

Journeyman Training Program

Mark McCoy
Senior Training and Development Specialist

**General Dynamics – National Steel and
Shipbuilding Company (GD-NASSCO)**

NASSCO Background

- Original business was founded in 1905 as the California Iron Works
 - NASSCO as a corporate entity was formed in 1959
- In November 1998, General Dynamics purchased NASSCO
 - Became part of Marine Systems
- NASSCO is the only remaining full service shipyard on the US West Coast
 - Designer and Builder of ...
 - Navy auxiliary ships
 - Commercial ships of all types
- Approximately 15% of NASSCO's business is Repair
 - Prime maintenance provider for the San Diego-based LHA, LHD, LSD, LPD, and FFG class ships



People Building Ships – Employment

- **Employment:**

- 7,900 employees in 1981
- 1,800 employees in 1988
- 4,700 NASSCO employees (salaried & hourly)
 - 920 TIMSA employees
 - 1,500 long term partners and subcontractors

- **NASSCO is the leading manufacturer in Southern California**

- Essential employment niche between San Diego's high technology industries and tourist-based service industry
- Above average hourly wage for top journeyman with full benefits, extensive training and education programs
- Average age of workforce is 40 years

- **Largest minority employer in San Diego**

- 62% speak Spanish as first language
- 8% women in shipyard



Dry Cargo /Ammunition Ship - T-AKE (12 ships firm, options for 2 additional)



Design Particulars:

Length	210m (689 ft.)	Speed	20 kts
Beam	32m (106 ft.)	Max Dry Cargo Weight .	7,800 MT
Draft	9m (30 ft.)	Max Cargo Fuel	23,450 bbls
Displacement	~41,000 MT	Accommodations	172
Propulsion		Single Screw, Diesel Electric	

PC-1 Product / Chemical Tanker



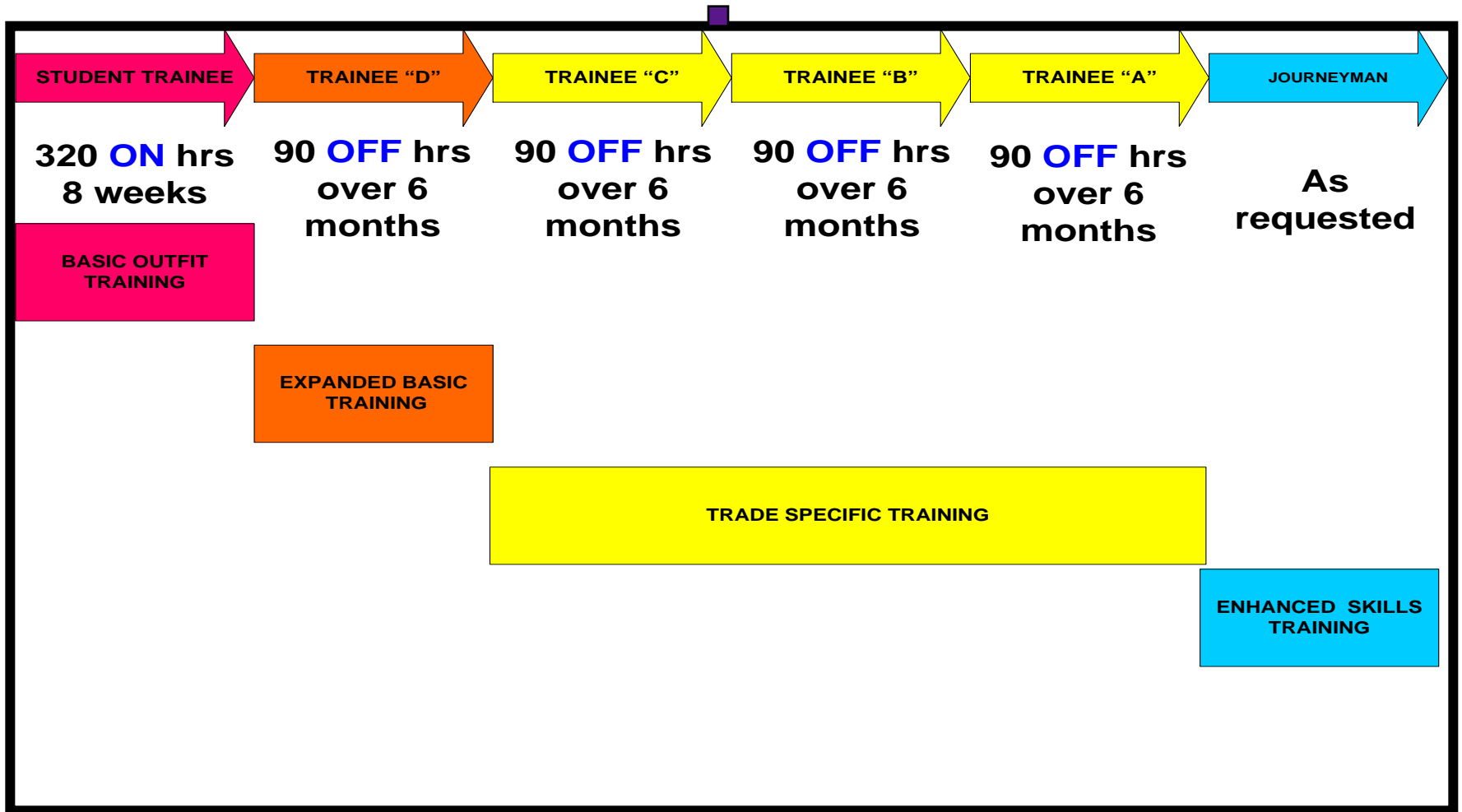
Design Particulars:

Length.....	183 m (600 ft.)	Design Draft	12 m (39 ft.)
Breadth	32 m (106 ft.)	Cargo Capacity.....	53,500 m ³
Deadweight	43,300 MT	Speed.....	15 Knots
Propulsion.....		Single Screw, Slow Speed Diesel	

Journeyman Training Program

- Eight Weeks of Student Training
 - ↗ On hours
 - Tack welding
 - Blue Print
 - Tool Cells, etc
- 24 months of continued trades training
 - ↗ After hours (before for 2nd shift)
 - ↗ 6 month interval for advancement
 - ↗ Pay increase at each level

Training Flow



After-hours Training Program

Student → Trainee D → Trainee C → Trainee B → Trainee A

Promotions Based on:

- Performance – at least average on bi-weekly evals
- 6 months work experience at that level
- Attendance
- Attend Monthly classes on own time



Program

with Trainee D personnel who have successfully resulted in a quality product.

presented in New Hire Orientation is actively achieved through lecture, five-minute meeting

Weeks 6 and 7 Trade Applications

HandsOn
Installation

Drawing
Interpretation,
Hanger Location,
installation

Practice Cells

Simulations

Week 8 Metal Outfitting

Welder Training Program

Charter: The Welder Course is designed to provide the stages of construction with Trainee D personnel who have successfully completed the basic training and certifications necessary to safely perform the primary processes that will result in a quality product.

Safety emphasis: All modules are designed to continually stress safety. The information presented in New Hire Orientation is actively reinforced throughout the program. Additionally, safety is addressed on a daily basis in each course through lecture, five-minute meeting safety grams, and demonstrations.

Week 1 Flat and Horizontal Fillets

Machine Hookup
Safety
Machine Care

Single and multi-pass flat fillet welding
Weld bead measurement
Horizontal single and multi-pass weld

Safe hose hookup
Tour of plate shop

Week 2

Vertical Fillet Welds

Proficiency in (3F)
1/4"
3/8"
1/2"
and 5/8"
weld sizes using
.045 wire

Weld theory and written test
tour of BAL

Week 3

Overhead Fillets and Flat Butt Joints

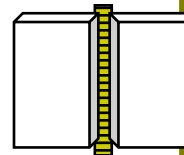
Ceramic tape backing
Explanation and identification of rework (pick-up marks)
Tour of SOC 3



Weeks 4 & 5

Flat, Vertical and Horizontal Butt Joints

Using .052 wire on 3/8" and 3/4" thick plate



Color coding of gas and fuel lines

Week 6

Overhead Butt Joints with .052 wire on 3/8" and 3/4" plate

Tool Cells

Ship Orientation



Weeks 7 & 8

Production Simulation:

Watertight collars, diagonal overhead fillets, inserts, rathole wraps

Koiki

Air Arcing
Surface and edge prep before and after welding

After Hours Classes

POT #	Pipefitter D (26008)	POT#	Sheet Metal D (11808)	POT#	Outside Machinist D (21008)
POT805	Burning Penetrations	POT805	Burning Penetrations	POT624	Basic Cable Way
POT800	Composite Blueprint	POT800	Composite Blueprint	POT800	Composite Blueprint
POT802	Basic Pipe & Reach	POT802	Basic Pipe & Reach	POT802	Basic Pipe & Reach
POT017	Work Packs & LED	POT017	Work Packs & LED	POT600	Basic Outside Machinery
POT801	Basic Sheet Metal	POT801	Basic Sheet Metal	POT625	Adv. Outside Machinery
POT #	Pipefitter C (26007)	POT#	Sheet Metal C (11807)	POT#	Outside Machinist C (21007)
POT012	Pipe Joint Fit Up	POT012	Pipe Joint Fit Up	POT017	Work Packs & LEDs
POT804	Basic Layout	POT804	Basic Layout	POT801	Basic Sheet Metal
POT102	Make Up Spools	POT102	Make Up Spools	POT620	Valves, Flanges & Gaskets
POT106	Sheet Metal Equipt. Install.	POT106	Sheet Metal Equipt. Install.	POT612	Precision Measuring
POT105	Small Rectangular Duct	POT105	Small Rectangular Duct	POT609	Advanced Reach Rods
POT #	Pipefitter B (26006)	POT#	Sheet Metal B (11806)	POT#	Outside Machinist B (21006)
POT009	Pipe Bending	POT416	Sheet Metal Attributes	POT626	Intermed. Precision Meas.
POT007	Tube Bending	POT413	Light Gauge Welding	POT619	Pump Identification
POT011	Pipe Specific Blueprint	POT417	Adv. Light Gauge Welding	POT621	Hydraulics
POT014	Valves & Systems Diagrams	POT452	Sketching	POT804	Basic Layout
POT103	Quality Attributes	POT418	Advanced Sketching	POT615	Pump Alignment
POT #	Pipefitter A (26005)	POT#	Sheet Metal A (11805)	POT#	Outside Machinist A (21005)
POT001	Pressure Testing	POT414	Vent Systems Diagrams	POT618	Machinery Quality Attributes
POT018	Silver Braze	POT401	Ventilation Test & Balance	POT623	Lasers Alignment
POT019	Advanced Silver Braze	POT402	Sheet Metal Layout & Fab.	POT627	Adv. Precision Measuring

Enhanced Skills Training

- **Emergent needs of Production**
 - **Aluminum Welding**
- **New Programs and Processes**
 - **Product Carrier Training**
- **Update Journeyman Skills**
 - **Advanced Welding Hook up**
- **Cross Trade Training**
 - **SOC 4**
- **Performance Evaluation and Communication Program (PECP)**

AS in Shipbuilding Technology Degree Program

- San Diego City College
- Fall and Spring Semesters
 - One SHIP and One GE class
 - One night (3 hours per week)
- SHIP instructors are from NASSCO but paid by SDCC

Class	Units
SHIP 101, Introduction to Shipbuilding Technology 1	3
SHIP 103, Introduction to Shipbuilding Technology 2	3
ELCT 111 Electrical Theory	3
ELCT 111L – Lab	2
SHIP 110 – Industrial Safety and Safety Management	3
SHIP 115- Shipbuilding Processes	3
SHIP 115L –Processes Lab	1
SHIP 201 – Technology, Organization and Leadership	3
SHIP 205 – Culminating Project	3
Total Units	24

UCSD Competitive Manufacturing Certificate

- Univ. of California, San Diego Extension
- 8 classes total on a quarter system (2 years)
- After hours. One night a week, three hours
- 4 additional classes for Engineering Management Certificate.

COURSE TITLE	CRS. NO.	UNIT S	START DATE			
CORE COURSES (All four courses are required – 12 units)						
Introduction to Competitive Manufacturing	AMES-40068	3				
Manufacturing Project Management	AMES-40092	3				
Process Management	AMES-40067	3				
Management Systems: ISO 9000 and 14000	AMES-40126	3				
ELECTIVES						
Facility & Equipment Economics	AMES-40061	3				
Communications Skills for Tech. Professionals -OR- Oral Communications for Tech. Professionals	BUSA-4B062 BUSA-40406	2 1				
Benchmarking Products & Processes	AMES-40083	3				
Supply Chain Management	AMES-40127	3				
NOTE: Students can earn a Professional Certificate in Manufacturing Management by completing 12 additional units from the Professional Certificate in Engineering Management.						
L=UCSD La Jolla Campus; N=UCSD North County Center; S=Sorrento Mesa						

Thank you!

Questions?