



PATTEN COMPANY

SAFE SYMPOSIUM 2020

WING GROUP OF COMPANIES



Innovator in polyurethane design for sponsons, tubes, and inflatable boats. Our boats are used by the U.S. Army, U.S. Navy SEALs and other military professionals who demand only the best.



Iconic producer of aviation life rafts and other lifesaving solutions for the DoD since 1947. Patten is also the sole provider of life rafts for NASA and SpaceX crew mission capsules.



Pioneer in the development lifesaving solutions since 1967. Mustang Survival is committed to the protection and enhancement of those who push themselves to extremes.

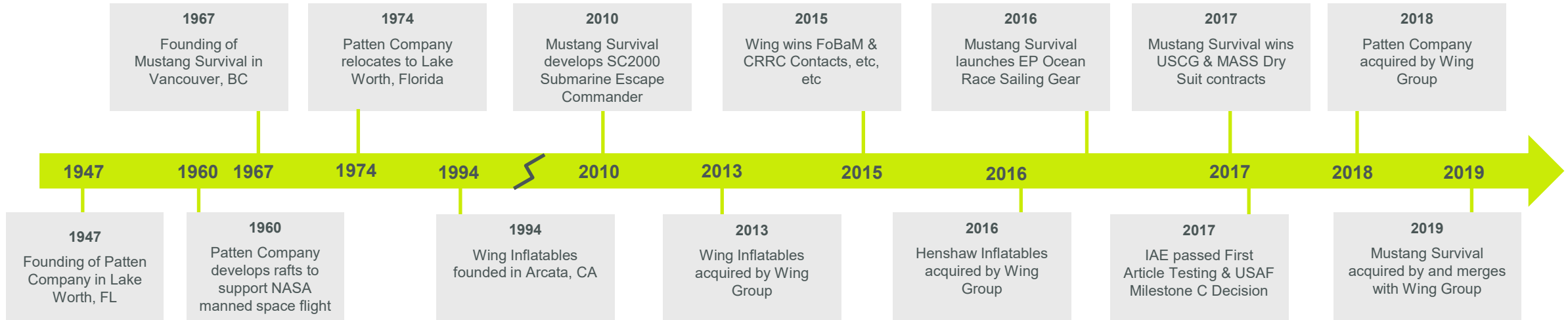


The leading manufacturer of Hypalon inflatable tubes and collars to RIB builders in the UK and throughout the world. Superyacht customer and militaries alike put their trust in Henshaw products.

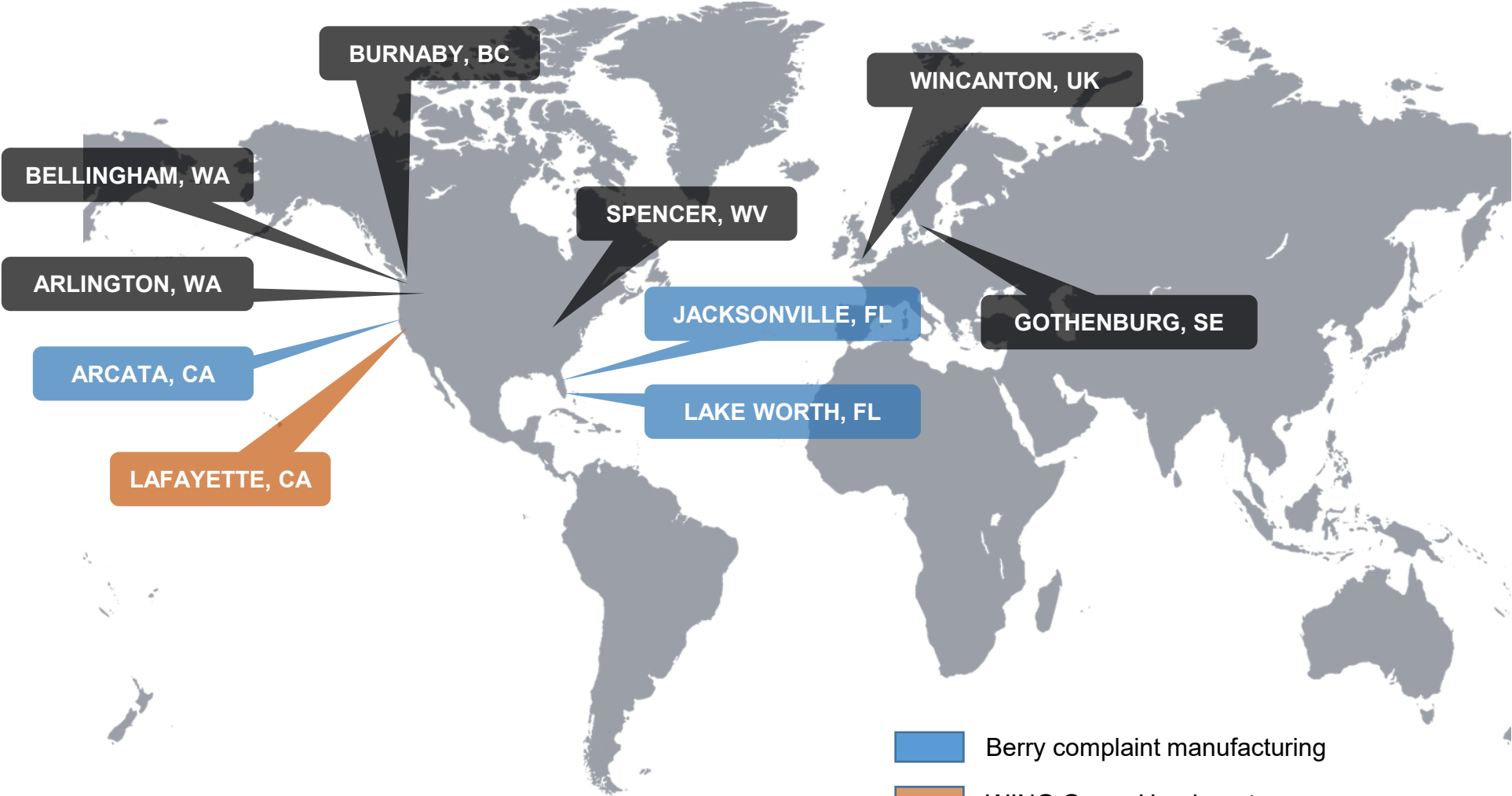
72 YEARS OF LIFE-SAVING INNOVATIONS



The Wing Group of Companies has built deep, trusted relationships with elite users over its 70+ year operating history and established itself as the Premier group of Brands in the North American marine and aviation safety equipment market



GLOBAL FOOTPRINT



Blue box: Berry complaint manufacturing

Orange box: WING Group Headquarters

OUR MISSION

DELIVERING CONFIDENCE TO THE MOST DEMANDING MARINE & AVIATION USERS IN THE WORLD THROUGH INNOVATIVE TECHNICAL SOLUTIONS



PATTEN COMPANIES

Introduction:

- Manufacturer of critical inflatable lifesaving equipment since the 1940s
- **Products include:**
 - 1p, 7p, 20p legacy rafts used in military aviation
 - 25p and 50p U.S. Navy shipboard rafts
 - Multi-Place Life Rafts for U.S. Army, NASA, SpaceX
- 38k square foot facility in Lake Worth, FL
- 54 employees
- Certified Small Business
- Berry compliant
- ISO 9001:2015 certified

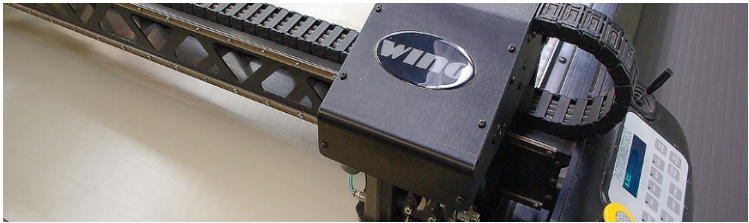


MANUFACTURING CAPABILITIES

- **Lake Worth, Florida**
 - Primarily focused on production for DoD where the Berry Amendment or Buy American Act (BAA) is applicable
 - Over 1,500 life rafts per year for U.S. Air Force, U.S. Navy, U.S. Army, USMC, USCG, NASA, SpaceX and international militaries
 - Sole source life rafts for NASA, SpaceX, Boeing Starliner
 - Have operated out of the same 38,000 sq. ft. facility in Lake Worth, Florida since 1974

Key Equipment Detail

Eastman Automated Cutter	CAD cutting machine for cutting patterns from specialty fabrics and textiles
Radio-Frequency Welding Machines	High-frequency seam sealing of inflatable tubes, bladders, canopies and small parts
Rotary Heat Welding Machines	Hot weld technology for longer tubes supporting larger capacity marine and aviation life rafts
Single and Double Needle Sewing Machines	For small parts, canopies and non-air holding components



AVIATION RAFTS



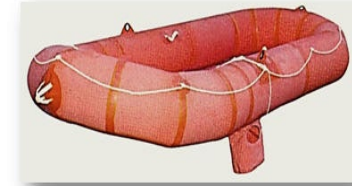
- **F2B for USAF, U.S. Army and foreign militaries**
 - Used on C-130 aircraft
 - More than 25,000 manufactured over 4 decades
- **LRU-16/P (1 person), NSN: 4220-01-003-6763**
 - Used on USAF fast jets, bombers (stealth and non-stealth)
 - Used on certain U.S. Army rotary wing aircraft
 - More than 100,000 manufactured over 4 decades
 - Available with face shield
- **LR-1 (1 person), NSN: 4220-00-118-6122**
 - Used on rotary wing aircraft where larger rafts not required
 - Formerly used on T-45s and F-18s



AVIATION RAFTS (continued)



- **LRU-13/A (7 person), NSN: 4220-01-074-3408**
 - Used on C-2 aircraft; also has SAR applications
- **LRU-18/U (1 person), NSN: 4220-001-272-8004**
 - Used on the E-2 and with survival backpack systems
- **Multi Place Life Rafts (MPLR) in sizes 4, 6, 8, 12, 20**
 - Coated polyurethane, welded construction
 - Rights on inflation 100% of the time in normal sea states
 - MPLR 4 used in NASA (Orion), SpaceX (Crew Dragon)
 - MPLR 6 used in LSI HARD-6 for MH-47 Chinooks
 - MPLR 8 used in LSI UNI-PAC II for P8, certain rotary wing



MORE ON PATTEN'S MPLR LINE

- **Innovative Technology**

- Self-righting canopy
- Rights on inflation 100% of the time in normal sea state conditions
- Boat-shaped design offers better seakeeping in higher sea states
- Meets NAVAIR MPLR performance specs



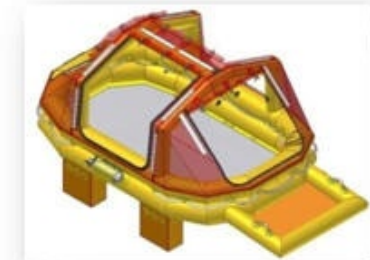
- **Cost Effective**

- Priced an average of 10% below competitor rafts



- **Proven**

- NAVAIR started testing in Pensacola in 2002
- MPLRs 6, 8, 12 put on NAVAIR QPL in 2007
- MPLR 20 put on NAVAIR QPL in 2018
- MPLR 8 already used by NAVAIR in UNI-PAC II for P-8s
- MPLR 4 variant used by NASA (Orion) and SpaceX (Crew Dragon)



Recent winner of NAVAIR MPLR 8/MPLR 20 Multi-Platform Awards!

MORE ON PATTEN'S ULW SSLR

- The Ultra Lightweight SSLR is a lighter weight, lesser bulk version of the ubiquitous LRU-16/P single seat raft and the more recent LRU-23/P ejection raft used aboard rotary wing aircraft and fast jets
- 95% welded seams (not glued)
- *Packed weight* reduced by 24% from LRU-23/P
- *Packed volume* reduced by 37% from LRU-23/P
- Exceeds performance specifications of MIL-L-83491A and material specifications of MIL-C-83489

	Patten LWSSLR	Patten LRU-23/P SSLR	LRU-16/P	LRU-23/P
Manufacturers Part #	9-01-200	9-01-202	9-01-003	40154001, 40061001, 40154002
NSN	TBD	TBD	4220-01-003-6763	4220-99-352-4975
Nomenclature	LWSSLR	SSLR	LRU-16/P	LRU-23P
Volume (Packed)(in^3)	††382 cubic inches (Threshold Goal) 267 cubic inches (Objective Goal)	612 cubic inches	714 cubic inches	612 cubic inches
Full Configuration Weight (lbs) w/o Inflation System	4.03	5.27	5.78	5.27
Full Configuration Weight (kg) w/o Inflation System	1.83	2.39	2.62	2.39
Weight Reduction (compared to LRU-23/P)	-24%	0%	10%	0%
Material	Light Weight Single sided polyurethane coated fabric	Single sided polyurethane coated fabric (MIL-C-83489)	Single sided polyurethane coated fabric (MIL-C-83489)	Single sided polyurethane coated fabric (MIL-C-83489)
Method of Construction	Radio Frequency Welded (RF), adhesive (5% non-air holding), and sewing	Radio Frequency Welded (RF), adhesive and sewing	RF, adhesive (40%), and sewing	RF, adhesive, and sewing
Inflation System	Mirada Series 1000 Hammar MA-1 & Variants	Mirada Series 1000 SEI M-100 Hammar MA-1 & Variants FLU-2A/P (DEPRECATED †)	FLU-2A/P (DEPRECATED †)	FLU-6/P (DEPRECATED †)
Dimensions (Packed)	††20" x 12.75" x 1.5"(Threshold Goal) 17" x 15.75" x 1" (Objective Goal)	12" x 17" x 3"	12" x 17" x 3.5"	12" x 17" x 3
Dimensions (Inflated)	Approx. 61-3/4"L x 39-1/4"W	61-3/4"L X 38-1/2"W X 35-1/8"H	70"L X 36"W X 50"H	61-3/4"L X 38-1/2"W X 35-1/8"H
Specifications	NEW MARKET Based on MIL-PRF-81542D(1) Rev. 10-OCT-2019	Exceeds MIL-L-83491A Meets MIL-PRF-81542D91), III Rev. 10-OCT-2019	MIL-L-83491A	Proprietary information
† FLU-2A/P and FLU-6/P are not recommended for new construction and MS29599 Inlet Check Valve is deprecated by Notice 2, dated 30-JUL-1997				
†† Air Warrior Over-Water Gear Carrier (OWGC) - MIL-PRF-81542D(1) JUL 2019				

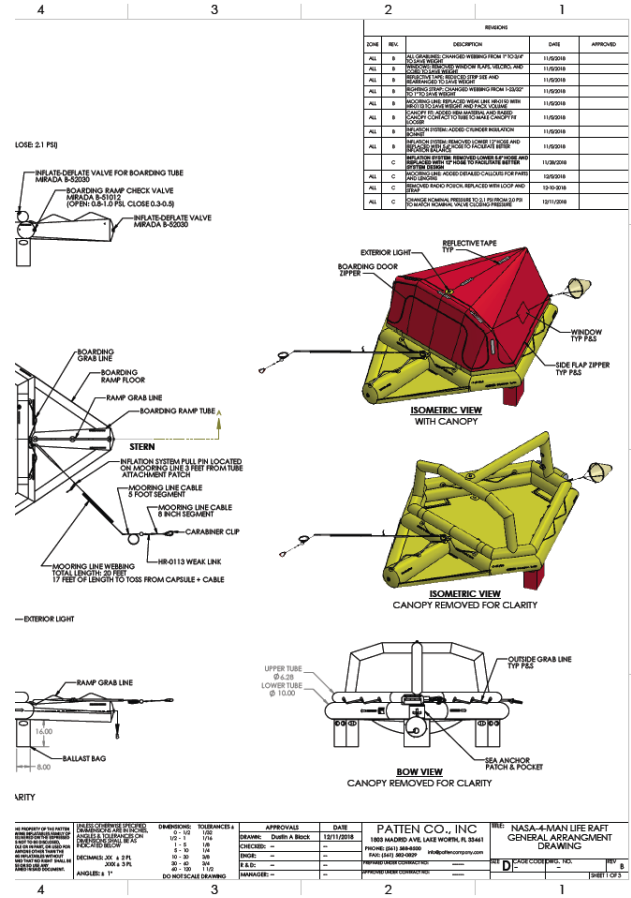
MORE ON PATTEN'S NASA and SPACE-X RAFTS

ORION

OCTOBER 2018

Weathering the Storm

Focused specifically on open water raft and survival equipment performance, the Orion Crew Survival Systems (OCSS) team took to the simulated choppy waves at the Louisiana Wave Studio in Shreveport, Louisiana.



OTHER PRODUCTS



- 25p and 50p shipboard life rafts for NAVSEA via Viking Life-Saving Products



- Commercial jet trainers, oil booms, shelters, decoys, tactical training walls
- Patten also makes the giant rolling rock in *Raiders of the Lost Ark*

CONTACT INFO



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WING | HENSHAW | FABTEK | PATTEN | MUSTANG SURVIVAL