

Statement A: Approved for Release. Distribution is unlimited.

Metal Trades Council Moonshine Team

***... making a
difference in the
workplace***



What is Moonshine?



Moonshine:

- A method of creative action, that challenges organizational boundaries and procedures producing improvements to any process.
- A Lean manufacturing power tool that uses fast and inexpensive prototyping to develop and prove a concept, prior to full implementation.

Statement A: Approved for Release.
Distribution is unlimited.



or In Other Words...

The *efficient* use
of readily available
factors of production
to create improvements in
processes, schedules, costs
And Quality of Life in the Shipyard.

Statement A: Approved for Release.
Distribution is unlimited.



A Simple Idea from Boeing...

Moonshine Teams

- Small teams
- Fast, inexpensive ideas
- Generated by the workers
- Freedom to innovate
- Immediate action
- Bottom up approach



Statement A: Approved for Release.
Distribution is unlimited.



How Do We Do It?



- “If you want to find a better way to do a job, ask the workers how.”
Shipyard Log – September 2006
- Empower ideas of process improvements from the **workers**.

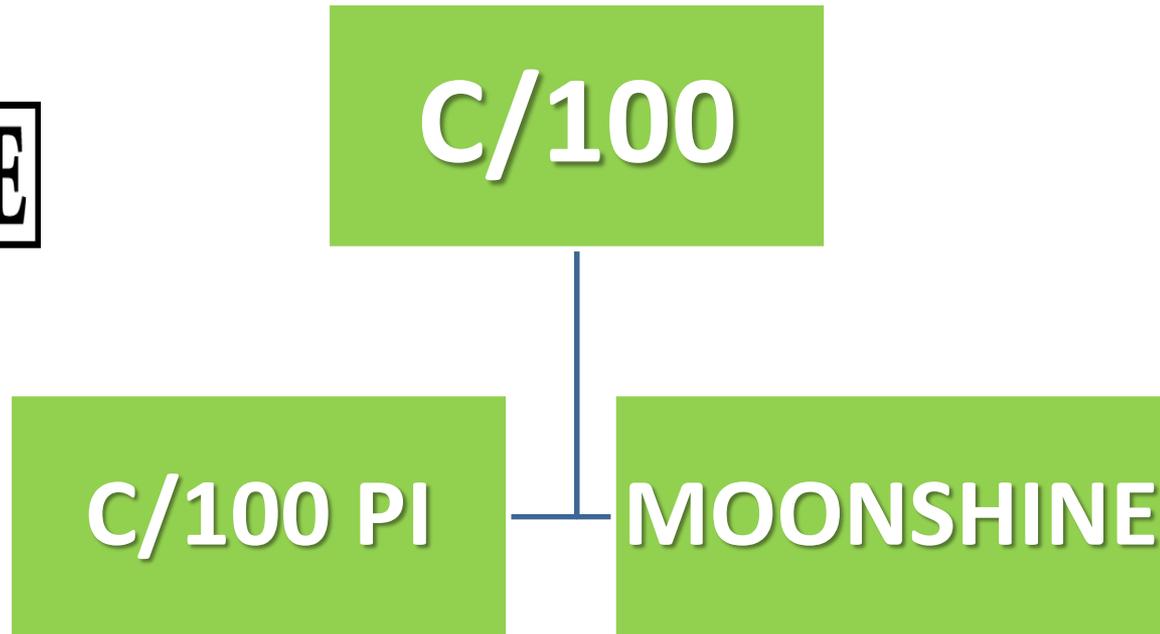
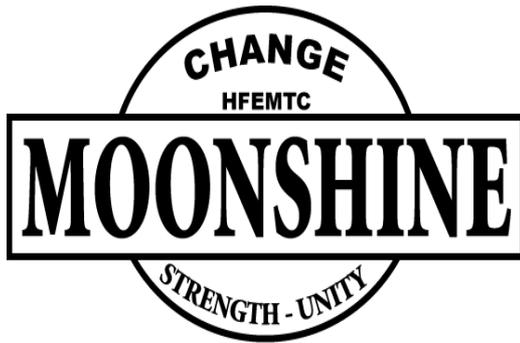
Make our “*Common Sense*”
approach our “*Common Practice*”

...\$12 idea saves \$600,000 and
the submarine from dry docking.

Statement A: Approved for Release.
Distribution is unlimited.



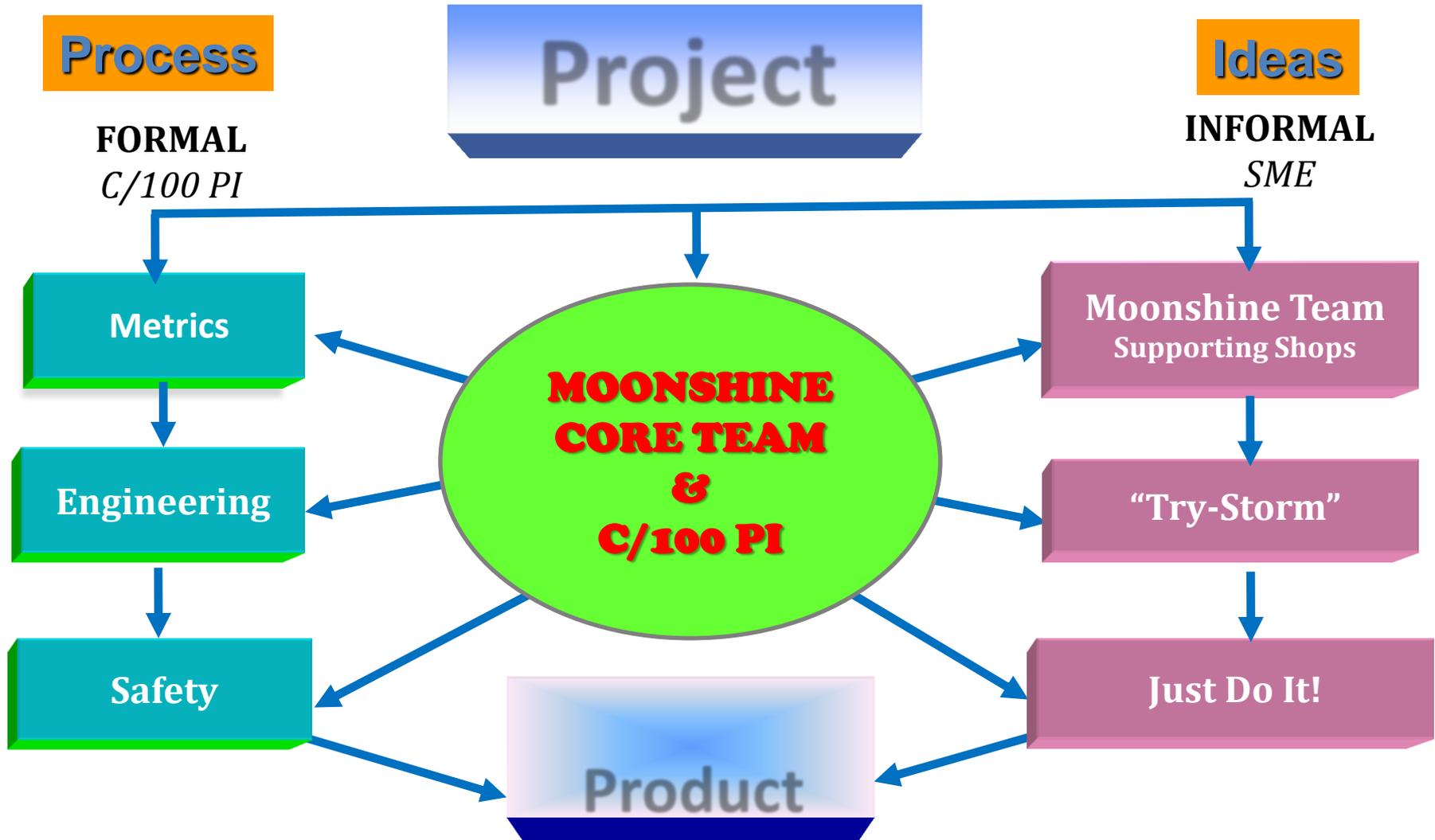
Organizational Structure



Statement A: Approved for Release.
Distribution is unlimited.



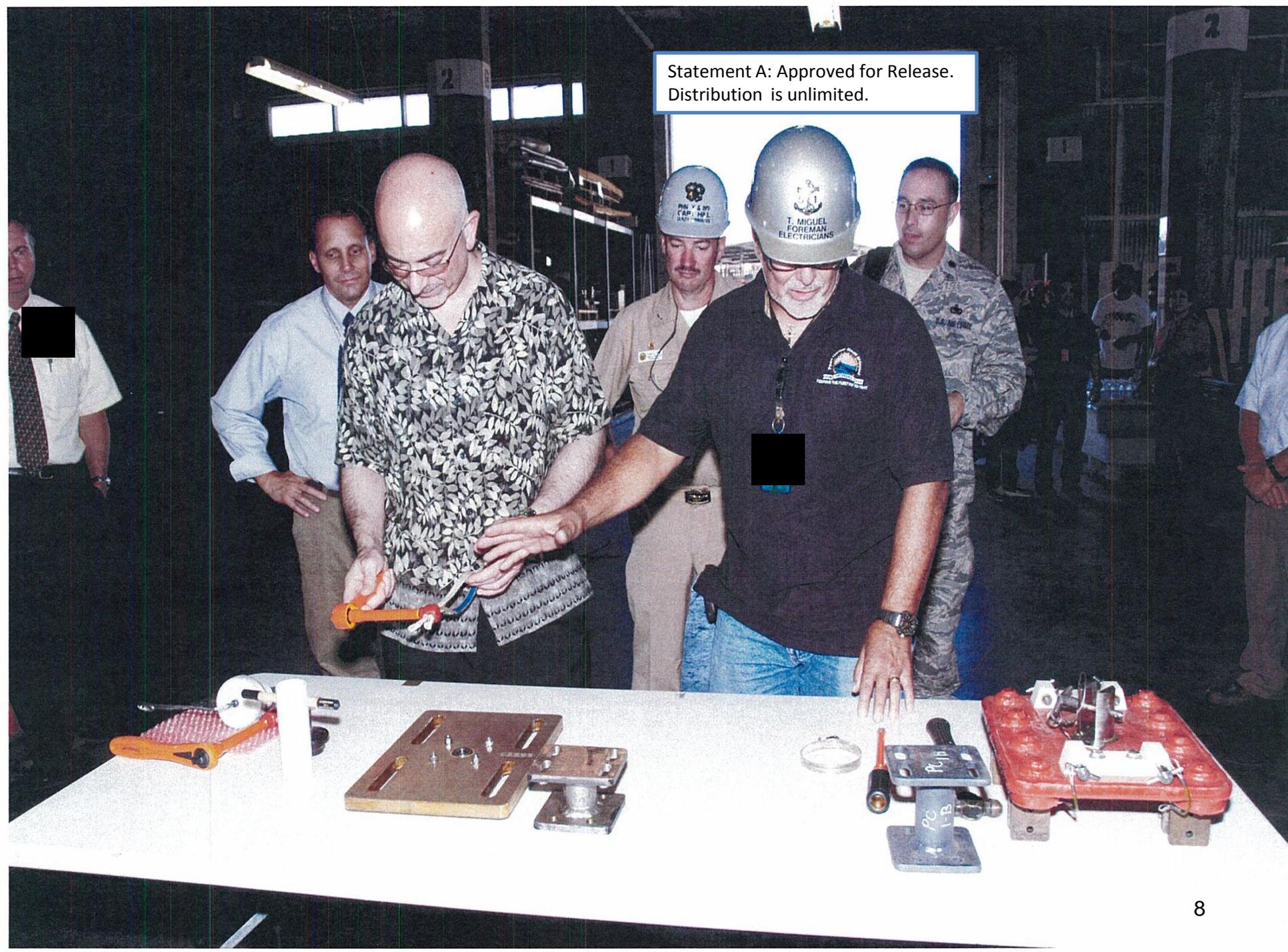
MOONSHINE: THE WAY IT WORKS



Statement A: Approved for Release.
Distribution is unlimited.



Statement A: Approved for Release.
Distribution is unlimited.



VACL Battery Change-Out Improvement Items

Statement A: Approved for public release; distribution is unlimited.

SSN688 Class Spacer
(6 inch Clearance)



VACL Spacer
(4 inch Clearance)

Height restrictions in the VACL prevent the usage of the SSN 688 Class dolly and hoist system to remove and re-install batteries from the battery well.

The Spacers for the hoist system were re-designed to accommodate the height restrictions. SSN 688 Class spacers were 6 inches in height where the VACL Spacers are 4 inches in height.

VACL Battery Change-Out Improvement Items

Improved VACL Lifting Plate
(Pearl Harbor NSY)

VACL Lifting Plate
(Portsmouth NSY)



The lifting plate that Portsmouth Naval Shipyard utilizes is bulky and does not facilitate the height clearance that is needed to utilize the hoist system that PHNSY prefers.

Pearl Harbor Naval Shipyard has designed and manufactured a lifting plate made of melamine fabricated in the Shipyard's Wood and Plastic Shop (Code 970, Shop 64B). This material is light, sturdy and meets the height requirements to utilize the hoist system.

VACL Battery Change-Out Improvement Items

688 Class Do



Statement A: Approved for public release; distribution is unlimited.

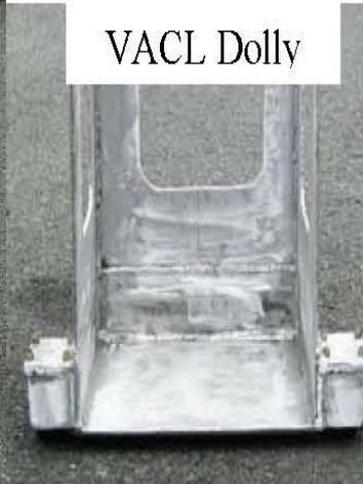


VACL Dolly



Height restrictions also limited the use of the dolly system utilized to transport the batteries through the passage way to the hatch of the submarine. A new dolly was designed to accommodate the restrictions with a 1 inch clearance from the ground compared to the 6 inch height clearance on the SSN 688 class dolly system.

VACL Dolly



688 Class Dolly



Statement A: Approved for public release; distribution is unlimited.

** Note: All photograph's included on this page have been Approved for Public Release; distribution is unlimited (Statement A) ** *Official Navy Photograph taken by Melissa Lamerson*

PHNSY & IMF Performance Improvement Summary Report

Serial Number: 2010-17

Status Date: 16 February 2010

Title: Virginia Class Battery Change-out Moonshine/ Learning Cell

I. Description of Improvement Activity:	II. Activity Plan of Action and Milestones:																												
<p>PHNSY is going to improve the battery change-out method for the Virginia class submarine. The Virginia class battery change out process is equipped with a monorail system that poses new challenges to the battery change out team. The team would like to modify the Virginia class battery change out process in order to expedite the time it takes to remove and replace the batteries from the battery well.</p> <p>POC: Thomas Miguel Black Belts: Melissa Lamerson, Jeffrey Letterii Facilitators: Don Bongo, Benjamin Toyama, Melissa Lamerson, Jeffrey Letterii, Justice Vannatta</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Action</th> <th style="width: 15%;">POC</th> <th style="width: 10%;">Start Date</th> <th style="width: 10%;">ECD/ ACD</th> <th style="width: 35%;">Comments</th> </tr> </thead> <tbody> <tr> <td>Design/manufacture new lifting plate</td> <td>T. Miguel</td> <td>01-15-10</td> <td>01-26-10</td> <td>Complete</td> </tr> <tr> <td>Design/manufacture new dolly</td> <td>P. Saunders</td> <td>01-15-10</td> <td>01-26-10</td> <td>Complete</td> </tr> <tr> <td>Design/manufacture shorter spacers.</td> <td>P. Saunders</td> <td>01-15-10</td> <td>01-26-10</td> <td>Complete</td> </tr> <tr> <td>Create a mock-up for try-storm.</td> <td>T. Miguel</td> <td>01-26-10</td> <td>01-26-10</td> <td>Complete</td> </tr> </tbody> </table>	Action	POC	Start Date	ECD/ ACD	Comments	Design/manufacture new lifting plate	T. Miguel	01-15-10	01-26-10	Complete	Design/manufacture new dolly	P. Saunders	01-15-10	01-26-10	Complete	Design/manufacture shorter spacers.	P. Saunders	01-15-10	01-26-10	Complete	Create a mock-up for try-storm.	T. Miguel	01-26-10	01-26-10	Complete			
Action	POC	Start Date	ECD/ ACD	Comments																									
Design/manufacture new lifting plate	T. Miguel	01-15-10	01-26-10	Complete																									
Design/manufacture new dolly	P. Saunders	01-15-10	01-26-10	Complete																									
Design/manufacture shorter spacers.	P. Saunders	01-15-10	01-26-10	Complete																									
Create a mock-up for try-storm.	T. Miguel	01-26-10	01-26-10	Complete																									
III. Results/Benefits	IV. Costs & Savings:																												
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 15%;">Metric</th> <th style="width: 15%;">Baseline</th> <th style="width: 15%;">Est. Impr.</th> <th style="width: 15%;">Difference</th> </tr> </thead> <tbody> <tr> <td>Cycle Time (Days)</td> <td>31 Days</td> <td>15 Days</td> <td>16 Days</td> </tr> <tr> <td>Man-days</td> <td>1860 Mdays</td> <td>900 Mdays</td> <td>960 Mdays</td> </tr> <tr> <td>Man-hours</td> <td>14880 Mhrs</td> <td>7200 Mhrs</td> <td>7680 Mhrs</td> </tr> </tbody> </table> <p>Benefits:</p> <ul style="list-style-type: none"> • Increased Communication amongst the team • Increased Trust and Openness amongst the team • Reduced Cycle time to remove/ install batteries • Reduced waiting time (for hoist to return to position) • Improved understanding of the roles and responsibilities of each team member • Improved relationships amongst the team • Increased teamwork amongst the group • Incorporated changes into the Lead Planning yard (Electric Boat) database which will allow deviation from original configuration via a Liaison Action Request (LAR) from Technical Code. 	Metric	Baseline	Est. Impr.	Difference	Cycle Time (Days)	31 Days	15 Days	16 Days	Man-days	1860 Mdays	900 Mdays	960 Mdays	Man-hours	14880 Mhrs	7200 Mhrs	7680 Mhrs	<p>Projected Costs:</p> <ul style="list-style-type: none"> • Labor Cost= 7 MHRs <p>Projected Benefits:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ADD8E6;"> <th style="width: 25%;">Fiscal Year</th> <th style="width: 25%;">Savings (Man Days)</th> <th style="width: 25%;">Cost Savings</th> </tr> </thead> <tbody> <tr> <td>FY10</td> <td>960 MDAYS</td> <td>\$435,686.40</td> </tr> <tr> <td>FY11</td> <td>960 MDAYS</td> <td>\$435,686.40</td> </tr> <tr> <td>FY12</td> <td>960 MDAYS</td> <td>\$435,686.40</td> </tr> </tbody> </table> <p><i>** Estimated benefits based on 3 straight time shifts (8 hours) and 1 Virginia Class Availability per year **</i></p> <div style="border: 1px solid black; padding: 10px; margin-top: 20px; text-align: center;"> <p>Statement A: Approved for Release. Distribution is unlimited.</p> </div>	Fiscal Year	Savings (Man Days)	Cost Savings	FY10	960 MDAYS	\$435,686.40	FY11	960 MDAYS	\$435,686.40	FY12	960 MDAYS	\$435,686.40
Metric	Baseline	Est. Impr.	Difference																										
Cycle Time (Days)	31 Days	15 Days	16 Days																										
Man-days	1860 Mdays	900 Mdays	960 Mdays																										
Man-hours	14880 Mhrs	7200 Mhrs	7680 Mhrs																										
Fiscal Year	Savings (Man Days)	Cost Savings																											
FY10	960 MDAYS	\$435,686.40																											
FY11	960 MDAYS	\$435,686.40																											
FY12	960 MDAYS	\$435,686.40																											

PHNSY & IMF Performance Improvement Summary Report

Serial Number: 2010-17
Status Date: 16 February 2010

Title: Virginia Class Battery Change-out Moonshine/ Learning Cell

Benefits Calculations:

Metric	Baseline <i>(Portsmouth NSY)</i>	Estimated Improvement <i>(Pearl Harbor NSY)</i>	Difference
Cycle Time	31 Days	15 Days	(31 days -15 days) 16 Days
Man-Days	(31 days * 60 men) 1860 Man-Days	(15 days * 60 men) 900 Man-Days	(1860 MDays- 900 MDays) 960 Man-Days
Man-Hours	(60 men * 8 hours * 31 days) 14880 Man-Hours	(60 men * 8 hours * 15 days) 7200 Man-Hours	(14880 Mhrs – 7200 Mhrs) 7680 Man-Hours

FY	Savings (Man Days)	Cost Savings
FY10	960 MDAYS	(\$453.84 * 960 MDays) \$435,686.40
FY11	960 MDAYS	(\$453.84 * 960 MDays) \$435,686.40
FY12	960 MDAYS	(\$453.84 * 960 MDays) \$435,686.40

Man Day Rate of \$453.84

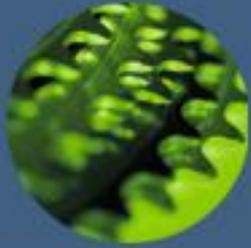
Project Benefits Calculations:

FY	Savings Days
FY10	(16*1) 16 DAYS
FY11	(16*1) 16 DAYS
FY12	(16*1) 16 DAYS

** Projected Benefits are based on 1 Battery Change-out per year on VACL Submarines running 24 hours a day for 15 consecutive days utilizing the Tiger Team Concept**

A: Approved for Release. Distribution is unlimited.

Moonshine Project



Production Efficiency Program



Business Model

Reduce



A business model is the 'one principle thing' that your business is based on to make money.

Examples.....

Improve



Task delays

=

Cost/schedule overruns

Statement A: Approved for Release.
Distribution is unlimited.

Collect task delay information through technology

TGI

ON _____

TYPE: PR	PHASE: F	REPEAT: 0	CHANGE: 0
AME: _____	SYSTEM: 20301	PROJECT: N25	

TS, GASKETS & STAVES. INSPECT PROP EYE BOLTS.

PREPARING ACTIVITY: PORTS MOUTH NAVAL SY

PREPARED BY: RYDER THOMPSON

APPROVED BY: EDWARD WRIGHT

CONCURRED BY: JONATHAN LEWIS

CONCURRED BY:	CODE	PHONE	DATE
CONCURRED BY:	CODE	PHONE	DATE

REASON FOR WORKNEED FOR CHANGE:

CHANGE INSTRUCTIONS:

Delay Bar Code



DEVELOPED FROM SSN 713.

SPECIAL REQUIREMENTS:

LIST OF EFFECTIVE PAGES							
SHT NO.	CHG NO.	SHT NO.	CHG NO.	SHT NO.	CHG NO.	SHT NO.	CHG NO.
SEE SHEET 2							

WORK CERTIFICATION SIGNATURES

COMPLETION OF WORK REVIEW: _____ BADGE NO.: _____ SHOP CODE: _____ PHONE: _____ DATE: _____

ACCEPTANCE OF COMPLETED WORK

PHYSICAL INSPECTION COMPLETED: _____ BADGE NO.: _____ SHOP CODE: _____ PHONE: _____ DATE: _____

REQUIRED: YES NO N/A



Scan code

TGI Data

Project, Job Order, CU

Data interfaces

Scanning Automatically Adds:

- Project Supt
- Zone Manager
- Supervisor
- Ship Zone Location
- RYG Task Priority via PSS

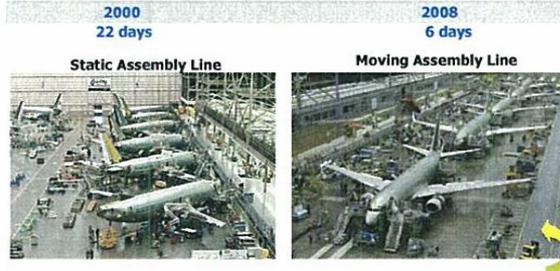
System software

- Tallies the delay time
- Accumulates delay cost
- Signals - touched or not

Display task delays in real time

PEP (Production Efficiency Program)

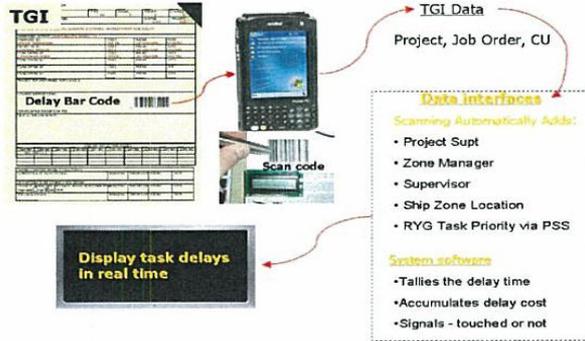
Boeing Breakthrough



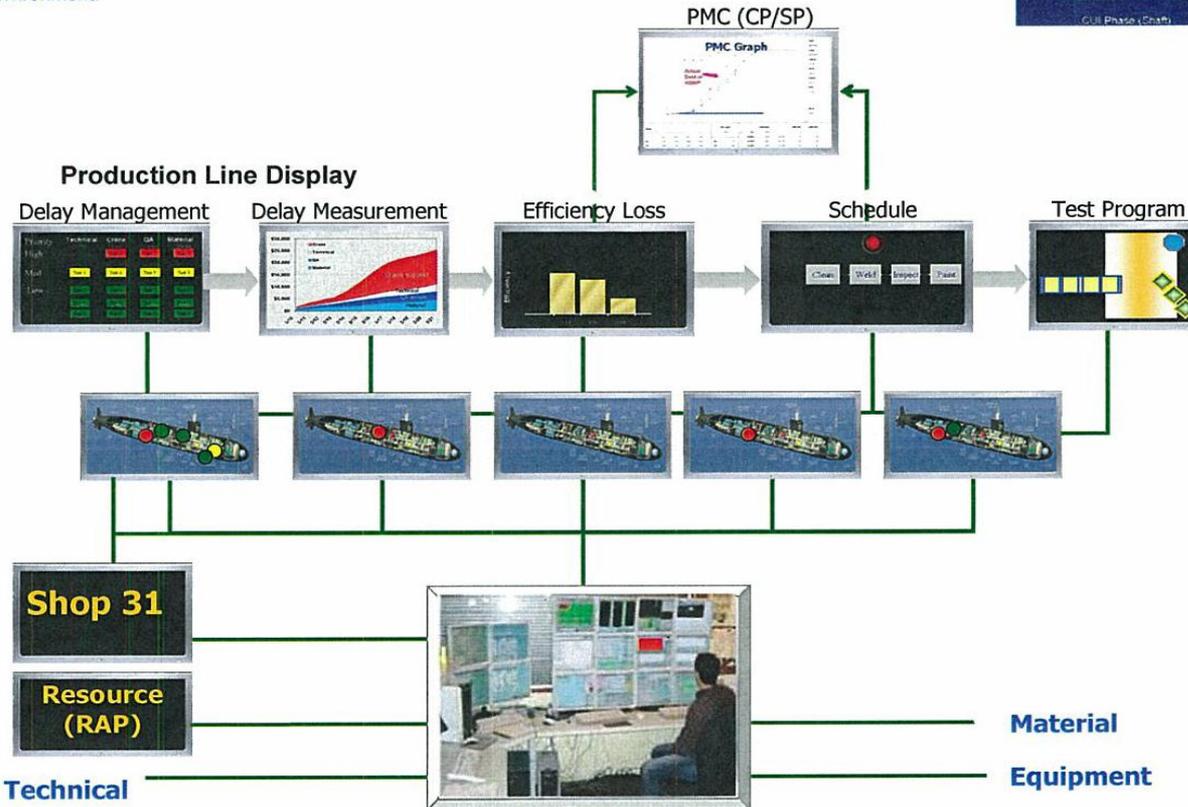
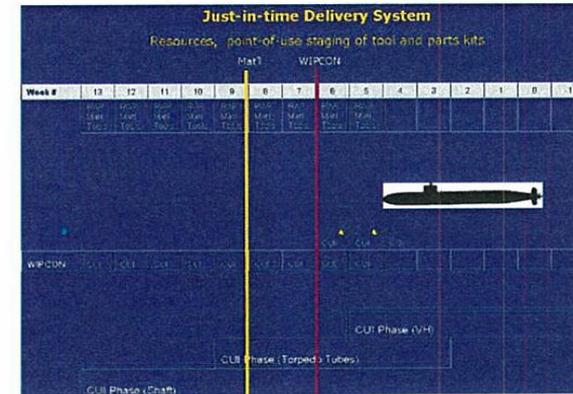
Problems are more visible There is an acute awareness and understanding of waste in this environment.

Mo Yahyavi, Boeing VP

Collect task delay information through technology



Virtual Moving Assembly Line



Statement A:
Approved for
Release.
Distribution
is unlimited.

Static Assembly Line



Moving Assembly Line



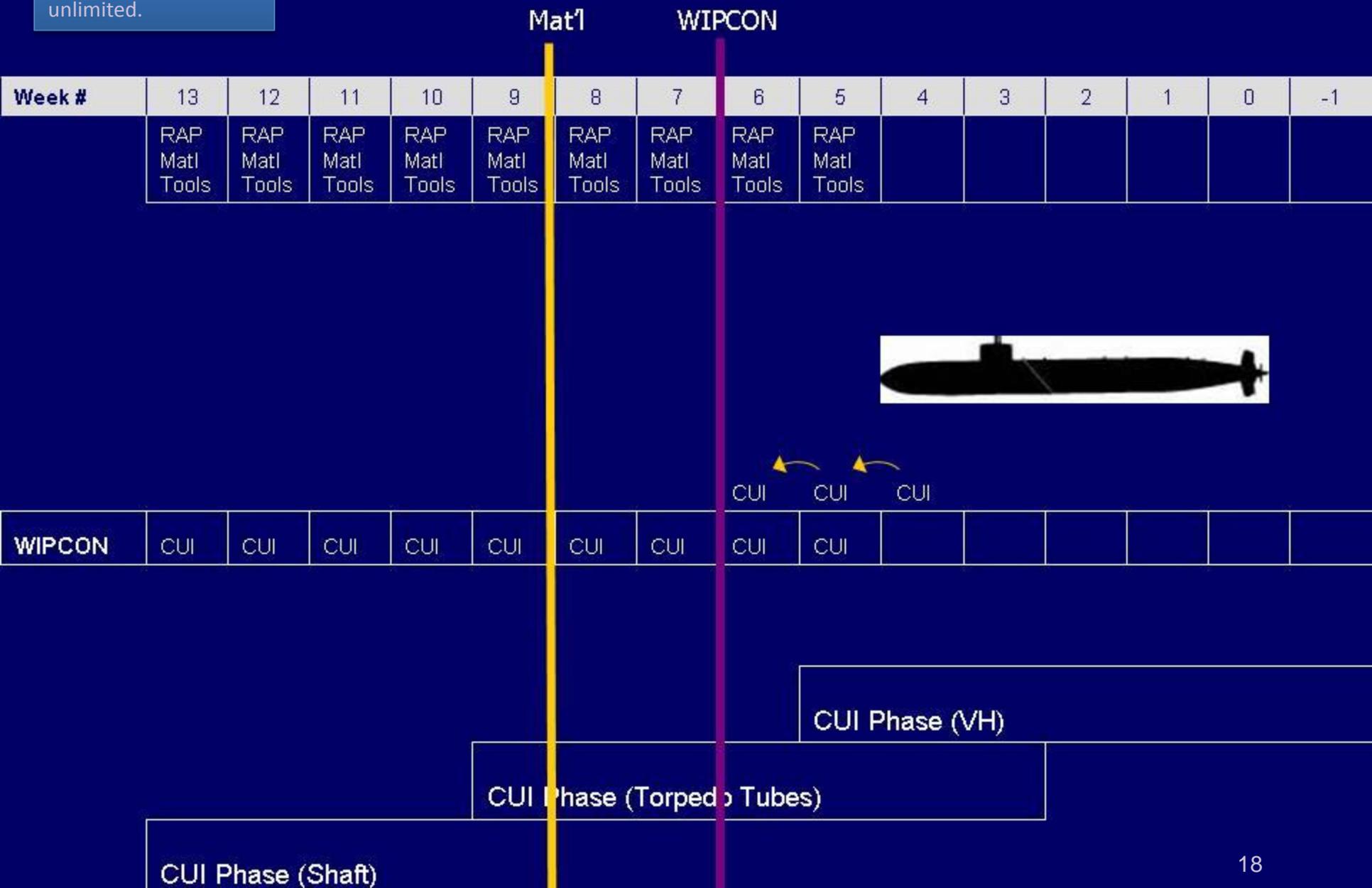
Problems are more visible There is an **acute awareness and understanding of waste** in this environment.

Mo Yahyavi, Boeing VP

Just-in-time Delivery System

Resources, point-of-use staging of tool and parts kits

Statement A:
Approved for Release.
Distribution is
unlimited.



Moonshine Teams give voice to the workers

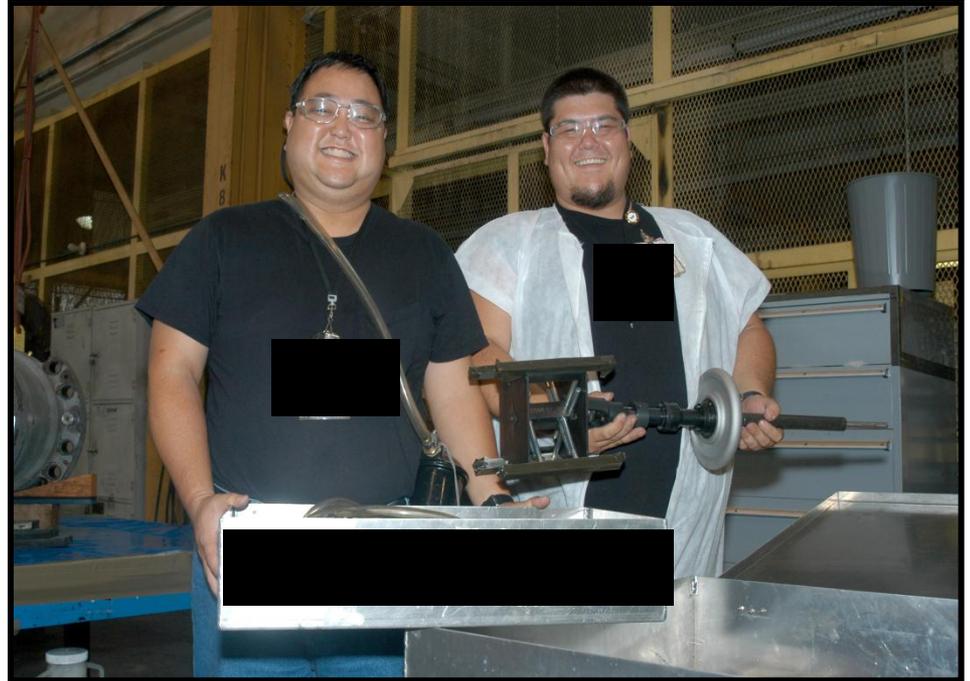
Machinist Mechanic's Idea:

Reduces 320 man/hr
(\$145,238)

job to

60 man/hrs (\$27,232)

A \$118,006 savings.



*X38 Steward, Scott Miller with Dave Shirai
displaying their In Place Honing device
developed to increase their quality of life.*



Statement A: Approved for Release.
Distribution is unlimited.

MOONSHINE:

Improving Efficiency to Ensure our Future

Machinist Mechanic's Idea:

Reduces 240 man/hr
(\$108,934)

job to

8 man/hrs (\$3,631)

A \$105,303 savings



Shop 38 Marine Machinist Mechanics developed a prototype rig to automate torpedo tube brush plating repairs.



Statement A: Approved for Release.
Distribution is unlimited.



Chill Water System



Statement A: Approved for Release.
Distribution is unlimited.



I. Project Description: To increase the ability to swap out chill water valve in a timely manner by changing the way water from the system is drained. Allocating resources and techniques to drain the system by gravity will greatly reduce the requirement to use wheelers manned by X71 mechanics.

Project Outcome: Reduce the lead time for this job by improving methods of draining chill water valves which will improve on-time delivery performance of the job. This will also reduce the number of resources required to complete the job and will free X71 wheeler mechanics to do other tasks. X56P7 mechanics utilized a gravity feed method of draining chill water into a controlled collection container, then pumped directly into the sewer for disposal. The old method consisted of pumping the chill water off the boat into a wheeler which was then transferred to another location and disposed of.

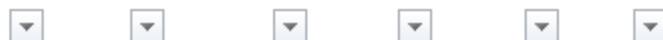
Moonshine Facilitator: Terry Quapaw, [REDACTED]

II. Status:

Month	Year	Event or Milestone	Status
2-Feb	2007	Meeting with mechanics & C/106	completed
2-Feb	2007	Gather resources needed	completed
7-Feb	2007	Submit sample to Chem Lab	completed
12-Feb	2007	Sample results obtained	completed
14-Feb	2007	Job started & completed	completed
Feb	2007	Integrate work process into TWD	In process

Statement A: Approved for Release.
Distribution is unlimited.

III. Metrics / Benefits:



Cycle Time man hours 16 mhrs. 5/ Year 1 mhr. 93.75%

94% Decrease in Lead Time to drain the system

Benefits: Reduced lead time spent waiting for wheeler services, improvement of on-time delivery performance and reduction of resources need to complete job.

Notes: See Calculations

IV Cost & Benefits:

Projected Cost: Labor: 8 mhrs.

Projected Benefits: Decrease in drain time

FY 07	75 mhrs.
FY 08	75 mhrs.
FY 09	75 mhrs.

Validated Benefits: TBD



Cooling Air Hose

Statement A: Approved for Release.
Distribution is unlimited.



Increased time in the Tank by 100%



I. Project Description: Manufacture a personal cooling device suitable to be worn by painters/blasters during tank work. Prototype design was taken from worker efforts to combat heat exhaustion while working for prolonged periods in tanks.

Project Outcome: Prototype was field tested and performed above expectation.

POC: Rose Palacat

Moonshine Facilitator: R. Palacat

II. Status:

Month	Year	Event or Milestone	Status
12-Dec	2006	Meet with C/106, Fab 1st prototype	completed
13-Dec	2006	Fab 2nd prototype w/C106 specs	completed
14-Dec	2006	Refine product	completed
15-Dec	2006	Field test to Management/Shop	completed
19-Dec	2006	Field Test on USS Olympia	completed
Jan	2007	Prototype Implementation	In process

Statement A: Approved for Release.
Distribution is unlimited.

III. Metrics / Benefits:

Avg External temp	Avg Temp in suit	% Cooling in vest
83.5	69.5	17%

(Describe Benefits) Decrease chance of heat exhaustion, increased throughput time and time in tank. Improved Quality of Life.

Notes:

IV Cost & Benefits:

Projected Cost: <\$40/vest

Projected Benefits: Various Intangible

Validated Benefits: TBD

Roamer Arm for Control Cabinets



Statement A: Approved for Release.
Distribution is unlimited.





Project Description: This project's goal is to reduce the time it takes to install cabinets by creating an installation jig.

Project Outcome: Shop 11 personnel will innovate the current system of using a "trial and error" process of shimming by using a "Roamer Arm" to input the dimensions of the cabinet base into software that will be used to fabricate a jig for installation. Hours that are used by Shops 31 and 38 shimming and re-shimming the base will be transferred to Shop 11's one time research and development of new technology and techniques to yield significant time savings.

Moonshine Team Members: Wayne Takara, George Flores Jr., Harry Wasa, Gary Palacio, Randy King, Leslie Balbas, Scott Miller, Alfred Medrow, Melissa Lamerson, Francisco Cordero, Keola Martin, Rose Palacat, Terry Quapaw,.....

II. Status:

Month	Year	Event or Milestone	Status
23-May	2007	Moonshine Team Contacted	complete
1-Jun	2007	1st Moonshine Meeting	complete
4-Jun	2007	R&D- Mock up in X11	complete
18-Jun	2007	R&D- Lofters complete DFX	complete
10-Apr	2007	R&D- X31 Machine Liners	complete
22-Jun	2007	Production begins	complete
26-Jul	2007	Installation Complete	complete

Statement A: Approved for Release.
Distribution is unlimited.

I. Metrics / Benefits:

BREMERTO	OLYMP	COLUMBIA R&D	COLUMBIA ACTUAL	Actual Chang	Actual % Chan
918.4 mhrs	778.5 mhrs	345 mhrs	568 mhrs	280.5 mhrs	33%
33% Productivity Increase					

Benefits: 33% increase in productivity, implementation of new technology

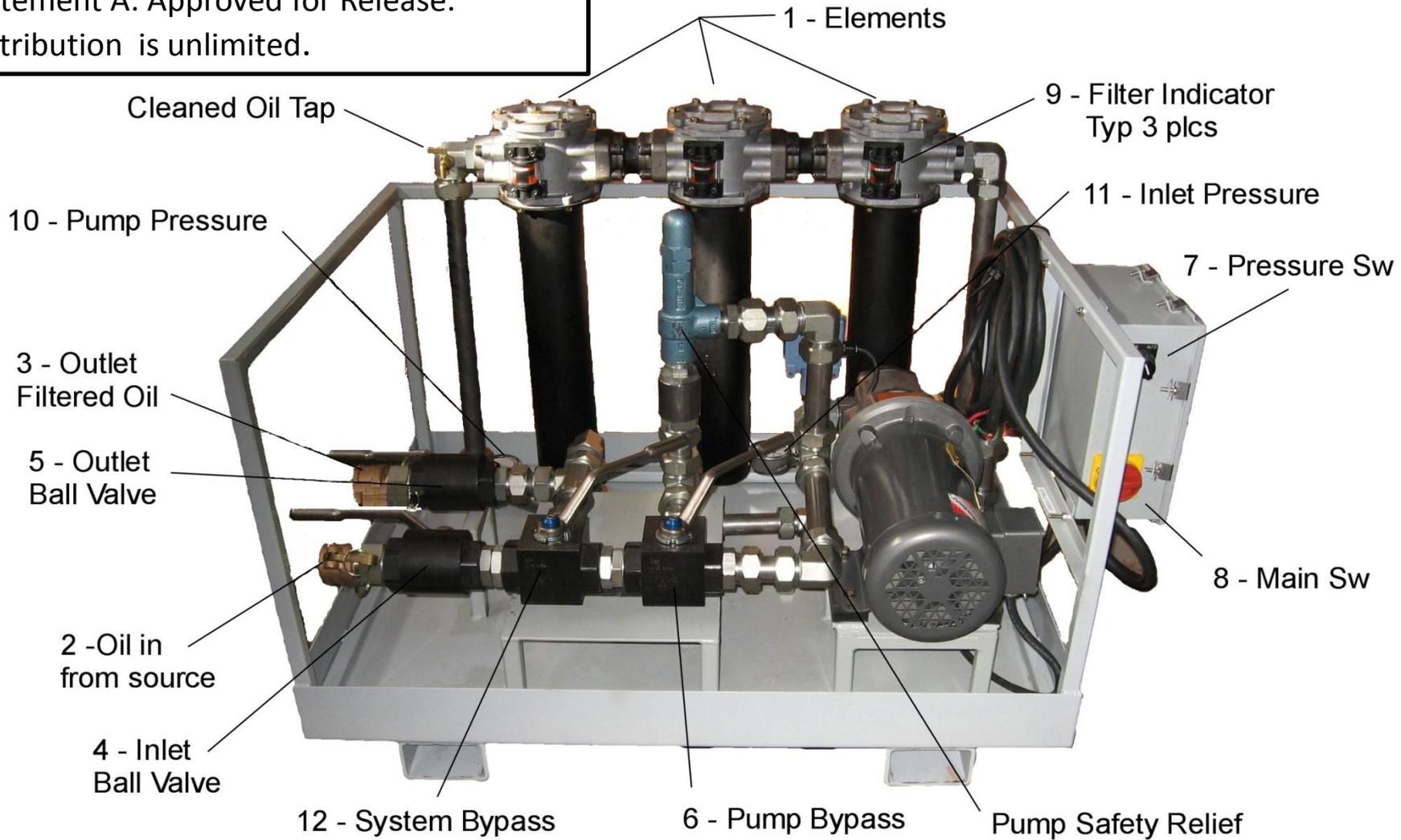
IV Cost & Benefits:

<u>Projected Cost:</u>	Labor: 568
<u>Projected Benefits:</u>	33% Increase in Productivity
	FY 07 210 mhrs.
	FY 08 210 mhrs.
	FY 09 210 mhrs.

Validated Benefits: TBD 26

Notes: See Calculations (Total Man hours taken from shops 11, 26, 31, and 38.)

Statement A: Approved for Release.
Distribution is unlimited.



The CFC 200 Series filtration units, currently being used in U.S. Navy dockside applications, were designed to provide a filtration System for new hydraulic fluid that does not meet the cleanliness standards required for a specified application. These units provide 1-1/2" camlock connectors, up to 25GPM flow, and offer three stage filtration providing the means to meet your cleanliness requirements