

Ben Franklin/PX-15 Collection

Dates of Creation: 1957-2009; predominantly 1966-1972

Physical Extent: 1.65 meters of textual records; 971 photographs; 1 negative; 86 slides; 1 audio tape; 1 videocassette; 1 compact disk; 1 crest (textile)

Administrative History:

In 1965 Dr. Jacques Piccard met with Grumman Aerospace Corporation and an agreement was struck between Piccard and Grumman to build a Mesoscaph - a submersible which could operate in the intermediate depths, for the exploration of the Gulf Stream. The project called *PX-15*, began construction on March 16, 1967 in Switzerland. The final touches to the submersible were made in Palm Beach, Florida a year later. *PX-15* was launched on July 26, 1968 and was christened *Ben Franklin* on August 21, 1968 after the American scientist who was the first to systematically study the Gulf Stream. The next seven months were devoted to testing the submersible through a series of dives to ensure that it was ready for the beginning of the Gulf Stream Drift Mission on July 14, 1969.

The Gulf Stream Drift Mission's primary objective was to drift the maximum distance along the core of the Gulf Stream at varying depths safely for 30 days. In addition to the oceanographic studies conducted on board, NASA was interested in the submersible as an analogue for a space station. NASA engineer, Chet May, accompanied the mission to observe and evaluate the crew at work, monitor the environment within the submersible, and to relate the experience to the development of future NASA space stations.

Ben Franklin was uniquely designed for this mission – its complex variable ballast system enabled the crew to maintain the submersible's position at specific depths as they drifted in the Gulf Stream. In addition, the submersible had four motors that could be moved independently of each other and could be tilted around an axis of 130 – this provided great maneuverability. The special design of the *Ben Franklin* also enabled the scientists to conduct acoustic (sound) measurements in a way that had never been done before. They continuously measured the Gulf Stream's velocity, salinity, temperature, turbidity, the sea floor geology, and gravitational and magnetic anomalies. Over four million oceanographic measurements were made during the voyage. The Gulf Stream Drift Mission was a great success. The submersible drifted for 30 days and 11 hours and covered a distance of approximately 2400 kilometres at an average depth of 200 metres. They made excursions to depths between 400 metres and 600 metres. All aspects of the submersible performed well and the mission provided valuable information for NASA for future space travel.

After the Gulf Stream Mission the *Ben Franklin* was used for a few more research dives until it was seriously damaged on April 12, 1970 when it struck a coral reef off the Bahamas after its mother ship's mooring lines broke.

In 1971 Horton Trading Limited bought *Ben Franklin* and moved it to British Columbia. Horton planned to expand *Ben Franklin* by adding an extra portion to carry divers and a "lock-out" diving chamber and would be used for commercial work in the waters around British Columbia. However, this project was never carried out and the *Ben Franklin* was moved to Vancouver Shipyards in North Vancouver and stored there for many years. In December 1999, Horton Trading Ltd. donated *Ben Franklin* to the Vancouver Maritime Museum. With the help of volunteers, local companies, and museum staff, the submersible was cleaned, repainted in its original colours, and re-assembled. In 2003 the museum rededicated the *Ben Franklin* as an educational exhibit and hosted a reunion for the original crew members.

Ben Franklin/PX-15 Collection

Ben Franklin Crew

Dr Jacques Piccard, Scientific Leader of Mission, Bureau Piccard

Born in Belgium in 1922, he was the son of the famous scientist and explorer, Auguste Piccard. He worked with his father in the design of the first bathyscaphs and the *Trieste*. Jacques Piccard piloted *Trieste* on 65 dives including the record-breaking dive down 35,800 feet in the Marianas Trench (the deepest part of the ocean). Together with his father they built the first mesocaph for the Swiss National Exposition in 1964. This mesocaph carried more than 30,000 passengers into Lake Geneva. In 1966 he became an exclusive consultant with the Grumman Corporation. During the Gulf Stream Drift Mission Dr. Piccard was responsible for the coordination of all the scientific experiments as well as piloting the submersible.

Donald J. Kazimir, Captain, Grumman Aircraft Engineering Corporation

Kazimir received a degree in Industrial Engineering and served in the US Navy, including duty on board submarines. He joined Grumman Corporation in 1967. He was responsible for the vehicle operations, crew comfort and safety and was the chief pilot. At 35 years old, he was the youngest of all the crew.

Erwin Aebersold, Pilot, Bureau Piccard

Aebersold was trained as an engineer and was a long time member of the Bureau Piccard staff. He was responsible for the design of the pilot station in the earlier mesocaph, *Auguste Piccard*. He served as chief engineer and shop master during the European construction phase of *Ben Franklin*. He was second to the Captain (Donald Kazimir) in piloting and all other vehicle operations.

Roswell F. Busby (Frank), Scientist, US Naval Oceanographic Office

Frank Busby joined the US Naval Oceanographic Office in 1960 where he could apply his Oceanography degree. He was the Branch Head of the Deep Ocean Survey Vehicles Project, responsible for determining the design characteristics, oceanographic sensors and operational techniques for a 20,000 foot depth deep ocean survey vehicle. He was responsible for conducting the oceanographic experiments during the mission and for evaluating the possibilities of *Ben Franklin* for future civilian and navy uses.

Kenneth Haigh, Scientist, US Naval Oceanographic Office

Kenneth Haigh joined the US Naval Oceanographic Office in 1968 as an exchange scientist from the Royal Navy Scientific Survey (Britain). An electrical engineer by training, Haigh was a specialist in acoustics and was responsible for conduction scientific experiments while on board *Ben Franklin*.

Chester B. May, Scientist, NASA

Chet May was a pioneer in space system maintenance who worked for NASA as a researcher. His role on board *Ben Franklin* was to collect information about environmental conditions, maintaining the submersible, power management, and physiological and psychological reactions of the crew. His observations would be supported by the over 65,000 photos taken by the cameras installed through out the submersible.

Ben Franklin/PX-15 Collection

Scope and Content:

Records in this collection consist of technical reports and correspondence related to the construction and operation of the Ben Franklin/PX-15 during the Gulf Stream Mission in 1969. Also included are promotional materials including press kits; brochures; crew biographies; status reports for potential NASA projects; contracts; operation manuals for equipment onboard the *Ben Franklin*; invitations from the christening ceremony of the *Ben Franklin*; publicity materials for the VMM rededication ceremony including an audio tape of speeches from the ceremony and a videocassette of local news coverage; issues of Grumman "Ocean Systems Newsletter" and "Grumman Plane News"; a crest from the 1969 Gulf Stream Drift Mission; and records from the mesoscaph "Auguste Piccard" at the Lausanne National Exhibition, France.

Also included in the collection are photographs of the *Ben Franklin*. The images depict construction of the submersible; promotional interior and exterior views; in drydock in West Palm Beach, Florida; the crew at work; and the restoration and rededication ceremony at the Vancouver Maritime Museum.

The collection has been divided into the following series:

- 1.0 History and technical reports (1965-1972)
- 2.0 Horton Maritime Explorations ([19--]-2004)
- 3.0 Walter K. Muench Collection (1957-[200-])
- 4.0 Submarine of the Swiss National Exhibition (1962-1964)
- 5.0 Publicity ([196-]-2009)
 - 5.1 General publicity materials ([196-]-2003)
 - 5.2 Grumman corporate magazine and newsletter (1967-2002)
 - 5.3 Newspaper clippings and magazine articles (1967-2009)
- 6.0 Photographs ([196-]-2003)

Notes:

Source of Title: Title based on the content of the records.

Physical description:

- 1.65 meters of textual records
- 971 photographs; 2.5x2.5 – 10x14", colour, B&W
- 1 negative; 8x10", B&W
- 86 slides; colour, B&W
- 1 audio tape; 45:43 min. (September 29, 2003)
- 1 videocassette (September 29, 2003)
- 1 compact disk
- 1 crest (textile)

Immediate source of acquisition: Records in this collection have come from a number of different sources. Some of the material was collected by VMM staff and volunteers for general research and exhibit purposes. Recognized donations in this collection include Alfred Kuhn, Northrop Grumman History Centre (accession no. 2000-55); Walter Muench (accession no. 2003.055.0001 and 2005.0059.0001); Bill Kutner (accession no. 2003.050.001); and C.V. Rau (accession no. 2004.1290.001). Accession numbers have been written on the corresponding files.

Arrangement: Records arranged by Archivist. Where applicable, individual accessions have been maintained together as a sub-series.

Ben Franklin/PX-15 Collection

Related Records: For artifacts, plans, and technical drawings of the Ben Franklin/PX-15 please consult the VMM Curator.

Language: Records are in English with one report in French.

Restrictions on access: None.

Terms governing publication: None.

Finding aids: A box-file list exists for these records.

Accruals: Future accruals to this collection are expected.

Ben Franklin/PX-15 Collection

Box / File list

- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 1 **Date:** 1966
Title: Grumman/Piccard PX-15 contract
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 2 **Date:** 1969
Title: Ben Franklin vehicle description
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 3 **Date:** 1966
Title: The Gulf Stream Project by Jacques Piccard
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 4 **Date:** [196-]
Title: Grumman/Piccard PX-15 Gulf Stream Drift Mission report (2 copies)
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 5 **Date:** 1967
Title: Manned submersible development at Grumman by K. Fitch and R. Munz (report)
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 6 **Date:** [196-]
Title: Life support on the PX-15 by H. Rind (report)
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 7 **Date:** [196-]
Title: PX-15 general specifications
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 8 **Date:** [196-]
Title: Preliminary plan to National Oceanic & Atmospheric Administration for a multi-dive Ben Franklin mission (report)
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 9 **Date:** 1970
Title: Research submersible Ben Franklin cruise, 8-9 September 1969: Biological Observations (report)
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 10 **Date:** 1966
Title: Grumman submersibles PX-15 and GSV-1: Presentation to Navy Oceanographic Office (report)

Ben Franklin/PX-15 Collection

- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 11 **Date:** 1968
Title: Grumman ocean systems (report)
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 12 **Date:** [19--]
Title: Grumman PX-15 Gulf Stream Mission - Battery voltage to ground vs. time (graph)
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 13 **Date:** 1970
Title: Statement of work: use of the Ben Franklin submersible as a test bed in support of manned space programs
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 14 **Date:** 1969
Title: Ben Franklin spectral filter tests for the U.S. Naval Oceanographic Office
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 15 **Date:** 1970
Title: Use of Ben Franklin submersible as a space station simulator
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 16 **Date:** 1970
Title: Use of Ben Franklin submersible as a space station analog - vol. 1, Summary Technical Report
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 17 **Date:** 1970
Title: Use of Ben Franklin submersible as a space station analog - vol. 2, Psychology and Physiology
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 1
Series No: 1.1 **File No:** 18 **Date:** 1970
Title: Use of Ben Franklin submersible as a space station analog - vol. 3, Habitability
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 2
Series No: 1.1 **File No:** 19 **Date:** 1970
Title: Use of Ben Franklin submersible as a space station analog - vol. 4, Microbiology
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 2
Series No: 1.1 **File No:** 20 **Date:** 1970
Title: Use of Ben Franklin submersible as a space station analog - vol. 5, Maintainability

Ben Franklin/PX-15 Collection

PartOf **Ben Franklin/PX-15 Collection** Location: Box 2
Series No: 1.1 **File No:** 21 **Date:** 1970
Title: Preliminary plan for a joint Ben Franklin mission - lobster survey and skylab analog

PartOf **Ben Franklin/PX-15 Collection** Location: Box 2
Series No: 1.1 **File No:** 22 **Date:** 1971
Title: Technical proposal - Fisheries resources/Geological survey mission with Ben Franklin (Gulf of Maine to Norfolk Canyon)

PartOf **Ben Franklin/PX-15 Collection** Location: Box 2
Series No: 1.1 **File No:** 23 **Date:** 1969
Title: Grumman Ben Franklin Gulf Stream mission report

PartOf **Ben Franklin/PX-15 Collection** Location: Box 2
Series No: 1.1 **File No:** 24 **Date:** [19--]
Title: Grumman Ben Franklin system description (report)

PartOf **Ben Franklin/PX-15 Collection** Location: Box 2
Series No: 1.1 **File No:** 25 **Date:** 1968-1970
Title: Ben Franklin - radio logbook and radio station license

PartOf **Ben Franklin/PX-15 Collection** Location: Box 2
Series No: 1.1 **File No:** 26 **Date:** 1969
Title: Grumman ocean systems operations manual - Ben Franklin

PartOf **Ben Franklin/PX-15 Collection** Location: Box 3
Series No: 1.1 **File No:** 27 **Date:** 1969
Title: Ben Franklin systems description and operation, vol. 1

PartOf **Ben Franklin/PX-15 Collection** Location: Box 3
Series No: 1.1 **File No:** 28 **Date:** 1969
Title: Ben Franklin systems description and operation, vol. 2

PartOf **Ben Franklin/PX-15 Collection** Location: Box 3
Series No: 1.1 **File No:** 29 **Date:** 1969
Title: Ben Franklin Operations: Life Support System Instruction Manual

PartOf **Ben Franklin/PX-15 Collection** Location: Box 3
Series No: 1.1 **File No:** 30 **Date:** 1965
Title: Simrad Panel Sounder Model EP Operation & Maintenance

PartOf **Ben Franklin/PX-15 Collection** Location: Box 3

Ben Franklin/PX-15 Collection

Series No: 1.1 **File No:** 31 **Date:** 1968
Title: Operation Maintenance Manual for model 500 CTFM scanning & navigation sonar (Ben Franklin vessel copy)

PartOf **Ben Franklin/PX-15 Collection** Location: Box 4

Series No: 1.1 **File No:** 32 **Date:** 1971
Title: D.J. Kazimir - Ben Franklin notebook

PartOf **Ben Franklin/PX-15 Collection** Location: Box 4

Series No: 1.1 **File No:** 33 **Date:** 1966-1972
Title: Grumman correspondence

PartOf **Ben Franklin/PX-15 Collection** Location: Box 4

Series No: 2.0 **File No:** 1 **Date:** 2004
Title: Michael J.A. Muirhead's binder on Auguste Piccard, Ben Franklin and related material

PartOf **Ben Franklin/PX-15 Collection** Location: Box 4

Series No: 2.0 **File No:** 2 **Date:** [19--]
Title: Horton Maritime Explorations Ltd. company booklet

PartOf **Ben Franklin/PX-15 Collection** Location: Box 4

Series No: 3.0 **File No:** 1 **Date:** 1957-1972
Title: Correspondence to and from Grumman

PartOf **Ben Franklin/PX-15 Collection** Location: Box 4

Series No: 3.0 **File No:** 2 **Date:** 1958-1975
Title: Grumman inter-office memorandum

PartOf **Ben Franklin/PX-15 Collection** Location: Box 4

Series No: 3.0 **File No:** 3 **Date:** 1971-1972
Title: Correspondence - Pascal Renaudin (Message in a Bottle)

PartOf **Ben Franklin/PX-15 Collection** Location: Box 4

Series No: 3.0 **File No:** 4 **Date:** [196-]
Title: Ben Franklin Gulf Stream Drift mission

PartOf **Ben Franklin/PX-15 Collection** Location: Box 4

Series No: 3.0 **File No:** 5 **Date:** [200-]
Title: Report on Gulf Stream Drift mission - Ben Franklin (in French)

Ben Franklin/PX-15 Collection

PartOf Ben Franklin/PX-15 Collection	Location: Box 4
Series No: 3.0 File No: 6	Date: 1968-1970
Title: Grumman brochures and publicity materials	
PartOf Ben Franklin/PX-15 Collection	Location: Box 4
Series No: 3.0 File No: 7	Date: 1967-1984
Title: Grumman newsletters	
PartOf Ben Franklin/PX-15 Collection	Location: Box 4
Series No: 3.0 File No: 8	Date: 1968-1971
Title: Journal and newspaper articles	
PartOf Ben Franklin/PX-15 Collection	Location: Box 5
Series No: 4.0 File No: 1	Date: 1962-1964
Title: Mesoscaph "Auguste Piccard" at National Exhibition, Lausanne, France	
PartOf Ben Franklin/PX-15 Collection	Location: Box 5
Series No: 5.1 File No: 1	Date: [196-]
Title: Gulf Stream Drift Mission Press Book	
PartOf Ben Franklin/PX-15 Collection	Location: Box 5
Series No: 5.1 File No: 2	Date: 1968
Title: Christening ceremony of the Ben Franklin	
PartOf Ben Franklin/PX-15 Collection	Location: Box 5
Series No: 5.1 File No: 3	Date: [196-]
Title: Grumman promotional materials	
PartOf Ben Franklin/PX-15 Collection	Location: Box 5
Series No: 5.1 File No: 4	Date: 2003
Title: Vancouver Maritime Museum dedication ceremony of Ben Franklin	
PartOf Ben Franklin/PX-15 Collection	Location: Box 5
Series No: 5.2 File No: 1	Date: 1967-1968
Title: Grumman Ocean Systems Newsletter	
PartOf Ben Franklin/PX-15 Collection	Location: Box 5
Series No: 5.2 File No: 2	Date: 1968-2002
Title: "Grumman Plane News" and "The Integrator"	

Ben Franklin/PX-15 Collection

- PartOf **Ben Franklin/PX-15 Collection** Location: Box 5
Series No: 5.3 **File No:** 1 **Date:** 1967-2007
Title: Journal articles on Ben Franklin/PX-15
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 5
Series No: 5.3 **File No:** 2 **Date:** 1967-1969
Title: Magazine articles on Ben Franklin/PX-15
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 5
Series No: 5.3 **File No:** 3 **Date:** 1968-2009
Title: Newspaper clippings on Ben Franklin/PX-15
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 5
Series No: 5.3 **File No:** 4 **Date:** 1969
Title: Ben Franklin Gulf Stream Mission crest
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 6
Series No: 6.1 **File No:** 1 **Date:** [19--]
Title: Grumman photographs - Ben Franklin/PX-15
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 6
Series No: 6.1 **File No:** 2 **Date:** 1968
Title: Jerry Kallaman photographs - Ben Franklin/PX-15
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 6
Series No: 6.1 **File No:** 3 **Date:** [196-]
Title: W. Meunch slides - Ben Franklin/PX-15 "Gulf Stream Mission & Atlantic City/West Palm Beach"
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 6
Series No: 6.1 **File No:** 4 **Date:** 1968-1969
Title: W. Meunch photographs - Ben Franklin/PX-15
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 6
Series No: 6.1 **File No:** 5 **Date:** [196-]
Title: W. Meunch photographs - Ben Franklin/PX-15 crew
- PartOf **Ben Franklin/PX-15 Collection** Location: Box 6
Series No: 6.1 **File No:** 6 **Date:** [196-]
Title: W. Meunch photographs - "Gulf Stream Drift Mission, Management Pictorial Presentation"

Ben Franklin/PX-15 Collection

PartOf **Ben Franklin/PX-15 Collection** Location: Box 6
Series No: 6.1 **File No:** 7 **Date:** [200-]
Title: VMM Ben Franklin/PX-15 photographs - installation and rebuild, vol. 1

PartOf **Ben Franklin/PX-15 Collection** Location: Box 6
Series No: 6.1 **File No:** 8 **Date:** [200-]
Title: VMM Ben Franklin/PX-15 photographs - installation and rebuild, vol. 2

PartOf **Ben Franklin/PX-15 Collection** Location: Box 6
Series No: 6.1 **File No:** 9 **Date:** [200-]
Title: VMM Ben Franklin/PX-15 photographs - installation and rebuild, vol. 3