Panel Project Guide Volume 1 – Proposers</a>

# NSRP SP&C – For the Good of the Panel

Surface Preparation & Coatings



**Joe Walker, SSPC President, Board of Governors present the *SSPC Technical Achievement Award* to Pete Ault**

***SSPC Technical Achievement Award***

**Pete Ault, P.E. PCS, Elzly Technology Corporation**

***The Richard W. Drisko Coatings Education Award***

**Gordon Kuljian, PCS, GK Consulting LLC**

***President's Lecture Series Award:***

**Daniel Chute, CIH, BSI Group / EH&S**

**Peter Yancy, CTO, APS, Inc.**



# NSRP SP&C Panel 2020 Meetings Schedule

## Surface Preparation & Coatings

- ✓ **January 21-24, 2020** – **NSRP Strategic Investment Plan (SIP) / Technology Investment Plan (TIP) Workshop** – Summerville, SC
- ✓ **February 3-6, 2020** – **SSPC 2020 Coatings + Annual Conference** – Long Beach, CA
  - SSPC Awards Lunch – Monday, February 3<sup>rd</sup>, 11:30 AM – 1:00 PM
  - NSRP SP&C Panel 2020 Update – Tuesday, February 4<sup>th</sup>, 11:00 AM – 11:30 AM
  - MegaRust Mid-Year Follow-Up – Wednesday, February 5<sup>th</sup>, 8:00 AM – 12:00 PM
- ❖ **March 17-19, 2020** – **SP&C Panel Winter Meeting In-Conjunction W/NACE** – Houston, TX
  - Programs Updates & International Marine Coatings Tour – Tuesday, March 17<sup>th</sup>
- NACE – Cancelled**
- NACE International Exhibit Hall – Thursday, March 19<sup>th</sup>
- ❖ **ShipTech – Postponed until March 2022**
- ❖ **May 19-21, 2020** – **Mega Rust 2020 – Naval Corrosion Conference** – San Diego, CA
- MegaRush – Postponed until September 1<sup>st</sup> & 2<sup>nd</sup>**
- ❖ **June 15-19, 2020** – **NAVSEA SSRAC Standard Item Review** **SSRAC – Cancelled**
- ✓ **June 10 & 24, 2020** – **Panel Virtual Meeting – Projects/Program Updates & "SPACE" Town Hall**
- ✓ **August 5, 2020** – **SP&C Panel Virtual Meeting – White Papers Proposals**
- ❖ **September 2020** – **SP&C Panel Fall Meeting** **Panel Meeting – Cancelled**
- ❖ **September 29<sup>th</sup>-October 2<sup>nd</sup>, 2020** – **SNAME 2020 Maritime** **SHAME – Virtual**
- ❖ **November 17-19, 2020** – **ECB Mtg. & NSRP Day @ NAVS** **ECB & NSRP Day – Virtual**

# NSRP SP&C Panel Responsibilities & Takeaways

## Surface Preparation & Coatings

***“You, the Coatings Community, are the subject matter experts (SMEs). You owe it to yourselves, your Shipyards, and your Companies to stay aware of and understand the current and proposed coatings requirements. Don’t allow someone else to determine your fate and/or that of your Company without your input”.***

***“Remember, the work isn’t completed until the ship is painted and/or cleaned (Polysiloxane) and the coatings system is documented; preferably paperless”.***

***“Together, let’s paint a picture that allow the Coatings Community and the US Navy to be successful”!!!***

***“Q”***



# NSRP SP&C Panel Questions & Answers

Surface Preparation & Coatings

*Questions* 