History of AIRE

By Herm Hoops ~ 2017

Over the years Alan Hamilton doesn't know how many times he has been asked the following two questions: How did you get into the whitewater business and how did AIRE get started? As AIRE, raft and inflatable kayak manufacturers since 1982, celebrates the 25th year of manufacturing inflatables, it is only fitting to answer these questions.*(#a.)*

Hamilton graduated from the University of South Dakota in 1979 and moved to Idaho in June where he spent the summer unemployed on the beaches of Lake Coeur d'Alene in North Idaho. He eventually got a job at a bank and bounced around northern Idaho at various branches for a year. When his training was finished Alan was transferred to the Moscow, ID branch of First Interstate Bank.*(1,7)*

In 1980, a fellow bank employee invited Hamilton on his first rafting trip, a private day trip on the Lower Selway River in Idaho. They rented equipment from the University of Idaho outdoor program. The group had little or no experience so it was fortunately a class II run. The group had four 10'-12' rafts with 4 or 5 people in each. Hamilton's boat crew was comprised of a "guide," who had been rafting once before, two women and Alan who had no experience at all. The first wave of the first rapid resulted a flip. Fortunately, everything turned out okay and they eventually got the raft to shore and all were present and accounted for. The only problem was that we were on the wrong side of the river in regard to the road. When we managed to get back over to the road, Hamilton's companions decided to abandon ship. After shuffling some bodies around, he was put in a raft with two other guys that nobody else wanted to ride with because they were only interested in going for the big stuff and he was hooked on the sport of rafting!*(1)*

Hamilton met Bill Parks, the owner of Northwest River Supplies, Inc., while working at the bank and rafting with the same group. Parks occasionally joined the weekend outings and in the summer of 1982, Bill invited Hamilton on a preseason Middle Fork of the Salmon River trip. They flew into Indian Creek because the road into Boundary Creek was not open because of snow. It was Hamilton's first wilderness trip and he rode in Bill's raft, while the other two guys ran another boat. It was an exciting high water trip. The Middle Fork was running 8' at the confluence when they turned the corner to continue down the Main Salmon. The original plan of two weeks turned into just eight days and the trip ended at Spring Bar, 10 miles upstream of Riggins, ID. The Main Salmon was running close to 100,000 cfs and the parking lot at Vinegar Creek was under water. The scariest part of the trip was the ponderosa pine trees floating in the river and the swirly in the eddy lines. Approximately, 15 months later in the fall of 1983, Bill Parks asked Alan Hamilton to be the general manger of NRS.*(1,7)*

{Numbers in parenthesis (1) are REFERENCES; letters in parenthesis (#a) are described in SIGNIFICANT NOTES.}

While working at NRS Alan met his future partners in AIRE. Alan became acquainted with Dennis Hill, a part owner of Seattle Sports, during a Middle Fork of the Salmon trip in 1985.(#c.) The second partner Alan met was Kris Walker, owner and designer of the Argonaut Catarafts. Walker visited NRS in the fall of 1984 and Parks, Walker and Hamilton went to a pond and rowed his Argonaut cataraft.*(#d.)* AIRE would later produce the Argonaut and call it the Cougar. Kris and Alan started rafting together on a Grand Canyon trip in 1985.*(1,7)*

Greg Ramp started R & R Inflatables in Grants Pass in 1984. Greg designed and manufactured the Challenger inflatable kayaks (IK). One unique feature of Challenger was a closed cell foam floor making it a more rigid craft. AIRE would eventually use that feature in future models of the Lynx Series IK and Puma Series rafts. Ramp and Hamilton first met on a Cascade Outfitter demonstrator trip in 1986.*(1)(#e.)*

After five years Alan Hamilton resigned as Vice President and General Manager of NRS and moved to southern Idaho. There Hamilton was approached by Dennis Hill and Kris Walker, and soon after Greg Ramp, to consider starting a company. By pooling our resources AIRE was incorporated in March of 1989. Greg, Kris and Alan each were ¼ owners and put in $9,000.00 each. Dennis and Bob Perlatti, Dennis' partner at Seattle Sports, gave equipment, material and financial support from Seattle and they split the remaining ¼ of AIRE. Dennis would later buy Bob's share of AIRE.*(1,7)*

AIRE's first order was from a New England company to build inflatable collars for aluminum hull RIBs. Some of the collars were actually made at Seattle Sports/Seattle Tarp. AIRE's first whitewater order, thanks to Jack Nelson, came from Cascade Outfitters for some Cougar cataraft tubes. Even with this good start to the business, it would be a full year and half before Greg, Alan and Kris started drawing a salary.*(1)(#s.)*

Hamilton's major focus was bookkeeping, marketing and sales where his banking background and previous sales experience served him well. In the beginning all of the partners worked in production. Greg Ramp became President and continues to be in charge of production and design. He uses various computer programs to design AIRE's different products. Kris Walker did purchasing and design before he left. Dennis Hill was and is an active advisor.*(1)*

They rented space in Garden City and purchased our equipment: two sewing machines, a radio frequency welder, a rotary welder and a computer costing about $15,000.(#g.) Greg Ramp recommended and spearheaded the use of the AIREcell system.*(1,7)(#k.)*

AIRE has a unique system of an inner unsupported air holding cell (or bladder) made of vinyl or urethane and an outer layer made of PVC outer skin with zippered compartments.*(#t.)* All AIRE and Tributary have welded seams and do not use adhesive except the Tomcat and Sawtooths, which have polyester stitched seams. *(1,7)(#k.)*

Over the years, AIRE has used fabrics from all over the world. The original PVC material came from Heywinkel a Germany company. AIRE used it for several years before switching to PVC fabric from Ferrari in the mid-nineties and Ferrari is AIRE's current fabric provider.*(1)(#m.)*

Ferrari has a unique precontraint fabric. During the coating process, most fabrics tension the base cloth only in the length direction. Precontraint means that the base fabric is tensioned by length and width during the coating process, so the fabric has very little stretch when inflated. This is crucial for seam strength and consistency. Since AIRE uses the AIREcell system, they order PVC fabric with 70% of the coating on the outside and 30% of the coating on the inside. This means that the current 43-ounce material has approximately 30 ounces of coating on the outside of the fabric gave more abrasion and ultraviolet protection. This type of fabric coating also helps reduce the weight of AIRE boats and counters the extra weight of the inner AIREcell. The urethane fabrics for both the outer skin and the AIREcells are currently made in the United States by Lamcotec.*(1,7)(#h.#o.)*

In 1995, Jim Dean, AIRE and the owners of Seattle Sports started Outcast Sporting Gear, Inc. that marketed a line of fishing inflatables, float tubes and accessories used for flyfishing. In 2002, AIRE bought out the other owners of Outcast and moved it to the new factory in Meridian, ID. Shortly thereafter, AIRE started AIRE Industrial to make products for the hazardous spill containment using similar materials and manufacturing techniques as other AIRE products.*(1)(#I.)*

All AIRE boats are made in Idaho and Tributary Boats are made in China. Almost all of the industrial products are made in the Meridian, Idaho factory which currently has around 60,000 sq. ft. and employs about 40 employees. The AIRE branded inflatables are made at the Meridian Factory. The Tributary line of inflatables is made overseas. Outcast Sporting Gear and Fish Cat fishing inflatable boats are made at the AIRE factory or they are imported depending on the model.*(1)*

In 2002 Idaho River Sports moved with into the new AIRE factory in Meridian and have operated the "factory store" with a selection of SUPs, kayaks, canoes, inflatables and river equipment.*(#j.)*

In 2008 Alan Hamilton stepped down from his position and assumed an advisory role. Dan Allumbaugh has taken over Hamilton's duties and is the vice president and general manager of AIRE, Inc. Dan started at Outcast Sporting Gear, Inc. in 1995 and was promoted to general manger in 1997. Dan and our many loyal employees, some who have been with us for more than 20 years, continue to strive to provide the best products and best custom service.*(1,7)(#q.)*

In 2014 the AIRE team began working with BAKraft's Cory Walker on the concept of a packable backcountry IK and launched the AIRE BAKraft Hybrid. Cory led the charge on industry knowledge, fabric insight and passion for ultra-light boats while AIRE lent a hand with engineering, craftsmanship and prototyping.*(6)(#l.)*

AIRE has been designing boats for various river conditions, from paddleboats to oar boats, since the company's inception. Much of their design comes from the staff's experience and from input of customers. When people ask for things and AIRE builds them, the staff tests them and if it's something they like they make it part of the product line. In a whitewater, or any boat design, everyone stands on everybody else's shoulders. If someone comes up with a good idea the next one improves it.*(7)*(#r.)

All AIRE boats have a ten-year no fault warranty that covers all the labor and material costs of fixing your boat or kayak if it fails due to faulty construction. They pay for return shipping costs. Tributary boats have one and five-year limited warranties which are not the same as the AIRE no fault warranty. The no fault warranty protects against user damage and the limited warranties do not.

AIRE offers two different self-draining floor options: a standard floor with drains where the water enters the drain holes and acts as ballast or the sealed floor pocket option that is better for silty rivers.*(#v.)*

The D Series is AIRE's performance raft that features "diminished" bow and stern tube diameter designed for paddle teams and for extra space on oar frame boats. They include frame wear pad, Leafield C-7 Valves, thwarts, d-rings and carry handles. Colors vary by model: blue, dark green, lime, orange, purple, red, white and yellow.

2016 Model	Lngth	Width	Tube	Rise*	Wt.	Fabric	Denier/Wt.	Price
130D	13'0"	6'4"	19"	12"	120#	U	1670/37oz.	$4,199
143D	14'3"	6'8"	20"	10"	146#	U	1670/37oz.	$4,449
156D	15'6"	7'0"	22"	12"	169#	U	1670/37oz.	$4,699
160DD	16'1"	8'0"	21"	15"	175#	U	1670/37oz.	$5,149

{*Rise = Bow rise; Fabric: U = urethane}

The E Series "elliptical" design is for more technical, narrow, rocky, and steep rivers. It features a high-rising bow, slightly narrower beam and smaller diameter tubes and a square stern to guide from. They include frame wear pad, Leafield C-7 Valves*(#n.),* thwarts, d-rings and carry handles. Colors vary by model: blue, dark green, lime, orange, red, white and yellow.

2016 Model	Lngth	Width	Tube	Rise*	Wt.	Fabric	Denier/Wt.	Price
130E	13'2"	6'2"	19.5"	13"	115#	U	1670/37oz.	$4,049
143E	14'5"	6'7"	20"	12"	136#	U	1670/37oz.	$4,299
156E	15'10"	7'1"	21.5"	14"	159#	U	1670/37oz.	$4,549

{*Rise = Bow rise; Fabric: U = urethane}

The R Series round design with large tube diameters and long water lines, offers maximum stability and stiffness and is primarily for oar frames and gear on big rivers and extended trips. They include frame wear pad, Leafield C-7 Valves, thwarts, d-rings and carry handles. Colors vary by model: blue, dark green, orange, red, white and yellow.

2016 Model	Lngth	Width	Tube	Rise*	Wt.	Fabric	Denier/Wt.	Price
130R	13'2"	6'2"	19.5"	10.5"	122#	U	1670/37oz.	$4,199
143R	14'3"	6'8"	20"	10"	146#	U	1670/37oz.	$4,449
156R	15'9"	7'2"	22"	12"	169#	U	1670/37oz.	$4,699
176R	17'7'	7'8"	22"	12"	190#	U	1670/37oz.	$6,699
183R	18'4"	8'6"	22.25"	12"	220#	U	1670/37oz.	$6,899

{*Rise = Bow rise; Fabric: U = urethane}

The Puma Series with narrow beams, high rockers and a continuous curve design are designed to play in waves and run tight lines. They add a level of excitement to running easier class II and III water and yet have the stability necessary for experienced paddlers to run class V sections and drop waterfalls. While primarily a paddle boat, when set up with a frame, anglers can take advantage of their excellent maneuverability and responsiveness for fishing on any kind of water. They include frame wear pad, Leafield C-7 Valves, thwarts, d-rings and carry handles. Colors vary by model: blue, dark green, lime, orange, red, white and yellow.

2016 Model	Lngth	Width	Tube	Rise*	Wt.	Fabric	Denier/Wt.	Price
Puma	11'6"	5'6"	18"	12"	89#	U	1670/37oz	$2,899
Super Puma	13'1"	5'8"	18.5"	14"	100#	U	1670/37oz	$3,149
Super Duper	14'2"	5'10"	19"	14"	115#	U	1670/37oz	$3,849

{*Rise = Bow rise; Fabric: U = urethane}

Tributary HD Series: Most of the Tributary boats, introduced in 2004, have designs based on old AIRE designs. The Catarafts are old Jaguarondi and Ocelots, the Strike is an old Force Expedition and the Tomcat is based off the Caracal Models. The Tributary HD Series is for people who do not do a lot of river trips every year, but they are well-built boats that can take a beating year after year. They include Leafield B-7 Valves, thwarts, d-rings, carry handles and are available in blue and dark gray only.

2016 Model	Lngth	Width	Tube	Rise*	Wt.	Fabric	Denier/Wt.	Price
Nine.Five HD	9'8"	5'3"	18"	9"	70#	U	2000/42oz.	$1,649
Twelve HD	12'4"	6'1"	18"	9"	118#	U	2000/42oz.	$2,249
Thirteen HD	13'3"	6'6"	19"	13.5"	137#	U	2000/42oz.	$2,599
Fourteen	14'3"	6'10"	20"	12.5"	146#	U	2000/42oz.	$2,799
Sixteen	16'4"	7'2"	22"	15"	177#	U	2000/42oz.	$3,099

{*Rise = Bow rise; Fabric: U = urethane}

AIRE produces two types of cataraft Expedition and Performance. The Expedition Series includes the Lion, Leopard and Jaguarundi that have large tube diameters and long straight sections to accommodate large frames for extended trips. The Performance Series includes the Sabertooth frameless R2, designed for paddling big, technical whitewater. The Sabertooth features include a quick draining mesh floor with knee protection, built in foot cups and cross tubes. The Wave Destroyer Series is for experienced boaters who challenge big water. It has radically kicked tubes and is available in four sizes for running high class water or an occasional extended trip.*(7)(#u.)*

AIRE produces a variety of inflatable kayaks. The recently designed BAKraft was designed to be the perfect packraft.(#l.) The Force, Lynx, Outfitter and Tomcat Series are designed as whitewater IK's. In 2016 the Force was updated with a mesh floor top and bottom drain system, bow and stern d-rings, and d-ring thigh strap attachment points at the hip. More portable and packable than a hardshell boat, it requires little storage and transport space.

The Lynx Series are all-around whitewater kayaks built for day-long outings and small extended trips. The Outfitter Series has large tube diameter and low seat position making a stable and forgiving whitewater kayak. There's room for two in the Outfitter II, or it can be paddled solo with extra capacity for gear on extended trips. The family-friendly Tributary kayaks are manufactured with a heavy-duty PVC outer shell with an inner air-retaining chamber (AIREcell) for an affordable price. The array of different models offers options for different skill levels and uses. AIRE also produces a Crossover Series (Super Lynx, Strike Series and Traveler Canoe) designed for lakes, rivers and a variety of activities. The Sea Tiger was designed for the hardcore touring/sea kayaker who needs a portable boat or can't store a hardshell. It has bow and stern skirts for extra storage and an improved rudder system can be adjusted along the length of the kayak for any seat position. Finished with rustproof components, Sea Tiger is a mobile traveler, ready to meet Arctic swells head on or dart through Na Pali Coast caves.

Inflatable river boat production is AIRE's primary company income, but they also manufacture containment items related to oil and gas production and secondary containment for construction and military operations. The break down as of 2015 is about 40% whitewater, 30% fishing and roughly 30% containment items. As of 2015 about half of the containment business is gone due to the falling oil prices. AIRE is getting more and more outfitter business, with the breakdown about even with private boaters. AIRE has more than 100 dealers in whitewater and fishing retail sales. They sell to Cabelas and Sportsman's Warehouse and other large distributers.*(7)* In 2015 AIRE entered the packraft market.*(7)(#l.)* They also market a lightweight and stable SUP.*(7)(#o. #p.)*

AIRE has a robust foreign market. One of the interesting ones is South Korea. The fly-fishing craft have really been big sellers in Korea fishing clubs. There are pictures of 200 or 300 people carrying our boats on their shoulders going down to the river for a bass fishing tournament. Japan is another good market as is South America. There are import, export and other issues with foreign sales but to be successful you have to learn it and deal with it. Most of AIRE's foreign customers have figure out and they know the loop holes, like the best way to get a boat from the United States to Costa Rica.

In 1989 while AIRE was kicking out its first models of rafts, kayaks and catarafts the rest of North America was enjoying the newly released Sega Genesis, Disney World's grand opening to the public, and the Premier of Seinfeld on television. One March 9th 1989, the very day that AIRE was organized a strike forced Eastern Airlines into bankruptcy, bread was $.67 a loaf, you could by a stamp for $.25 and the Dow - Jones was a whopping 2,753. Over the years AIRE has continually supported river events, organizations, trade shows and it has been a leader in the river conservation movement. Operating AIRE and manufacturing American-made inflatable boats has been quite the accomplishment and AIRE plans to be around for many more to come.

REFERENCES

* - University of Utah, J.Willard Marriott Library, Special River Archive, Herm Hoops Collection
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(2) *River Runner Magazine - Rubber and Air*; 1990; Herm Hoops Catalog Collection;
(3) Jack' Plastic Welding Website;
(4) The Complete Book of Inflatable Boats; Hubbard, Don; 1980; Western Marine Enterprises, Inc.; Page 43;
(5) Oral Interview with George Aragon ~ Maravia & Holcombe Industries, Boise, Idaho; Herm Hoops November 17, 2014;
(6) Canoe & Kayak Magazine; Review: AIRE's BAKraft; Jun 25, 2015; www.canoekayak.com/gear/review-aires-bakraft
(7) Oral Interview with Alan Hamilton and Greg Ramp; AIRE, Meridian, Idaho; Herm Hoops; June 17, 2016;
(8) AIRE Documents provided to Herm Hoops in AIRE Repair Clinic, Meridian, ID; 2011;

MISCELLANEOUS

- U.S. Coast Guard Hull Code: AIR
  (Location of serial number is usually across from safety tag)
- AIRE, Inc.; 2021 E. Wilson Lane, Meridian, P.O. Box 186 Meridian, ID 83680; 800-243-2473 / (208) 991-5771; email: info@aire.com

SIGNIFICANT NOTES:

(#a.) AIRE:

AIRE stands for Argonaut Inflatable Research and Engineering because the company began manufacturing aeronautical inflatable devices. They started out using the name "Argo" because Chris Walker had a cataraft that he was marketing by that name, made by Angel Bell in Missouri. Greg and Alan thought people kind of knew the Argonaut name and that gave them a good marketing tool and they wanted to be more than just a raft manufacturing company, so originally the name was Argo Inflatable Designs, AIDS! That was kind of a problem so they went with Argonaut Inflatable Research and Engineering. The idea was that would hopefully help get contracts to build other inflatable structures.*(2,5,7)*

(#b.) PVC:

PVC, which is also commonly referred to as "vinyl," is made from two basic substances: chlorine, which comes from salt, and ethylene, a compound derived from crude oil. The chlorine and ethylene are combined to produce ethylene dichloride, which undergoes high heat and polymerization to create the powder known as "polyvinyl chloride resin." To make PVC fabric, manufacturers process PVC resin with other materials to obtain the desired color and texture, and then use the PVC to coat one side of a knit fabric, such as polyester or Lycra. The origins of PVC fabric date back to the early 1920s, when a scientist named Waldo Semon discovered a versatile new material. He called this new product "polyvinyl chloride," or "PVC." In the following decades, PVC was used in a variety of products, from piping to raincoats, with PVC-coated fabrics gaining popularity in the 1950s and 1960s. PVC rafts, especially the larger sizes, are difficult to roll up.

(#c.) Dennis Hill:
Hill was a part owner of Seattle Sports when Hamilton met him. Seattle Sports supplied waterproof bags to NRS and many other companies. Dennis and his partners started Seattle Sports in 1983. Before that he had worked for another company that produced similar products. Dennis would later sell his shares of Seattle Sports and start Newmedics in 1991.

(#d.) Kris Walker and Argonaut:
The original Argonaut was made of PVC(#b.) with no AIREcells. NRS imported a neoprene version of the Argonaut and paid a royalty to Kris Walker. Kris, Hamilton and several other catarafter's were in several videos produced by Mike Hamilton (not related) that helped to make catarafts popular. Walker came up with the rescue boat floor using drop stitch. Maravia was building boats for Walker for some time. Walker left AIRE in 1997 and formed Oceanid (Rescue Boats: Oceanid Inflatable Rescue Boats and Rapid Deployment Craft) in Washington.(1,5)

(#e.) Greg Ramp:
Greg Ramp started R&R Inflatables building inflatable kayaks in his garage in Grants Pass, Oregon in 1984. He designed the Challenger self-bailing kayak. After two years of not selling many boats he finally started selling to Cascade Outfitters. They invited Greg on this self-bailing demonstration and on that trip he met Alan Hamilton and Doug Tims of Maravia. It was probably a year before Ramp got a PVC welding machine. He told Doug that he found a guy who made a very good welding machine and we had built a really good inflatable kayak by welding it. Tims was pretty interested in the welding and thought welding would solve an issue for Maravia because they were having seam failure with adhesive.(7)

R&R merged with Maravia around 1987 and Ramp became the vice president of Research and Development at Maravia. In 1988 Greg Ramp designed the thwart attachment used by Maravia to this day. By the end of 1988 Ramp decided to leave Maravia.*(1,5,7)* One of Ramp's concerns at Maravia was the urethane spray that is very toxic. In his words: "Its very toxic. I didn't like what it was doing and just thought it was going in the wrong direction. I was trying to get where there weren't any adhesives, toxic chemicals or solvents used in the manufacturing process."

(#f.) Jack Nelson &Cascade Outfitters:
In 1979 Ron Mattson founded Cascade Outfitters in a small outbuilding at his rural home in Oregon. An avid river runner, Ron's Goal was to reach out and share his passion for the sport and the knowledge of the equipment with others. Mattson eventually sold Cascade Outfitters to Jack Nelson. Matson was on the ill-fated Yangtze River Expedition led by Ken Warren. Ron Mattson died in an Oregon coast bicycle race when he rode his bike off a cliff and died in August 1995. When Jack Nelson was planning to sell Cascade Outfitters, Maravia decided to buy Cascade and move it to Boise and operate it as a separate entity. Cascade is a dealer for AIRE, NRS and other purveyors of river equipment.(5)

(#g.) Radio Frequency Welding & Rotary Welding:
In the 1940s, some engineers were working on the radio transmitters. They stopped to eat and a worker placed his ham sandwich on top of the transmitter box for a minute. When he returned, the sandwich was warm and the concept of using radio frequencies to heat things was born.

Much of the research in the RF field occurred in the Seattle area in the 1970's. While working on the technology that would eventually make AIRE handles and D-rings, the engineers were tuning the frequency and duration of the weld cycles. This research was going on in the flight path of the Sea-Tac Airport. The frequencies of the welding machines actually jammed the radios of the landing planes causing brief losses in communication and the FBI was called to investigate. The agents actually used the surrounding radio towers to triangulate the location of the RF machines and they showed up at the research facility with guns drawn, expecting to find terrorists with radio jamming machines. When the FBI arrived, many of the general laborers actually fled the building and ran into the forest for various reasons, further increasing the amount of explaining the engineers had to do.

Now, years later, radio frequency welding is the fastest, cleanest, most ecologically friendly way to attach a d-ring, install a handle, or seal an air cell.

(#h.) Serge Ferrari Fabric:
If you have ever been to the Denver Airport, you have seen Ferrari PVC, it is the material that covers the entire terminal like a tent. The French manufacturing group Serge Ferrari is a leader in the flexible composite material sector. As the inventor of Précontraint Serge Ferrari technology, they design and manufacture flexible high performance composite materials for architecture, yachting protection, industry, furniture, equipment protection, health, environment and visual communication sectors.

Materials and technology are constantly improving to provide better, stronger, faster, lighter products for paddlesports enthusiasts. AIRE continues to work with Ferrari fabrics to design a lighter weight 1670 denier PVC that is just as tough as the 43 Oz. gray fabric used in the past. The new fabric has an extra layer of lacquer to provide higher abrasion resistance and improved tear strength. Starting in 2017, AIRE is offering all of our U.S. made rafts and catarafts with new lighter weight materials, with a 10-20% weight savings depending on the model.

(#I.) Outcast Sporting Gear, Inc. & AIRE Industrial:
Outcast Sporting Gear was originally located across the street from AIRE in Garden City.

AIRE Industrial products are berms, bladders and products used for preventing and containing chemical spills.

(#j.) Idaho River Sports:
Idaho River Sports (IRS) is celebrating 25 years working with AIRE and its 12th year operating the AIRE factory store in Meridian. Idaho River Sports started selling AIRE inflatables in 1989 when it was located in Hyde Park in Boise's North End. In addition to selling and maintaining AIRE rafts, they worked with Alan Hamilton and the other founders of AIRE to test and refine designs, integrate AIRE’s products with lines of frames and accessories from great companies like NRS, Sawyer and others.

(#k.) Unsupported Fabric & AIRE Cells:
The term fabric is misleading in this case because there is no fabric. These materials hold air very well because there is no fabric to coat. They can be easily manufactured, usually by electronic radio frequency welding. Because there is no fabric, tensile strength is low in these products. The strength of seams in unsupported fabric is important. Seams are made by heating and welding two sheets of material together with a bonding machine. In poorly-made boats the process often over melts the vinyl, making a thinner seam that either of the original fabric. A correct weld is almost as thick as the combined thickness of the original material. AIRE uses unsupported fabrics, as an air cell or bladder inside of a coated PVC fabric. There are advantages and disadvantages to this form of inflatable construction:

Advantages include: There is an extra protective layer of material to puncture; The outer shell does not have to be air holding, and can have a heavier substrate, a lighter substrate, or a cheaper substrate; Getting fabric to hold air is an expensive process; A new bladder can be added and a rip sewn up to make a repair.

Disadvantages include: The use of a zipper so that the bladder can be installed; Zippers are prone to failure over time; The accumulation of mud and moisture between the shell and the bladder causes the boat to become heavier and it wears on the fabric; A puncture requires unzipping th outer shell and removing the bladder.*(3,4)*

Switching from a 15-mil urethane to a 12-mil, the same thickness used on AIRE IKs, provided roughly a 20% decrease in weight. The new lighter weight AIREcells tested just as well as the 15- mil, with the same puncture resistance and tear strength. Urethane can be repaired using Type A Tear Aid.

Greg Ramp had been building boats for five or six years with R&R Inflatables and then Maravia. The problem was that they were always chasing leaks and could never make a perfectly airtight boat. Ramp was gluing kayaks and had success for two years and then they started falling apart in the sun. There were pin leaks in the PVC, even urethane boats, if they are rolled up in that memory crease when they are rolled back out. With the AIRE cell it doesn't matter because the bladder holds the air. Ramp was doing a lot of repair back then, and he got a boat made in Italy for Sears Roebuck that was 25 years old and made out of truck tarp style material. It was sewn together and it had a PVC bladder in it. So Ramp thought this is about the simplest thing in the world and he never let go of that idea. When they started AIRE Ramp wanted to try something and he designed the AIREcell system.*(7)*

Prior to 1992 AIRE used PVC bulkheads. Prior to 1994 the Pumas used the inflatable kayak (IK) yellow fabric. Pre 1994 Pumas used the IK (yellow)Bladder Fabric, 400 denier urethane coated packcloth. Velcro for Lycra and bulkhead strips was used beginning in 1995, and in 1996 velcro and valve strips were added. Velcro loops on thwart cells started in 1999.(8)

(#l.) BAKraft:
"Starting in our kitchen with painter's plastic taped together in a raft shape that was then inflated by a blow dryer, we set out to do the impossible. After several months of failure, with a little luck and a lot of divine intervention, we called and got through to speak with Greg Ramp, President of AIRE Inc. A conversation led to a relationship and over time he got excited about the project, as he "saw [himself] 30 years ago" in us. Working on it from home and on weekends to find the time, he used a computer program that cost more than the whole house we had been working out of and helped us design the ideal self-bailing pack boat. Over the course of two and a half years we sat side by side balancing weight and cost vs. durability and performance and finally feel we have found the perfect balance in the Hybrid by BAKraft." (Cory Walker)

A proprietary fabric helps bring the total weight in down to around six pounds, five ounces, including a multi-functional backrest which also serves as a day trip sized drybag and pump. Using the seat/inflation bag you inflate one chamber in the floor and another for the rest of the boat. Because the Bakraft is self-bailing and uses some really high tech materials it needs to be inflated to 2.5 PSI, more than your breath can handle. Bakraft has overcome this by providing a "hand pump" and various hoses that connect to your mouth or to the inflation bag to get air to the hand pump. The inflatable floor keeps the boat from folding in waves, and quickly drains a swamped cockpit. It also acts like a cushion when bouncing along a rocky river bottom. The main drawback for the BAKraft - as with many packrafts - is a lack of storage space.

(#m.) Heywinkel:
Julius Heywinkel GmbH has now become Heytex Bramsche GmbH, making that company's brand name also the name of their company. The Heytex companies manufacture coated and laminated technical textiles for products ranging from truck tarps and tents to advertising banners, large-format screens and stadium roofing. Along with corporate restructuring, there has been a significant investment in new technologies to expand product performance.

In 2017 Heytex, purchased BondCote to expand its worldwide portfolio. Heytex currently has centers in Bramsch and Neugersdorf, Germany, and Zhangiagang, China. BondCote was established in 1949, the company operates a manufacturing plant in Pulaski, VA and a distribution center in Dublin.

(#n.) Valves & Inflation Pressure:
Prior to 1994 Halkey-Roberts valves were used on AIRE cells. In late 1994, in what was an industry wide switch to Leafield valves, AIRE began using the Leafield B7 valve. Prior to that the military valve and others were used across the industry. Halkey-Roberts built the AD-2 valve for so many years the molds had become worn out and the valve wasn't working. They retooled the valve and molds to fix the problem, but they put a new thread into them that didn't allow replacement of the old ones. Because they quit making the old valves almost everybody in the industry just said the heck with them, and Leafield took much of the valve business.*(7)* AIRE continued to use the B7 until 1999 when they began using CT valves on rafts. IK's and catarafts still use the B7 valve. Many rafts changed location of the valves from outside the tube to the inside around 1997 or 1998, by mid-1998 they relocated the valves back to the outside of the tubes.(8)

AIRE used the Halkey-Roberts pressure relief valve (PRV) until late 1994 when they changed over to the Leafield PRV. AIRE has always been around 2.5 psi on floors.(8) The French fabric, which doesn't stretch much, is rock hard at 2 psi. At 2.5 psi it's going to be very hard but the diameter of the tube will not change, and can take up to 3.0 psi. or 4 psi.

AIRE uses 9 psi valves on the SUPs. The SUPs have twice as many beams in them plus they are using a more highly engineered French fabric.*(7)* French fabric (SUP) is the outer shell, the air mattress inside is made by Lamcotech.

(#o.) Lamcotech:
Lamcotec was founded by Richard (Dick) Anderson Sr., who was a chemical engineer with a lifetime of urethane coating and laminating experience. Dick got his start at New Notions in South Boston, MA in 1960, working for Allan Mann, learning polymer chemistry and chemical engineering. In 1965, along with Allan Mann and Victor Zager, he co-founded INCOPA in Bristol, TN, where they specialized in polyvinyl chloride (PVC) coatings. In 1980, Dick moved back to Massachusetts and developed a new concept for urethane, perfecting film laminating. Richard Anderson Jr. ("Rick") began his career at Mann Industries developing an expertise in polymer chemistry and chemical engineering.

Dick and Rick worked closely together for several years, refining the technology, processes and methods that were the genesis for their founding of Lamcotec in 1986. The Andersons began with two small machines, five employees, and a converted toilet seat warehouse in Monson, MA. Lamcotec's four original product lines consisted of inflatable camping mattresses, life vests, fishing waders, and medical mattresses. In the 1990s Lamcotec expanded into global markets, developing a unique expertise in the area of inflatable products. In 1998, Rick took over as President, and expanded Lamcotec's product lines. By 2000, Lamcotec grew its operations to become a leading provider of products used in aviation and airships, blood pressure cuffs, helium-holding balloons, rafts, and inflatable safety vests. During the next decade, using the proprietary processed developed by Dick, Lamcotec also became the world leader in polyurethane double-laminate technology. Now, thirty years later, Lamcotec has more than 70 employees and over 70,000 square feet of manufacturing space in two locations.

(#p.) SUP (Stand Up Paddleboard):
The AIRE SUP, backed by AIRE's 5-year warranty, includes: reinforced deck pad for added sturdiness, 3 removable fins, cargo cord , bow, stern and center handles, carry bag, I-beam AIREcell system. Length x Width x Height: 10'4" x 35" Weight: 28pounds Air Chambers: 1 AIREcell Material: Urethane coated Nylon Fabric Denier x Material Weight: 1000 x 28 Seam Construction: Sewn Valve: Leafield C7 ;

(#q.) AIRE Employees:
People at AIRE take pride in what they do and they consider themselves craftsmen. They have some turnover, but there is a core group who has worked at AIRE for almost 20 years. When they started AIRE the founders did everything from sewing and welding to attending trade shows.

As Hamilton and Ramp have 'retired' they are looking to make the company employee-owned, they haven't done that but it is something they've talked about. They are planning some buy outs for the four key staff members: Greg Ramp, Dennis Hill, Alan Hamilton, and Dan Allumbaugh. Greg still works as the president, and Alan is the secretary-treasurer. Dennis Hill, in Seattle, has never worked at AIRE. Even if the three of us are not active in the company, they own the building, and it still helps pay their bills.

Dan Allumbaugh, in his mid-fifties, has taken over as general manager and vice president. Dan's son, Shawn Allumbaugh, has worked at AIRE since he was in high school.

Claudia, The Zipper Lady, has been at AIRE for more than 20 years and will probably retire in another year or so. Claudia worked for a CPA and when she came to AIRE taught Alan how to do the books on the computer.

A few years ago, Troy, the Marketing Manager, sauntered into the office like he had done so many times before but instead of asking us to proof some bit of advertising material, he clasped his hands together and said, "I wanted to let you guys know that my last day with AIRE is going to be June 30th." Dan's jaw just about hit the floor. Employees come and go, but Troy knew everything about everything. He was more then the advertising guy, he was the Sea Tiger expert, keeper of product history and the company computer whiz.

(#r.) AIRE Boat Design:

AIRE basically has three different series of boats: The E (or East) Series, with an elliptical shape; The R Series, which is a standard round shape; The D Series with diminishing tubes. The Puma Series came from the idea of making just a big inflatable kayak.

By 1997 Chris Walker had a computerized way to print out a sine curve, within a year and a half they had a huge plotter with really wide paper with tractor holes in on the edges. It would print a dot on the paper based on Walker's math and it would write down the equation that put that dot on the paper, and they would print dot to dot. Then there was a measurement for the baseline and we put the sine wave on this edge. It took five days to put the input in and it took a half a day to print it.

For the last 18-20 years, since around 1997, AIRE has been using the CAD (Computer Aided Design) System. The cutting table is, perhaps what stimulated the company to use CAD. They had bought a cutting table, and at the time they just had flat patterns that had been developed through working drawings by laying out spline points and laying a spline on it and drawing it and trying to square up the pattern. When they first got the table they began digitizing those patterns and putting them in a computer. Greg Ramp said, "We spent a lot of money for that piece of equipment, its not much these days but it was a lot back then! We paid, I think $60,000 and to us it was like a million." Alan Hamilton added, "When we first got it, it wasn't very efficient because everyone was standing around watching it!"*(7)*

Around 1998 Chris Tidwick was taking computer sciences in Salt Lake City and for his senior project he wanted to create a flattening algorithm that AIRE could use to design tubes that were modeled to could flatten the surfaces and make their patterns. Back then it was really unheard of and there were only a few people who were able to grasp and produce such a project. Chris researched the market and found MultiSurf that had this flattening algorithm already figured out. MultiSurf is a surface modeler not a solid modeler, so you're designing with surfaces rather than taking a solid and cutting it away for the result. This is surface modeling so you have to build a structure to drape the surface over. MultiSurf specialized in racing sailboats, the America's Cup boats used it for design, so it was a marine design software. It had marine hydrostatics which Chris kind of used to actually build a model, stress test it, float it, know its capacity, and know the relational surface drag. What is good for a sailboat is not necessarily good for a raft, but it's a very neat piece of software.

Alan Hamilton had to teach himself, but MultiSurf provides classes and seminars around the country and they provide support. (Note; They don't do it much anymore, and Hamilton is worried because the genius behind the company has had medical issues. The last time Alan was in Southwest Harbor, ME he was in a hospital bed in his office and still working. He actually created mapping software for the medical industry in this whole process so they could figure how to go in and operate on your brain.) Amazingly Greg Ramp has taught himself on the program. AeroHydro, Inc. of Southwest Harbor, Maine, is a pioneer in the field of Computer Aided Design (CAD) for boats and ships, and has served the needs of the marine industry for over 25 years. More than 500 designers and builders worldwide use AeroHydro's computerized 3D and marine design software as an integral tool in their daily business. AeroHydro's flagship marine design software, MultiSurf, is in use in a variety of marine environments; customers include naval architects, boat builders, marine parts fabricators, and CNC machining centers.

(#s.) AIRE Start Up:

The fledgling company was fortunate that Greg Ramp, Alan Hamilton, Chris Walker, and their other partner Dennis Hill and his partner Bob Provate were the original investors. They each contributed about $15,000. Greg, Alan and Chris had wives to support, but they went without salaries for a year and a half (eating Saltines and Campbell Soup!). The original factory was in Garden City, on 37th Street then they moved to another factory, three blocks away, on 33rd street. The first factory was 2,500 square feet, and the second one they rented in Garden City for 12 years started out at 8 or 9,000 square feet. As production expanded, they added another 6,000 and then another 8 or 9,000 square feet, and in the end had about 25,000 square feet.*(7)*

By that time they had about 20 some employees. Then in 2002 they moved to their current location in Meridian, ID. They now use 40,000 square feet on the ground floor and they have added another 6,000 square feet for the mezzanine and offices. They had another building for boat repairs and storage that is around 10,000 square feet.*(7)*

(#t.) Zippers & Zipper Cars:
AIRE uses zippers on the outer PVC to access the air retaining cell. The zippers require periodic cleaning and lubrication. The zippers are composed of a zipper (toothed on both sides) and a zipper car (that opens/closes zipper). AIRE has complete instruction to demonstrate how to open/close zippers and insert cells.

The early zippers that were used the first four years opened really hard. AIRE changed to the double slider around 2004 and is much improved. It cost $10,000 for another mold but Ramp & Hamilton recognized how important it was. Now zipper failures are rare and usually result from poor zipper maintenance (lube), inflating the boat when the zippers were in the wrong position or missing the keeper rings (the zipper ends were not tied back together, or because the tie or clip came off, then the zipper blows open).

(#u.) Cataraft - Tiger:
The Tiger, with triple tubes, was a really friendly boat for inflatable kayak trips because you could just paddle right underneath it. It was a very stable boat, and exceptionally easy to step off and onto. AIRE originally called it the Cougar. Today people don't want the multiple tubes they are used to a single tube cataraft. AIRE brought the Cougar back a couple of years ago and made 10 of them on special order and sold them for a premium. Later they made 2 more, one sold right away and the last one AIRE basically sold at a "fire" sale, brand new with the frame, oars and everything for $2,000.(7)

(#v.) Self-Draining Floors:
There are two styles of self-draining floors:

1.) The Regular Floor Pocket: This design comes standard with all our rafts, Great choice for paddle rafts of all sizes.
How it's built: (RFP) is constructed by sewing the PVC floor top and bottom to a zipper along the perimeter edge of the floor pocket, an air floor AIREcell is placed inside the pocket which keeps the floor rigid and buoyant, drain holes are built into the bottom of the floor pocket.
Design Advantages: Aids in tracking and stability, on the river, water will enter the drain holes and add ballast to the boat, the extra ballast creates a low center of gravity which can sometimes help prevent a flip.

2.) The Sealed Floor Pocket: Good choice for rowing large, gear hauling rafts, rivers that require portage, a good option when mostly running silty rivers.
How it's built: (SFP) is constructed by welding the PVC floor top and bottom together along the perimeter to form a water proof pocket, two Watertight zippers are installed on the floor top to access the air floor AIREcell, 3 valves are installed (inflation valve, the pressure relief valve and a burp valve that relieves air pressure caught between the AIREcell and the floor pocket).
Design Advantages: The SFP does not take on any water to ballast, this will make the raft slightly faster and more responsive in whitewater. Owners don't have to wait at the take out for water to drain out of the raft floor pocket. No need to rinse out the floor pocket after a trip down a silty river. Better choice for cleaning quagga & zebra mussels.

(#w.) Raft Handles:

Raft handles have been a bit of a sore subject at AIRE. In 2012 AIRE thought they had designed a good looking, comfortable, functional handle their rafts and catarafts. They were mistaken, and the handles were marginal at best and to make matter worse, they were particularly hard to replace and that made for a grouchy repair department. The customer feedback was unanimous, something had to be done! There was a *battle between the Sales and Engineering departments, fought with dirty looks, swords, passive aggressiveness, and an incident with a forklift. After the dust settled, a new handle emerged victorious because: a boat owner can replace bad handles, it didn't look cheesy or make the boat look cheap, AIRE could easy change all our new boats to this new handle mid-season, it was very durable in a tear test, it is relatively comfortable and AIRE received positive feedback from Outfitters. Instructions are posted under the Installation and Repair Tips tab on the www.aire.com website. (*no staff was injured during the production of this handle. Well…not seriously injured.)

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