

A Brief History of LRD

The beginning of U.S. manned spaceflight landing and recovery was in Project Mercury when Bob Gilruth asked Bob Thompson, a veteran of the U.S. Navy, to work recovery operations for the Space Task Group (STG) at Langley Research Center.¹ On November 5, 1958, the STG under Gilruth had been formed at Langley in Virginia to plan and implement Project Mercury to put a man in space. In September 1961, NASA selected Houston as the site for a new facility, and the STG was redesignated the Manned Spacecraft Center (MSC) in November. STG personnel began relocation to Houston in October 1961 in leased office space while awaiting completion of MSC at Clear Lake.

When the NASA operations contingent moved to Houston, there was an Operations Division headed up by Chris Kraft. Within the Operations Division, there were several branches of which two, the Recovery Branch and the Operational Test and Evaluation Branch, were responsible for everything concerning the safe recovery of spacecraft and crew and the interface between NASA and the Department of Defense (DoD) for the military support of recoveries. Moving with Bob Thompson to Houston were STG recovery personnel: Don Cheatham, Pete Armitage, Bill Hayes, John Graham, John Stonesifer, Easy Harrin, Hal Granger, Leon Hodge, Milt Windler, Enoch Jones, Walt Hoggard, Charles Tynan, and Ed Bullock.

In November 1963, Gilruth reorganized MSC into seven directorates, and within the Flight Operations Directorate headed by Chris Kraft was the Recovery Operations Division headed by Bob Thompson.^{2,3} The new division was located in the Houston Petroleum Center (HPC) office complex on the Gulf Freeway (I-45) just south of Wayside Drive. In early 1964, the division name changed to Landing and Recovery Division (LRD), and by the end of June the division had moved into their new onsite MSC offices on the first floor of Building 30.⁴

With the recovery experience of Project Mercury⁵, LRD planned and executed recovery operations for the Gemini Program beginning with the unmanned Gemini-Titan 2 (GT-2) mission on January 19, 1965. Evaluation testing of Gemini recovery systems and recovery equipment had been ongoing since the June 1963 arrival of the Motor Vessel Retriever⁶, a modified Landing Craft Utility obtained from the Army, to be used for open water tests and the water tank installation at Ellington Hangar-135 in January 1964 to be used for static water tests. The key Gemini recovery test was a manned 36-hour postlanding systems qualification test with Gemini Static Article 5 (SA-5) conducted in the Gulf of Mexico with an astronaut crew (Jim Lovell and Alan Bean) on September 30 & October 1, 1964.⁷ (SA-5 also became the water egress astronaut crew trainer for the Gemini Program.)

With the Apollo program gearing up even as Gemini was beginning mission operations, LRD began development and evaluation testing of Apollo Command Module recovery systems and recovery equipment with several test vehicles: BP-25, BP-1101/1101A, BP-1102/1102A, BP-29 and CM-007/007A. BP-25 and BP-1101/1101A were used for early uprighting system and flotation collar testing. BP-1102/1102A was used for water egress procedures development and as the water egress astronaut crew trainer for the Apollo Program (as well as Skylab and ASTP.) BP-29 was used for recovery systems qualification for unmanned missions. The key Apollo recovery tests were the manned 48-hour postlanding systems qualification tests conducted in the Gulf of Mexico with CM-007 (Block I) and NASA test subject crew on September 30 to October 2, 1966⁸, and followed by a repeat test with CM-007A (Block II) and astronaut crew (Jim Lovell, Charlie Duke, and Stu Roosa) on April 5-7, 1968.⁹ LRD successfully planned and executed recovery operations for the Apollo Program beginning with the unmanned Apollo-Saturn 201 (AS-201) on February 26, 1966.

Return of lunar surface material from Apollo lunar landing missions presented the critical requirement for lunar quarantine. LRD developed special recovery quarantine equipment and procedures including the Mobile Quarantine Facility (MQF), a converted Airstream trailer^{10,11}. MQF's were used

successfully on Apollo 11, 12, and 14 to provide quarantine for the astronaut crew and lunar material for onboard ship operations and the long trip home to the Lunar Receiving Lab at MSC. After Apollo 14, the recovery quarantine requirement was eliminated for subsequent lunar landing missions due to negative findings of back contamination from the moon.

Bob Thompson was LRD chief until he was asked to head up the follow-on to the Apollo program, Apollo Applications (later to become Skylab), and subsequently became the first program manager of the Space Shuttle Program. Another STG veteran, Jerry Hammack, then took over division chief duties in 1966 before the GT-11 mission. As history records, Gemini recovery operations were conducted successfully with DoD for GT-2 in January 1965 through GT-12 in November 1966. Similarly, Apollo recovery operations were all conducted successfully beginning with the suborbital AS-201 with an unmanned CM-009 in February 1966 and ending with Apollo 17 in December 1972. (Jerry Hammack wrote about the partnership with DoD during Apollo.¹²)

With the continued success of the Apollo Program, LRD's responsibility for recoveries was downsized to a branch¹³, the Recovery Operations Branch with 22 personnel headed by Doc Stullken with two sections, the Mission Planning Section headed by Paul Chaput and the Operations and Procedures Section headed by Fred Sponholz, within the Flight Control Division, by the time of Apollo 16 recovery operations in April 1972. (The remaining 46 LRD personnel were reassigned to the Flight Control Division, the Flight Support Division, and the Flight Operations Directorate Office.) In 1973, the two Recovery Operations Branch sections were downsized to one section, the Mission Planning and Recovery Section headed by Paul Chaput. In May 1974, the section's name was changed to the Operations Support Section and supported the final Apollo CM recovery on ASTP in July 1975. Throughout all of the organizational transitions, recovery personnel continued on with core essential recovery assignments and equally successful operations throughout Apollo, Skylab, and ASTP.

During the Gemini and Apollo Programs, LRD was responsible for evaluation testing of spacecraft recovery systems; development and testing of recovery operations equipment and procedures development; planning, coordination, and execution of spacecraft/crew recovery with DoD; and manning recovery sites, centers, and deployed ships during mission operations. The successful water recovery operations of the Gemini, Apollo, Skylab, and ASTP crews and spacecraft are clear evidence of the dedication and contributions of LRD personnel to the U.S. human spaceflight program.

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Written By:

Coye Mac Jones

NASA-MSC/LRD Vehicle Project Engineer in 1964-71

Retired NASA-Johnson Space Center/Houston in January 2003

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