

Apollo BP-1102/1102A – Water Egress Trainer

Apollo BP-1102/1102A was an in-house NASA-MSC Landing and Recovery Division (LRD) designed aluminum boilerplate Apollo Command Module (CM), the crew module of the Apollo Program, Skylab Program and the Apollo Soyuz Test Project. BP-1102A is in Apollo Block II configuration (lunar mission configuration) but was initially delivered as BP-1102 in early 1965 in Apollo Block I configuration (earth orbit mission configuration) following its fabrication of aluminum alloy 5056 at Kelly AFB Air Materiel Command in San Antonio, where also its sister boilerplate BP-1101/1101A was fabricated. It was outfitted for manned testing by NASA-MSC Technical Services Division.

BP-1102/1102A had only operational mechanical and electronic subsystems required for post-splashdown testing/training such as communications, side and forward hatches, crew couches, uprighting system, etc. All other subsystems in the boilerplate CM were simulated by mockups such as equipment bays and display panel overlays. For the uprighting system, bag inflation was accomplished by compressed air from scuba tanks and controlled as in the CM by display panel switch throw. An unusual method was used to simulate the noisy CM uprighting bag air compressors pumps - two Mattel toy bicycle V-RROOM! "motors" were installed inside the equipment bays to activate concurrently with uprighting bag inflation. (BP-1102/1102A vehicle project engineer Harry Clancy personally purchased the V-RROOM!'s.) The BP-1102 Block I uprighting bags were built in-house for training purposes while BP-1102A utilized Block II CM bags. Crew equipment, suits, survival kits/rafts, were supplied and supported by Crew Systems Division during tests and training.

LRD used BP-1102/1102A for water egress procedures for Block I¹ and Block II² Command Module development/evaluation and astronaut water crew egress trainer for Apollo, Skylab, and ASTP astronaut crews. Prime and backup astronaut crews trained in BP-1102/1102A first in static conditions in a water tank, then in open water conditions in the Gulf of Mexico. BP-1102A was also used as the mockup command module during the simulation of recovery quarantine procedures on the USS Guadacanal during Apollo IX in March 1969³.

BP-1102A is Smithsonian National Air & Space Museum Collection Object No. A19800160000 and is currently on display at the Smithsonian National Air & Space Museum Stephen F. Udvar-Hazy Center in Chantilly VA (<http://www.nasm.si.edu/collections/artifact.cfm?id=A19800160000>). It is

displayed with the uprighting bags and flotation collar from Apollo 11 (Photo #12).

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References

1. NASA Program Apollo Working Paper No. 1213: "Crew Egress Procedures For Apollo Block I Command Module At Sea" dated December 7, 1966 (<https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19700024994.pdf>).
2. NASA Program Apollo Working Paper No. 1348: "The Crew - Command Module Postlanding Interface" dated July 7, 1969 (<https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19700024853.pdf>).
3. Ref: MSC Roundup, March 7, 1969, "Mobile Quarantine Trailer Gets Test During Apollo IX" (<http://www.jsc.nasa.gov/history/roundups/issues/69-03-07.pdf>).

Following are photos of BP-1102/1102A with Apollo/Skylab/ASTP prime crews during water egress training:

Photo #1 – Apollo 1

Photo #2 – Apollo 7

Photo #3 – Apollo 8

Photo #4 – Apollo 9

Photo #5 – Apollo 10

Photo #6 – Apollo 11

Photo #7 – Apollo 12

Photo #8 – Apollo 13

Photo #9 – Apollo 14

Photo #10 – Apollo 15

Photo #11 – Apollo 16

Photo #12 – Skylab 3

Photo #13 – ASTP

Photo #14 - BP-1102A display next to the Apollo 11 MQF in NASM



1. **Apollo 1:** BP-1102 with Apollo 1 prime astronaut crew, Grissom, White, and Chaffee, during open water egress training onboard MV Retriever on October 27, 1966, in Gulf of Mexico (Photo Credit: NASA S66-58501).



2. **Apollo 7:** BP-1102A with Apollo 7 prime astronaut crew, Schirra, Cunningham, and Eisele, during open water egress training onboard MV Retriever on August 5, 1968, in Gulf of Mexico (Photo Credit: NASA 68H729).



3. **Apollo 8:** BP-1102A with Apollo 8 prime astronaut crew, Borman, Lovell, and Anders, during open water egress training on October 19, 1968, in Gulf of Mexico (Photo Credit: NASA S68-53223).



4. **Apollo 9**: BP-1102A with Apollo 9 prime astronaut crew, McDivitt, Scott, and Schweickart, during static water egress training on November 1, 1968, in MSC B-260 water tank (Photo Credit: NASA S68-54859).



5. **Apollo 10:** BP-1102A with Apollo 10 prime astronaut crew, Stafford, Cernan, and Young, during open water egress training onboard MV Retriever on November 13, 1968, in Gulf of Mexico (Photo Credit: NASA S68-42906).



6. **Apollo 11:** BP-1102A with Apollo 11 prime astronaut crew, Armstrong, Aldrin, and Collins, during open water egress training onboard MV Retriever on May 24, 1969, in Gulf of Mexico (Photo Credit: NASA S69-34882). (Video of Apollo 11 egress training at <https://youtu.be/-mwiNUWMRr0>.)



7. **Apollo 12:** BP-1102A with Apollo 12 prime astronaut crew, Conrad, Bean, and Gordon in Biological Isolation Garments, during open water egress training on September 20, 1969, in Gulf of Mexico (Photo Credit: NASA S69-52990).



8. **Apollo 13:** BP-1102A with Apollo 13 original prime astronaut crew, Lovell, Haise, and Mattingly (Swigert replaced Mattingly after Mattingly was exposed to German measles) and LRD/Paul Kruppenbacher for open water egress training aboard MV Retriever in Gulf of Mexico on February 24, 1970. (Photo Credit: NASA S70-24767).



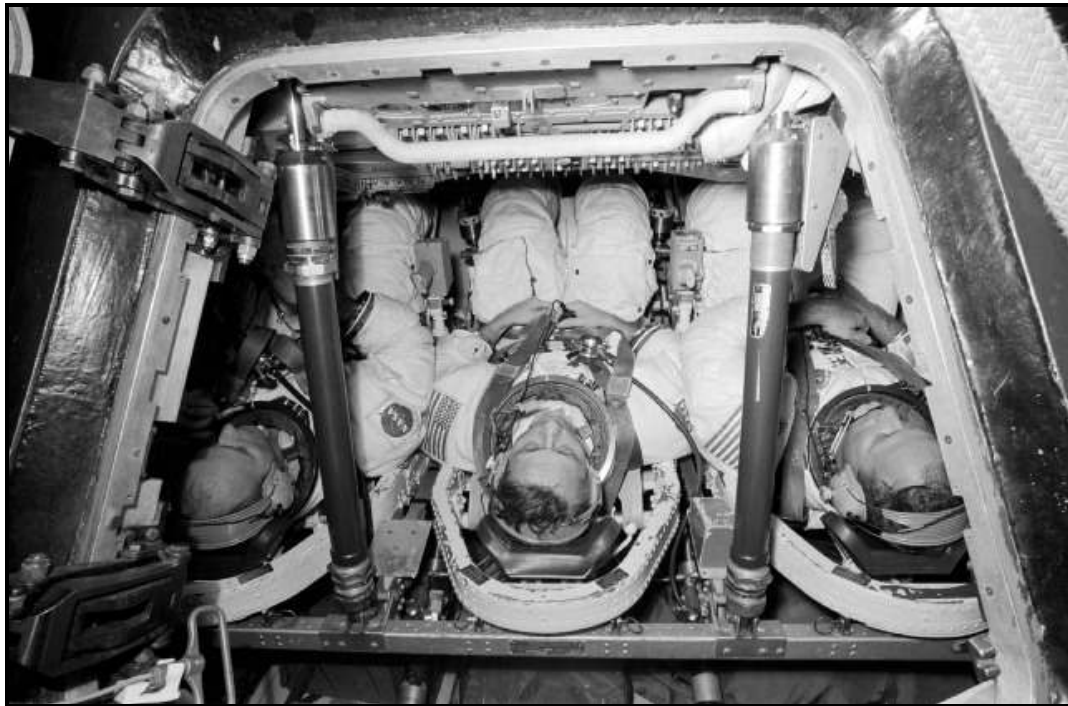
9. **Apollo 14:** BP-1102A with Apollo 14 prime astronaut crew, Shepard, Mitchell, and Roosa, during open water egress training onboard MV Retriever on October 24, 1970, in Gulf of Mexico (Photo Credit: NASA S70-51699).



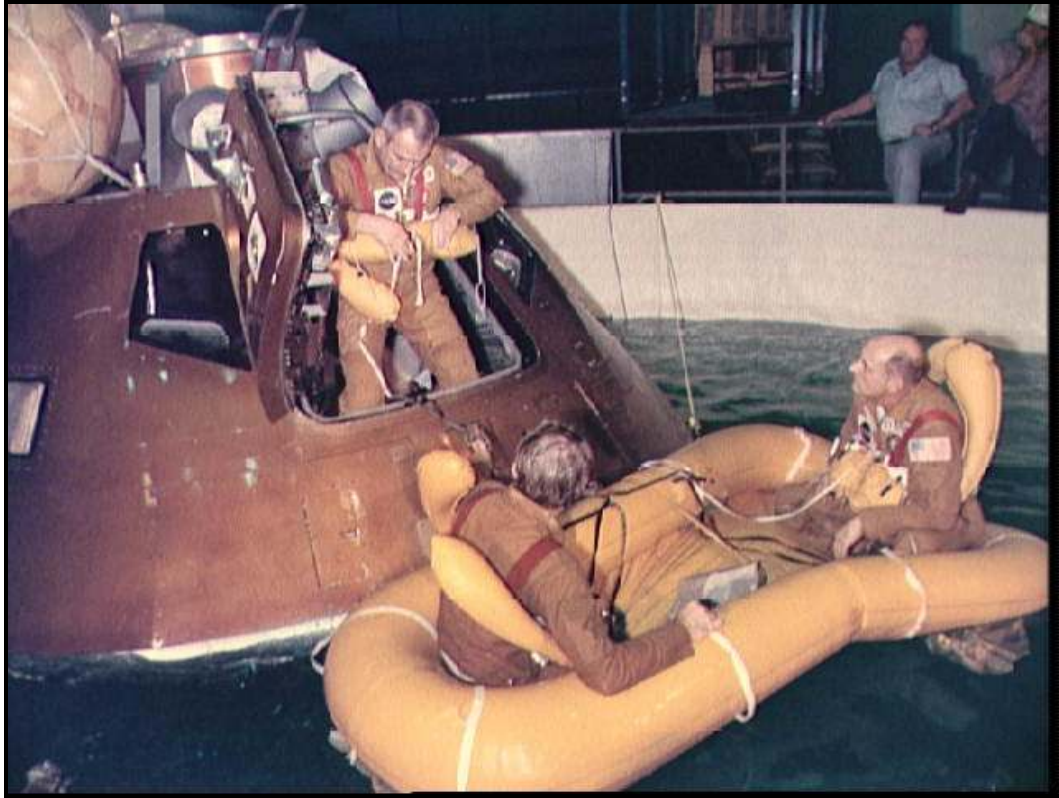
10. **Apollo 15:** BP-1102A (background left) with Apollo 15 prime astronaut crew, Scott, Irwin, and Worden, during open water egress training onboard MV Retriever on May 2, 1971, in Gulf of Mexico (Photo Credit: NASA S71-34286).



11. **Apollo 16:** BP-1102A with Apollo 16 prime astronaut crew, Young, Duke, and Mattingly, during open water egress training onboard MV Retriever on May 5, 1972, in Gulf of Mexico (Photo Credit: NASA S72-30160).



12. **Skylab 3:** BP-1102A with Skylab 3 prime astronaut crew, Bean, Garriott Lousma, during water egress training on May 1, 1973, in Bldg. 260 water tank (Photo Credit: NASA S73-27787).



13. **ASTP**: BP-1102A with ASTP prime astronaut crew, Stafford, Slayton, Brand during water egress training on March 8, 1975, in Bldg. 260 water tank (Photo Credit: NASA S75-23431).



14. BP-1102A on display with Apollo 11 uprighting bags and flotation collar installed and next to Apollo 11 MQF at Smithsonian National Air & Space Museum Stephen F. Udvar-Hazy Center (Photo Credit: Personal Photo of C. Mac Jones).