The GUPPY was designed and built by Sun Ship’s Aero/Hydro Space Division and was designed to be a practical, economical submersible for all-around ocean engineering including; inspection of oil rigs and drilling equipment and ocean floor-continental shelf geological surveys.

The GUPPY, a two-man submersible, was Sun Ship’s functional, economic approach for all-around underwater engineering and surveys. By ‘tethering’ the Guppy to a surface-support vessel by an electric cable saves significant weight of the submersible by removing the craft’s batteries. For at 5,000 pounds the GUPPY is lighter than some submersible batteries alone.

**Specifications:**
- Operating Depth: 1,000 Ft.
- Collapse Depth: 2,000 Ft.
- Safety Factor: 2
- Length: 11’-0”
- Beam: 8’-0”
- Pressure Hull Inside Diameter: 66”
- Height: 7’-6”
- Draft: 5’-6”
- Weight in Air: 5,000 Lbs.
- Submerged Displacement: 6,100 Lbs.
- Crew/Passengers: 2
- Submerged Speed Max: 3 Knots
- Submerged Range: 12 Miles
- Thrusters-10-hp, rotatable: 2
- Total Payload: 850 Lbs.
- Tethered Electrical Power at: 440 Volts

**Options**
By offering unique ‘customization’ of options, the GUPPY can be acquired for between $95,000 to $150,000 or lease for $1,200/day.

Various options may be included by the customer in adapting the GUPPY to specific needs. For example, the GUPPY has been designed with ample space to allow for:

- TV Cameras and Video
- Tape Recorders
- TV Monitors
- Motion Picture Equipment
- Forward Looking Sonar
- Still Cameras
- Heating/Air Conditioning Systems
- Torpedo Recovery Systems
- Salvage Operations Systems
- Sampling Baskets
- Forward Looking Sonar
- Heating/Air Conditioning Systems
- Torpedo Recovery Systems

**Structure:**
- 66 inch I.D. with ½” HY-100 Steel
- Two 8-inch Plexiglass Hemispherical Viewports
- One 16-inch Plexiglass Hemispherical Top Window
- Upper hatch with 20” opening

**Fabrication of Pressure Hull**
Under intense heat and pressure, the head of the sphere is spun into shape at Lukens Steel.

**Pressure Hull:**
Fabricated from HY-100 HSLA (High Strength Low Alloy) steel with a yield strength of 100,000 psi. Sun Ship designed the GUPPY with the highest rating as per the ‘ABS’ Guide for Classification of manned Submersibles 1968’, a pioneering document and the first guide on manned submersibles to be offered by any classification society.

In addition, the ABS required that submersibles have a depth safety factor of 1.5 to 2.0 of its maximum operating depth. Sun Ship’s GUPPY was designed at the maximum operating depth range of 1,000 feet with a safety factor of 2.0, so that the GUPPY could withstand pressures at 2,000 feet.
After the ‘spinning’ of the sphere, then machine tools cut and trim the head to precise tolerances and then the two halves will be welded together.

Photo courtesy of Sun Ship and ABS Surveyor (Aug, 1969)
SSHS: 020.34.6908.29

**GUPPY-Outfitting in Sun Ship’s North Yard-Rocket Shop**

Photo Courtesy of: HML-74319.4904

The “GUPPY” ready for its undersea certification tests off the coast of California in May, 1969.

Photo Courtesy of: HML-74319.4909.01

**Certification Test**

Bill Watson, Sun Ship Project Mgr. and John Reeves, Pilot (and ex-Navy SeaLab aquanaut) on GUPPY while on ABS certification 625-foot test dive off Santa Barbara, CA. These dives also included an unmanned hydrostatic dive to 1,100 feet.

Bill Watson (Sun Ship Proj. Mgr) and John Reeves (Pilot) off California coast-May, 1969

**Gulf of Alaska-First Job**

GUPPY undertaking an ocean floor geological survey of the Alaskan continental shelf for a consortium of six domestic oil companies which would take place from 8 to 60 miles off the southern coast of Alaska in waters up to 600 feet

GUPPY at the Gulf of Alaska. Note thruster located in the forward position. Part of the transport vessel crew would be a diver who would be in the water to secure and unsecure the crane hook as required.

Photo Courtesy of: HML-74319.4913

GUPPY and crane on stern of transport vessel ready to head-out into the Gulf of Alaska

Photo Courtesy of: HML-74319.4926
**Post Dive Check List**
Post dive check list from the Independence Seaport Museum, Sun Ship Archives
Courtesy of ISM. #SSA-0902

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**GUPPY-Dive Check:**
Surface crew, Rich Griffith (Sun Ship) and Norm Hibbard (Sun Ship), performing maintenance tasks on the GUPPY
Courtesy of: HML-74319.4931

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**Transport vessel with the GUPPY on the stern in Alaska**
On this dive, GUPPY was marked with 37 completed dives in the Gulf of Alaska
Photo Courtesy of: HML-74319.4931

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**GUPPY on-display at Independence Seaport Museum**
Series of photographs of the GUPPY on-display at ISM taken by Dave Boone (SSHS) 9/13/2013
Gift: Courtesy of Sun Ship to ISM, accessioned in 1987.
No: ISM 87.55

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**Tether-Cable:**
The GUPPY was 'tethered' to the transport vessel via the communications and power cable. While the vessel had in excess of 1,000 feet of cable, the vessel had to follow the GUPPY while the submersible's crew would relay the heading and depth to the transport vessel so it could follow.

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Photo courtesy of: HML-74319.4916
GUPPY Leaving ISM- and On 'Her' way to the
National Iron and Steel Heritage Museum
50 S 1st Ave, Coatesville, PA 19320
Date: 2/23/2018

The National Iron and Steel Museum is located on the old site of the Lukens Steel Plant. Many of the hemispheres for Sun Ship’s submersibles including; the ‘GUPPY’, the ‘DEEP QUEST’ (Bi-Sphere) and the ‘DSRV’ (Navy’s Tri-Sphere-Deep Submergence Rescue Vehicle) were manufactured at the Lukens’s Steel Plant in Coatesville, PA.

Photo courtesy of ISM: 20180223_080035

Note 1: ABS (American Bureau of Shipping)

Note 2: Sun Ship only built the pressure vessels for both the ‘Deep Quest’ and the ‘DSRV’. The ‘Exostructure’ that provides the hydrodynamic shape for these submersibles was provided by others.