

The Moon Watch: A History of the Omega Speedmaster Professional

by Alan R. Nelson, M.D. [CO]

Few things in American history have generated more interest and pride in our country than our nation's space program. The wrist worn Omega Speedmaster Professional (S.P.) has played an interesting role in America's conquest of space.

Not only did this chronograph become famous for being the first watch worn on the moon, but the story of its selection by NASA to become the wrist timing device of the astronauts is a story of workmanship, repeated testing, and a study in American politics.

First manufactured in 1959 by the Omega Watch company in Bienne, Switzerland, the S.P. is a chronograph capable of measuring elapsed time in seconds, minutes, and hours. The black anodized multi-dial face with luminous markers is housed in a stainless steel water proof case. There are 150 separate parts and the chronograph is anti-magnetic and shock protected. There is a tachymeter outer scale used for calculating speeds or unit per hour production.

In the early days of the space program during Project Mercury, wrist timing devices were used for manned space flight as a backup to the on-board timing devices. There was no one watch that was "standard issue" during Project Mercury. It was the astronaut's choice to wear/not wear a wrist timing device, and to choose the make/model he thought best. Astronauts Shepard, Grissom, and Glenn wore no watch. Scott Carpenter wore a Breitling Navitimer.¹

The Speedmaster Professional was first flight tested in space by Walter Schirra aboard Sigma 7, October 1962. The Omega ran flawlessly and was used as backup to the on-board clock. On-board timing devices in the Mercury capsule were internal to the spacecraft and wristwatches had not undergone rigorous testing, as the astronaut never left the protected environment of the spacecraft.

On the last Mercury Mission, Gordon Cooper wore both the Omega Chronograph and a Bulova Accutron Astronaut in order to compare the accuracy of the manually-wound Omega to the then new Electronic Bulova. The Omega was used to time the firing sequence of the retro rockets for re-entry.

Astronaut Walter M. Schirra Jr., with Omega S.P. on his wrist, speaks to President Kennedy after his space flight in October, 1962.



However, with the Gemini and Apollo programs, astronauts would also need wrist timing devices to help them with EVA activities, such as space walks, photographic timing exposures, and timing fuel cell purges. Such a watch should be able to operate in the vacuum of space where there exists wide variances in temperature and pressure.

The primary requirement for the wrist timing device was to provide the capability to perform short interval timing and backup for the main spacecraft timing device. Initially, a manually wound watch was required, as the "self-winding" watch mechanisms depend upon the action of an inertial pendulum in a gravity environment for performing the winding function. Consequently, these devices would not function in the reduced gravity environment encountered in space flight.

In 1962 NASA began the search for a wristwatch that could be worn by the Gemini and Apollo astronauts. NASA purchased watches from several companies which were then subjected to a number of rigorous tests. The watches were placed in vacuum chambers with conditions closely matching the space environment. Temperatures varied from 200° above 0 to 0°. They were exposed to accelerations of 12g's—twice as much as could be expected in spaceflight, and a vibration table shook the watches

Astronaut L. Gordon Cooper after his 22-orbit mission in the Mercury spacecraft "Faith 7." The Omega is on his left wrist and the Accutron on his right.



violently. The watch was also to be water-proof, shock proof, and anti-magnetic. The only watch that survived this testing was the Omega Speedmaster Professional. It is significant to note that this was a standard, product line model which was purchased over the counter, in nito at a Houston Jewelry Store.^{2,13}

In 1965, NASA chose the Omega Speedmaster Professional as the official chronograph for the space program. With the first Gemini flight (GT3) with astronauts Guson and Young, the Speedmaster Professional became part of the standard equipment issued to astronauts. The watch was worn on the outside of the pressure suit with the use of a large black velcro band. It was worn during the first walk in space by an American, Edward White in 1965. Two watches were worn by each Gemini astronaut as a matter of preference for timing different tasks.

Two years before the first lunar landing, a memo from Donald K. Slayton, then director of Flight Crew operations of NASA, indicated a need for "a wrist chronograph that would be qualified for use in an hostile environment existing on the lunar surface." He pointed out the difficulties in temperature protection and pressure suit/gment interface needed by astronauts on the lunar surface. He once again suggested that in order to measure elapsed time, a chronograph would be best suited for these purposes.¹

Due to its performance and reliability, the Speedmaster Professional was selected again as the official chronograph by NASA for project Apollo. Each astronaut wore two chronographs for space flight as a standard issue. Most, however, wore two during spaceflight. One watch was set on Mission Elapsed Time (MET) the other was set on Greenwich Mean Time (GMT) or Houston time. The watch became very popular with the astronauts and was often used in their everyday lives as well as their work in the space flight simulators.

However, the use of Swiss chronographs in the American space program met with political resistance by a number of American watch makers, specifically the Bulova Watch Company. In the early days of the space program, Bulova did not make a chronograph, but nonetheless, it exerted considerable pressure on NASA to use Bulova products. In the early 60's General Omar Bradley was President of the Bulova Watch Company. There were various meetings with NASA officials in order to promote the use of their products. In 1964, Senate hearings involved the domestic watch manufacturing industry and their use in space and defense projects. Senator Symington from Missouri, Margaret Chase Smith from Massachusetts, and Senator Stennis from Georgia were present at these meetings. The former assistant secretary of defense, Marx Leva was retained by Bulova as their legal counsel. James Webb, the administrator of NASA at the time, was aware of these meetings and helped shape NASA's response to them.³

As the official chronograph for all Apollo missions, the Speedmaster Professional was worn by Frank Borman

and crew on man's first journey to orbit the moon during Christmas of 1968. It was strapped to the outside of the space suit of Buzz Aldrin when he and Neil Armstrong made man's first lunar landing during the historic Apollo 11 mission in July 1969. The two hours and forty minutes that Armstrong and Aldrin were allotted on the surface of the moon, outside the lunar module, were timed by this chronograph.

There has been interesting discussion as to who in fact wore the first watch on the moon. Buzz Aldrin states that shortly after landing, there was a failure of the timer in the Lunar Module and he was unable to get it restarted. According to his best recollection, Neil Armstrong left his chronograph on board the Lunar Module as a backup. Thus, the first watch worn on the moon was worn by Buzz Aldrin.^{15,16} This watch was later stolen from his personal belongings, and has never been recovered.

During Apollo 13 in April of 1970, an on-board explosion of an oxygen tank in the service module left no electrical power in the Command Module (CM) or Service Module (SM) except for emergency reentry power. This left the on-board computerized timing devices inoperative. The crew had to use the Lunar Module for survival and had to power down everything in the Lunar Module. The Lunar Module was designed to provide approximately two days of electrical power. The crew and NASA had to devise a way to make this last the five days it would take to return to earth. The only electrical equipment turned on in the Lunar Module for the most part of the trip around the moon and back to the earth was a radio receiver, not even a transmitter. This left the crew of Jim Lovell, Fred Haies, and Jack Swigert without the use of on-board computers and their associated timing devices. Commander James Lovell thus had to use his Speedmaster Professional for both the timing and interval of thrust for critical engine burns as they rounded the moon and set a course for home.^{1,14} This contributed not only to saving the lives of the crew, but the vessel as well.

The last manned lunar landing Apollo 17 was scheduled for December 1972. As this date approached, the Bulova Watch Company became increasingly concerned that its products be used for this last manned lunar mission. Letters were sent to the Special Assistant to the President at the White House from Bulova indicating their displeasure with the use of Swiss chronographs in the American space program.

Thus it was decided by the Administrator of NASA, James Fletcher, that if a suitable Bulova chronograph could be found, it would be used on the last Apollo mission. The astronauts responded by stating that if forced to wear the Bulova time piece, they would also wear the Omega "as insurance." Bulova had insisted that chronographs chosen by NASA follow the policy of the "buy American" regulations established by the Senate. Both Omega and Bulova wished to comply with this, however, as of 1972, Bulova did not manufacture a U.S. made chronograph.^{4,5,7,8}

In August of 1972, sixteen companies were notified by NASA that the Manned Spacecraft Center (MSC) planned to establish a Qualified Product List (QPL) for possible future procurement of astronaut watches.⁶ This list included the Breitling Watch Corporation, Bulova Watch Company, the Elmore Watch Company, the Elgin National Watch Company, the Forbes Company, S. A. Girard-Perregaux Company, the Gruen Watch Company, the Hamilton Watch Company, Heuer Time and Electronic Corporation, the Lejour Watch Company, the Longines-Wittnauer Company, the Omega Watch Company, the American Rolex Company, Seiko Watch Company, and Zodiac Watch Company. Both Bulova and Omega were eager to comply with the "Buy American Act" which meant 51 percent of the products must be made or manufactured in the United States.

In order to comply with this act, Omega had the stainless steel cases for the Speedmaster Professional manufactured in Luddington, Michigan by the Star Watch Case Company. The crystals were shipped from Switzerland to the Star Watch Company where they were installed (the Star Watch Co. is no longer in business). The completed case and crystal were then shipped to the Hamilton Watch Company in Lancaster, Pennsylvania for inspection and testing. The case and crystals were then shipped

Walter Schirra and Tom Stafford after their Gemini 6 space flight, December 16, 1965.

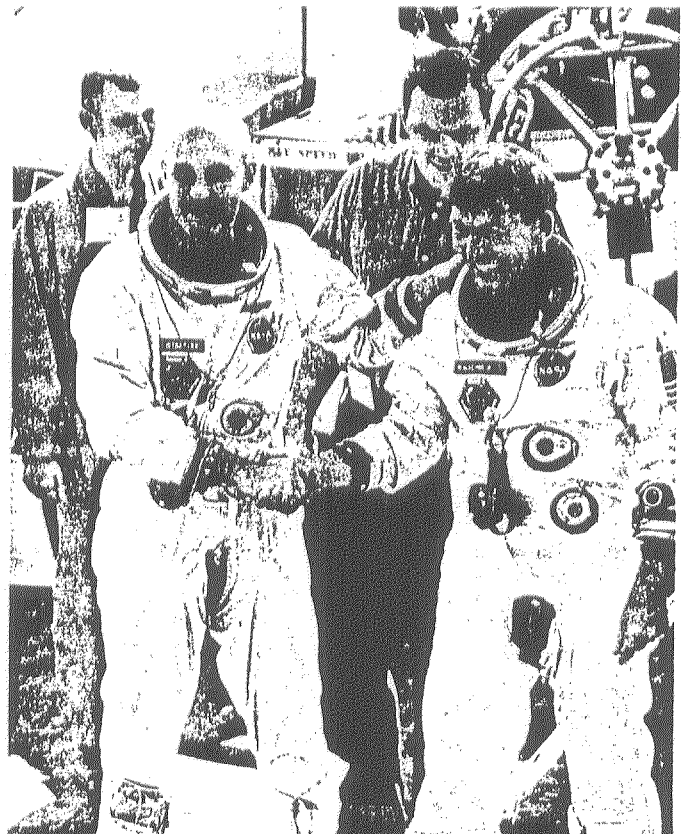


TABLE I

1. Vacuum Testing	The chronograph shall be subjected to a vacuum of 1×10^{-6} torr or better for a total of 72 hours. During the first ten hours of testing the temperature of the items shall be increased to $160^{\circ}\text{F} \pm 10^{\circ}\text{F}$. The temperature shall then be returned to $78^{\circ} \pm 10^{\circ}\text{F}$ for the remainder of test.
2. Oxygen Atmosphere/Temperature Test	The test items shall be placed in atmosphere of $95 \pm 5\%$ oxygen at a pressure of 5 ± 0.1 psia and a temperature of $155^{\circ}\text{F} \pm 5^{\circ}\text{F}$ for 72 hours. Gas samples extracted from the chamber area shall be analyzed for organic and CO content per test number 6 of D-NA-0002.
3. Low Temperature	The test items shall be lowered to $0^{\circ}\text{F} \pm 5^{\circ}\text{F}$. This temperature shall be maintained for 10 ± 0.5 hours. The test items shall be allowed to return to ambient before functional testing.
4. Acceleration	The test items shall be subjected to $20 \text{ g's} \pm 2 \text{ g's}$ in each direction of the three (3) perpendicular axes.
5. Random Vibration	The test items shall be installed in a fixture and submitted to 7.8 g's RMS for 5 ± 0.10 minutes, as defined in Figure 2 in each of three (3) axes. The test fixture with the test items shall then be submitted to 3.2 g's RMS for 12 ± 0.10 minutes as defined in Figure 1, in each of the three (3) axes.
6. EMI Test	The test items shall be subjected to all applicable requirements of MIL-STD-461A, if an electromechanical movement is employed.
7. Humidity Testing	The test items shall be submitted to a humidity test per MIL-STD-810B, Method 507, Procedure I, except minimum temperature shall be 68°F and maximum temperature shall be 120°F .

to Switzerland, where the movements were installed and the entire watch was subjected to final inspection and environmental testing.¹²

The Bulova Watch Company submitted 16 chronographs for testing at this time. It was later learned that

Buzz Aldrin shown in the lunar module wearing the Omega S.P., the first watch worn on the moon.



these watches were manufactured in Switzerland and that Bulova had purchased these chronographs through their subsidiary in Switzerland, Universal Geneva. The chronographs were disassembled by Bulova in their search laboratory and a new crystal, a new machine case, a specifically manufactured pin, a new crown and stem, a new face and dials and certain gaskets, washers and screws were replaced on each watch. The original movements and the back of each watch were retained.

When confronted with the fact that these watches were in actuality, Swiss chronographs, Bulova stated that they had invested \$23,000 of Research and Development funds in developing and tooling the process. Thus by utilizing these R&D costs, the watches were found to qualify under the "Buy American Act."⁹

The testing process was done in two stages. First, the watches were subjected to the several general requirements needed to become "Flight Qualified." If a watch met these criteria it was then subjected to a series of specific and rigorous "space flight environmental tests" to determine final suitability for space flight. The general requirements were that the watch be a chronograph, anti-magnetic, water-proof, a shock-resistant. The case must be finished for non-reflective characteristics, and the crystal of the chronograph must be anti-reflective so that the dials could be easily read under light levels ranging from three-foot candles to direct unfiltered sunlight. And accuracy requirements both in the face up and face down positions should be plus or minus 6 seconds in a 24-hour period.

The watches were then subjected to the specific environmental test which included vacuum testing, oxygen atmosphere testing, low temperature, acceleration, random vibration test, electromagnetic induction tests, and a humidity test. The specific requirements are listed in Table 1.

These tests were completed by November 1972, and the Deputy Administrator of NASA, George Low, in his letter to the Assistant to the President at the White House, Jonathan C. Rose, stated the results of the space-flight qualification test. To my knowledge, this information has never before been made public. "The Bulova chronograph stopped three times during the humidity test, and stopped again during the acceleration test. Based on our criteria, the Bulova chronograph therefore, has not qualified for use on the Apollo 17 mission. . . . We will continue to use the Omega watch in the Apollo program."⁹

The issue was finalized by a letter from Dale Myers, Associated Administrator for manned Space Flight, to Dr. George Low, the deputy director of NASA, on November 13, 1972. "The special Bulova chronographs purchased by MSC for possible application for Apollo 17 and Skylab, have failed their qualification tests both in humidity and acceleration." "I have instructed the Manned Spacecraft Center to take no further action with respect to chronograph testing of Bulova or other companies watches. I consider the Bulova watch issue closed."

Following the Lunar landing, the space program continued, and 1975 marked the first handshake in space between the American and Soviet crews during the Apollo and Soyuz mission. The American and Russian crews were both wearing the Speedmaster Professional.

The topic of astronaut timepieces was quiet for several years until 1976 when Bulova became interested in supplying time pieces for the Space Shuttle missions. Bulova had numerous public and private officials contact NASA in order to gain their objectives.

Senator Jacob Javits from New York contacted the Administrator of NASA, Robert Frosch, to lobby in Bulova's behalf.¹⁰ Once again, NASA initiated a competitive solicitation. A new deadline was extended several times so that Bulova could participate.

In September 1978, astronaut chronograph watches wishing to be considered for the space shuttle program underwent yet another round of prescribed space flight environmental testing. This included vacuum, low temperature, pressure, vibration, acceleration, salt-fog, humidity, and shock testing. Responses to the NASA procurement requests were received from the Bulova Watch Company and the Omega Watch Company in Bienne, Switzerland. Bulova submitted a proposal offering one type of chronograph, sold to NASA for \$1 each. Omega submitted three proposals for three separate models. The chronograph determined to be in compliance with the environmental requirements, achieving the highest technical score, and offered at the lowest price would be purchased. The technical evaluation team determined that, of the chronographs submitted by Bulova for space flight environmental testing, no single watch was exposed to all environmental tests. Also, one watch failed in salt-fog testing and all three watches exposed to vacuum testing failed to show adequate sealing. Accordingly, the Bulova

chronographs were determined to be in non-compliance with the specified environmental requirements.

Once again, the Omega chronograph was superior to the other chronographs tested. The Speedmaster Professional met all environmental requirements, had the highest technical score, and was offered at the lowest price. Therefore, the Omega was accepted for procurement. It is significant to note that this was the identical model which had been submitted in 1962. The watch was offered to NASA at the cost of \$.01 per watch.¹¹

In April 1981, STS-1, the first shuttle mission, was launched with Commander John Young wearing the Speedmaster Professional.

Now that the shuttle flights have become operational, there are no longer requirements by NASA for specific watches to be worn during shuttle missions. With the exception of extravehicular activity, all astronauts are confined within the pressurized environment of the shuttle. Nonetheless, the S.P. continues to be used by many of the shuttle astronauts.

In 1989, Omega commemorated the 20th anniversary of the Apollo 11 moon landing by issuing a limited edition of the Speedmaster Professional. The commemorative watches were limited to 2,000 pieces. In 1989, with the Soviet Union's improved attitude toward the West, the Soviet Union selected Omega as the watch supplied to all cosmonauts.

Alan Shepard, commander of Apollo 14, wearing an Omega on the lunar surface.





The Omega Speedmaster Professional, Apollo 11 20th Anniversary Commemorative edition.

Through the years, this watch has become a collector's item to some and a memento to others. Astronaut Buzz Aldrin mentions in his book *Return to Earth* that when donating several artifacts to the Smithsonian Institution, his Omega was one of the few things that was stolen from his personal effects.¹³ General Stafford, who has flown four space missions, is now the chairman of the board of The Omega Watch Corporation of America. Frank Borman and other Apollo astronauts continue to wear their Speedmaster Professionals for daily use and as a memento of their space accomplishments. Many of the Apollo astronauts were given the gold model of the S.P. by Omega upon return from their missions.

The S.P.'s are on display in several museums, e.g., the Michigan Space Center, Jackson, Michigan (McDevitt's from Gemini), and the Air and Space Museum, Washington, DC (Tom Stafford's from Apollo 10).

This then is the history of this interesting and historic watch. The manufacture of this chronograph gives meaning to the words quality, craftsmanship, and teamwork. Its record of performance speaks for itself. It withstood vigorous and repeated testing and surely must be one of the most thoroughly tested watches in history. It was the only watch "Flight Qualified by NASA for all Manned Space Missions," and was used during Projects Mercury, Gemini, Apollo, Skylab, Apollo-Soyuz and the Space Shuttle. As the only piece of space equipment available for wear to the public, the Speedmaster Professional provides the opportunity to own a small piece of history.

But perhaps the greatest legacy of the Speedmaster Professional is that it has withstood the test of time even now, some 30 years after it was first introduced, is still the only watch flight-qualified by NASA for vehicular space activity.

Acknowledgements

The author would like to note the valuable assistance of Lee Saegesser, NASA archivist, in Washington, and the services of Janet Kovacevich in the NASA headquarters office of the Johnson Space Center, Houston, Texas. Special thanks to General Thomas Stafford and the astronauts who provided the author with first-hand information regarding all aspects of the U.S. Manned Space program.

All photos courtesy of the National Aeronautics and Space Administration.

References

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2. Letter from Donald K. Slayton, Director of Flight Operations, NASA, October 19, 1967. (NASA Archives)
3. Letter from James E. Webb, Administrator of NASA, August 13, 1964. (NASA Archives)
4. Letter from George Low, Deputy Director of NASA, September 14, 1972. (NASA Archives)
5. Letter from George Low, Deputy Director of NASA, March 8, 1972. (NASA Archives)
6. Letter to Bulova Watch Company, August 16, 1972. NASA. (NASA Archives)
7. Letter from George Low, Deputy Administrator of NASA to Robert W. Miller, Assistant Director for The Council on International Economic Policy, The White House. September 19, 1972. (NASA Archives)
8. Letter from George Low, Deputy Administrator of NASA to Robert Miller, Assistant Director for the Council on International Economic Policy, The White House. September 20, 1972. (NASA Archives)
9. Letter from George Low, Deputy Administrator of NASA to Robert Miller, Assistant Director for the Council on International Economic Policy, The White House, and William A. Anders, Executive Secretary for the National Aeronautic and Space Council, November 15, 1972. (NASA Archives)
10. Letter from Jacob Javits, United States Senate to Robert Frosch, Administrator of NASA, June 23, 1978. (NASA Archives)
11. NASA Fact Sheet, September 20, 1978, Procurement of Astronaut Chronographs. (NASA Archives)
12. Personal Letter-Terrance Finn, Office of Legislative Affairs, NASA to John Wydler, House of Representatives, November 16, 1978. (NASA Archives)
13. Omega Press Release-1968 entitled "Omega Watches, Ready to Fly on Apollo 8."
14. Henry S. F. Cooper, Jr. *13: The Flight that Failed*. New York: Random House, 1973.
15. E. E. Aldrin, *Return to Earth*. Random House: New York, 1973, p. 281-282.
16. Personal correspondence of author with Neil Armstrong

MEMO

RE: Early history of wrist timing devices in man's space program

- I. The first watch worn into space was worn by Yuri Gagarin in 1961. This was a Russian made watch. It was simple and unsophisticated. It had no chronograph capabilities.
- II. The first watch worn in space by an American was worn by Scott Carpenter on Aurora 7. He wore a Breitling, Navitimer that was specially modified to his request.
- III. The Omega Speedmaster Professional was first flight tested by Wally Schirra, Sigma 7.
- IV. On the last Mercury Flight, aboard Faith 7, Gordon Cooper wore an Omega Speedmaster Chronograph on his left arm and on his right arm a Bulova Accutron. This was to test the overall effectiveness of both timing devices.
- V. Neil Armstrong did not wear an O-Chronograph while exploring the lunar surface. There was a timing failure on the lunar module and he left his Chronograph on board so as to act as a backup for this. Thus, the first Omega Speedmaster worn on the moon was Buzz Aldrin's. This watch has been subsequently stolen.

Note: Items II and V discovered through personal correspondence with the author. Items III and IV obtained by personal dialogue with the various astronauts involved.

ram
5/7/91

NOV 16 1978

Honorable John W. Wydler
House of Representatives
Washington, DC 20515

Dear Rep. Wydler:

This is in further response to your letter of October 24 in which you asked that we comment on certain assertions made by Mr. Harry B. Henshel, Chairman of the Board of the Bulova Watch Company, in his recent letter to you relative to the procurement by the Johnson Space Center (JSC) for astronaut chronograph watches.

Assertion: "Bulova watches did not fail the salt-fog or vacuum tests."

Response: The Request for Quotation (RFQ) for the astronaut chronograph watch procurement required that watches proposed by offerors be subjected to certain described environmental tests by one of four designated independent test laboratories. During the environmental testing, Dayton T. Brown, the independent laboratory selected by Bulova, noted the anomalies of (1) haze forming on the crystals of the watches during vacuum testing, and (2) a hand falling off during salt-fog testing. During the JSC evaluation of the Bulova proposal, we assumed that the haze was due to inadequate sealing and that assumption appears in the September 20 Fact Sheet in which it was stated that "all three watches exposed to vacuum testing failed to show adequate sealing." We similarly characterized the anomaly of a hand falling off during salt-fog testing as "one watch failed in salt-fog testing."

During the debriefing, Bulova representatives explained that post-proposal testing by them revealed that the haze was oil and attributable to excess oil around the mainspring. It was not, in their opinion, a seal failure. The Bulova representatives also expressed their belief that the salt-fog test

probably had nothing to do with the hand falling off. There is a temperature cycling process associated with the salt-fog testing which may account for the hand falling off; however, the exact cause cannot be determined with certainty.

It was agreed by all parties that the aforementioned anomalies did occur, and Bulova understands that we had to evaluate their proposal using the information available to us.

Assertion: "There was no requirement for serial tests on all watches."

Response: While NASA believed the RPO was clear with respect to serial testing, our subsequent review indicates that the language was not precise. Nevertheless, the purpose of the tests is for design verification, and serial testing is indispensable for determining the cumulative effects of the several environments on the candidate watch. Bulova representatives subsequently explained that serial testing was not employed due to time constraints. However, Bulova was assured of the fact that while their watches were not submitted to testing in serial fashion (although that fact was noted in some of our correspondence), it was not a significant factor in their proposed watch not being selected for award.

Assertion: "NASA did not directly conduct any tests; and the three shelf-item foreign products, though allegedly manufactured in the United States, were tested not in the United States but in Switzerland."

Response: It is correct that NASA did not directly conduct any tests. In order to be as fair and impartial as possible, NASA, in its RPO, gave all potential bidders the choice of any of four independent laboratories for submitting the chronographs to space flight environmental tests. Three of these laboratories are located in the United States and one in Switzerland which tested the Omega watches.

With reference to the manufacture of the Omega watches, we have confirmed that the chronograph cases used by Omega were manufactured by the Star Watch Case Co., in Ludington, Michigan. The crystals themselves were shipped from Switzerland to the Star Watch Case Co., where they were installed.

The completed case and crystals were then shipped to the Hamilton Watch Co., in Lancaster, Pennsylvania, for inspection and testing. The case and crystals were then shipped to Switzerland, where the movement was installed and the entire watch was subjected to final inspection and environmental testing.

As you know, during discussions held in your office on October 13, NASA representatives offered a debriefing to Bulova representatives which was accepted by them. The debriefing was held on November 2, 1978, at the Johnson Space Center. Among those attending were Mr. Larry Medway, of this office, and Mr. Laroy Hopkins, Associate Director of Procurement, Policy and Management, NASA Headquarters. Enclosed for your information is a copy of the report on the debriefing and a copy of the RFQ.

We believe that this debriefing clarified a number of concerns for the Bulova Watch Company relative to this procurement. If there is anything else we can do to be of assistance to you or Bulova, please let us know.

Sincerely,

Original Signed by
TERENCE T. FINN

Terence T. Finn
Director, Office of
Legislative Affairs

Enclosures

cc: H/Mr. Evans--INFO PROVIDED BY
HM/Mr. Kennedy
H/Mr. Golden
M/Mr. Germany
M/Mr. Yardley
G/Mr. Mossinghoff
A, AD, ADB, NHS-23

JSC/James Neal

NOV 7 1978

C:Ljv

MEMORANDUM

TO: AD/Dr. Lovelace

FROM: C/Terry Finn

SUBJECT: November 2 Debriefing at JSC of Bulova Officials

Attached is a report prepared by Larry Medway on the debriefing. JSC is preparing for Headquarters early this week, the formal debriefing memorandum and a suggested draft reply to Congressman Wydler.

Original Signed by
JERENGE T. FINN
Director, Office of
Legislative Affairs

Attachment

cc: A, ADB, G, M, H, NHS-23

SUBJECT: November 2, 1978, debriefing at JSC of Bulova officials relative to the procurement of astronaut chronograph watches

ATTENDEES: Jim Neal - JSC
Jim Taylor
Carl Scarlett
John Lottinville

Roy Hopkins, Code H
Larry Medway, Code C

William Gowen - Bulova Watch Co.
Charles Sauter
George Ott

This debriefing was conducted as a result of the suggestion made at the October 13, 1978, meeting held with Congressman Wydler, Bulova representatives, and NASA.

Background Information Relative to the Procurement Process and NASA's Selection

The debriefing began with a brief summary of the reasons for the selection of Omega for this procurement. Omega watch Model Number 1 met all environmental test requirements, received the highest technical point score, and was offered at the lowest price.

The membership composition and disciplines of those on the evaluation committee was discussed. Additionally, as noted in the RFQ, a review was made of the specific environmental requirements, the technical specifications with their scoring and the price offers. Each technical specification had a weight, with a maximum total possible score of 1000 points.

The specifications were based upon NASA experience and requirements for previous similar items used in a space environment, as well as military specs which have general acceptance standards.

Relative to the environmental testing, no single Bulova watch was exposed to all environmental tests. As reported by Dayton T. Brown, one of the four independent testing laboratories, there were anomalies in two areas, vacuum testing and salt-fog testing.

A second hand was lost during the salt-fog testing. Droplets were deposited on the crystals when exposed to vacuum testing. Bulova questioned the statement in

the NASA fact sheet that the failure to comply in the vacuum testing was because of inadequate sealing. The company admitted lubricant was deposited on the crystals--the problem was the lubricant in the mainspring, caused by temperature--it was not a vacuum problem. When again retested, Bulova admitted only an imperceptible film was deposited on the crystal. It was pointed out to Bulova that during EVA, the crystal haze would make it difficult for an astronaut to read the watch.

Bulova's Receipt of RFQ

Bulova indicated the company did not have enough time to do in-house testing prior to submitting the watches to Dayton T. Brown. The company was under extreme pressure to meet the closing date of June 21 for receipt of proposals. Bulova had not come to the debriefing to tell NASA to use watches with deposits on the crystal or hands becoming loose. The company believed that although given extensions to respond to the RFQ, it did not have adequate time. It was explained to Bulova that JSC issued the RFQ to 19 prospective sources on February 17, 1978. The RFQ had been sent to Mr. Titchell at Bulova's Woodside, New York address. This had been the address listed in the JSC procurement records. Bulova was still checking in-house, but could not uncover if the original RFQ had ever been received. Later during the debriefing, Bulova admitted it could understand the reason for NASA sending the RFQ to Woodside.

Matters Raised by Bulova Relative to NASA Specifications

Bulova did not believe it was required that all its watches be submitted to all the environmental tests. Dayton T. Brown did not conduct the tests in this manner because of the limited time for testing. NASA believed this requirement was clear in the RFQ. Regardless of this, Bulova watches did exhibit the anomalies previously mentioned. Additionally, Bulova scored lower on the degree of compliance with the technical requirements. It was also pointed out that Bulova's technical specification information was inadequate in a number of areas, i.e., luminescent qualities, marking configurations, means to start and stop the chronograph, materials listing, etc. Bulova asked if the specifications were written for a specific watch, with an inference on brand (Omega). NASA's answer was no.

Bulova was still concerned about the meaning of some of the specifications in the RFQ. Some of these items were water resistant (to what level?), shock resistant, anti-magnetic, and accuracy limits. Bulova pointed out that there are Federal Trade Commission standards for some of these terms. As a spokesman for the American watch industry, with extensive experience in the field, Bulova would like to provide to NASA information to tighten and improve technical specifications in future procurements. We indicated that NASA would be pleased to receive this information.

What Bulova May Do to Improve their Proposals Submitted in Future Procurements

Bulova discussed the "main reason" for coming to JSC. Bulova desired to learn what was wrong with its proposal and how to do a better job in the future. Bulova does wish to sway us that the company does know something about watches and their use in space. In submitting its proposal to NASA, Bulova had indicated it would meet all the required specifications. It was explained to the Bulova engineers that their proposal for many of the technical specifications did not indicate how Bulova intended to meet them. The JSC evaluation team scored on the basis of the available information provided by the company, chronograph photographs and findings in the Dayton T. Brown report. To assist Bulova in the future it was suggested that should there be anything in our procurement solicitations which the company believed was unclear, such as specifications, test requirements or delivery dates, Bulova should immediately contact NASA in writing. If there were ambiguities, NASA would correct these for Bulova (and other offerors).

Additional Comments From Bulova

(1) To have done the work on these chronographs for the best opportunity for selection, the company would have required six months in-house work before submitting the chronographs for testing.

(2) Had time permitted, Bulova would have had the environmental tests performed by the Neuchatel Observatory in Switzerland--the organization used by Omega.

(3) Mr. Harry B. Henshel is the Chairman of the Board. Newspaper articles indicating another Chairman and other information on corporate relocation changes are incorrect.

Conclusion

It appeared that the Bulova representatives appreciated and found the debriefing useful. It was conducted in an informal and amicable fashion. Hopefully, the company is satisfied that its proposal did receive a fair and impartial evaluation.

We did indicate the possibility of future watch procurements in the early 1980's.

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OCT 25 1978

Honorable John W. Wydler
House of Representatives
Washington, DC 20515

Dear Rep. Wydler:

Mr. Haskell C. Titchell, of the Bulova Watch Company, has requested that we provide you with a copy of the enclosed telegram confirming the debriefing to be conducted at the Johnson Space Center relative to the astronaut chronograph watch procurement.

Sincerely,

Original Signed by
TERENCE T. FINN

Terence T. Finn
Director, Office of
Legislative Affairs

Enclosure

cc: H/Mr. Evans
HM/Mr. Kennedy

Attn: Babs Raesly

*Copy for Larry Medway
10/23/78*

RECEIVED

NNNVZ CZ CNAAB 84
RTTUJAZ RUCHNVM0161 2931513-UUUU-RUEANAT.
ZNR UUUUU

1978 OCT 20 16 46

NASA
R 201441Z OCT 78
FM NASA JOHNSON SPACE CENTER HOUSTON TEXAS
TO 7105824789/BULOVA WATCH CO
ATTN: H. C. TITCHELL VICE PRESIDENT
BULOVA PARK - JACKSON HEIGHTS
NEW YORK NY 11370
INFO RUEANAT/NASA HQS
ATTN: HM-1/H M KENNEDY
WASH DC

PROCESSED BY
HM-1

BT
UNCLAS IN REPLY REFER TO: //BZ//
CONFIRMING INFORMATION FURNISHED BY NASA HEADQUARTERS, THE
DEBRIEFING OF YOUR COMPANY WILL BE AT 1:30 PM ON THURSDAY,
NOVEMBER 2, 1978, AT JSC/HOUSTON, BUILDING 1, CONFERENCE
ROOM 817B, WHICH IS ON THE EIGHTH FLOOR.

THE FOLLOWING PEOPLE WILL BE IN ATTENDANCE FROM JSC:
JAMES L. NEAL, DIRECTOR OF PROCUREMENT
JAMES A. TAYLOR, CHIEF, FLIGHT EQUIPMENT SECTION OF
DIRECTORATE
CARL R. SCARLETT, CONTRACTING OFFICER
JOHN K. LOTTINVILLE, COUNSEL

IN ADDITION, ONE OF THREE PEOPLE FROM NASA HEADQUARTERS WHO
ATTENDED THE MEETING WITH YOU IN CONGRESSMAN WYDLERS OFFICE
WILL BE IN ATTENDANCE. NASA HEADQUARTERS WILL FURNISH CONGRESS-
MAN WYDLERS OFFICE A COPY OF THIS INFORMATION AS REQUESTED.
I WILL CALL AND PROVIDE DIRECTIONS TO JSC.
SGD//JAMES L NEAL DIRECTOR OF PROCUREMENT
NASA JOHNSON SPACE CENTER HOUSTON TEXAS 77058

lee

BT
#0161
#0161

C:Ljv:A50941:A63861

OCT 23 1978

Honorable John W. Wydler
House of Representatives
Washington, DC 20515

Dear Rep. Wydler:

This is to inform you that arrangements have been made with Mr. Haskell C. Ritchell, of the Bulova Watch Company, to provide the company with a debriefing on November 2, 1978, at the Johnson Space Center relative to the astronaut chronograph watch procurement.

As you suggested, I and/or Mr. Medway, of my staff, will attend this meeting. I will write to you later advising you of further developments in the matter.

Sincerely,
Original Signed by
TERENCE T. FINN

Terence T. Finn
Director, Office of
Legislative Affairs

cc: H/Mr. Evans
HM/Mr. Kennedy
H/Mr. Golden
M/Mr. Germany
M/Mr. Yardley
G/Mr. Mossinghoff
A, AD, ADB, NHS-23

Expected Final: 11/9/78

~~OCT 15 1978~~

OCT 16 1978

C:Ljv/

MEMORANDUM

TO: AD/Dr. Lovelace

FROM: C/Terry Finn

SUBJECT: October 13 meeting with Congressman Wydler and
Bulova officials.

As I indicated in my October 13 memo, attached is the more detailed report of the meeting. We will advise Congressman Wydler when the arrangements are made for the JSC debriefing and later advise him of our disposition of this matter.

Original Signed by
TERENCE J. FINN
Director, Office of
Legislative Affairs

Attachment

cc: A, ADB, G, M, H, NHS-23

SUBJECT: October 13, 1978, meeting with Congressman John W. Wydler relative to the procurement of astronaut chronograph watches.

ATTENDEES: Congressman John W. Wydler
Terry Finn, Code C
Larry Medway, Code C
Ed Golden, Code H
Haskell C. Titchell, V.P., Public Relations and Industrial Relations, Bulova Watch Co.
William Gowen, Manager-Public Relations, Bulova Watch Co.

The Bulova officials felt that the cards had been stacked against their company for this procurement. Bulova was just getting its feet on the ground financially, had seen Omega watches in the limelight over the past years, and were hopeful that their American product would now share this limelight during the Space Shuttle program.

Bulova distributed two papers, copies of which are attached. The first of these papers, 1978 Chronology-NASA Chronograph Invitation to Bid, indicates that Bulova had not received nor was sent the RFQ when issued by JSC on February 17, 1978. It further noted that the company learned of this procurement in April from the "Washington grapevine" and had to request the RFQ and extensions of the closing date to prepare its submission. It appears to Bulova that the procurement procedures were improper and rigged in favor of Omega which had four months to prepare its bid, whereas, Bulova believes it had little more than a month to fully proceed with its submission.

The second paper, a Bulova House Letter of September 26 prepared by Mr. Charles Sauter, staff engineer, basically questions and disagrees with the information in the NASA Fact Sheet of September 20. Among the matters raised, it questions the basis of NASA specifications. It indicates that there was no requirement that all five watches had to comply with the space flight environmental test requirements. Further, it states that there was no definition of what constitutes passage or failure of any test. It appears to Bulova that Omega's claim for inclusion under the Buy American Act is fraudulent.

During the meeting Bulova raised the following issues:

(1) Bulova wanted to know why they weren't sent the RFQ when originally issued by JSC. If it was sent, then to whom? What other firms were sent the RFQ and when were they sent?

(2) When Bulova was notified on September 20 of the award to Omega, the company was also offered a NASA technical report. Bulova had to again request this report on October 4 and it has not yet been received.

NOTE: Mr. Titchell indicated he had just received this morning a letter from Mr. Jim Neal of JSC; a copy was provided us at the meeting and may be the promised report. A copy of Neal's October 10 letter is attached.

(3) Bulova was concerned that it had not been provided, by NASA, with a copy of the September 20 Fact Sheet, but had obtained a copy indirectly from a Member of Congress. We explained that this paper had been prepared to provide information for the Members of Congress who had inquired into the matter.

(4) Bulova questions the Buy American Claims of Omega. They believe that there may be something fraudulent in the information provided to NASA regarding the assembly of Omega watches. Ordinarily, Omega off-the-shelf models are completely manufactured in Switzerland. Why for this procurement did Omega have the cases manufactured in the U.S., crystals shipped from Switzerland, and have both installed by one company, inspected and tested elsewhere in the U.S., and then shipped to Switzerland to install the movement and subject the entire watch to final inspection and environmental testing?

(5) Bulova questioned where Omega had the tests conducted certifying that their proposed chronographs had successfully passed the specified environmental requirements?

(6) Bulova was concerned that the NASA Fact Sheet was in error relative to the place of manufacture of the crystals. They want to know who provided certification information on Omega's Buy American claims, and if it was a local Omega representative in the JSC area, they would like him identified.

In response to these matters posed by Bulova, we suggested that the best way and place to answer Bulova's allegations and technical questions was by means of a debriefing conducted at JSC. Messrs. Titchell and Gowen agreed and arrangements will be made as soon as possible.

Congressman Wydler, during most of the meeting, acted as a moderator. He expressed his belief that whenever possible purchases should be made from American firms like Bulova, provided the products meet the requirements and cost considerations. For the sake of continuity, Congressman Wydler

desired that one of the NASA participants at this meeting also be at JSC for the debriefing and we agreed. The Congressman was also invited to attend, but declined our offer. Should there be findings of improprieties in this procurement, Congressman Wydler wished to be advised of the corrective action taken by NASA. We assured him this would be done.

1978 CHRONOLOGY -- NASA CHRONOGRAPH INVITATION TO BID

Feb. 17 -- NASA request for bid on 56 astronaut chronograph watches, not received and not sent to Bulova, but received by Omega; bid deadline was to be 4:30 p.m. (Houston) May 1, 1978.

March 3 -- Deadline set by NASA for acknowledgement of request and intent to bid (apparently Omega is sole company to indicate its intent to bid to NASA). Bulova still not in receipt of invitation to bid.

April 17 -- Bulova hears from Washington grapevine that NASA has issued a request for bid on astronaut chronographs, checks NASA Houston.

April 20 -- Bulova receives NASA request for bid dated Feb. 17, requiring acknowledgment by March 3 and bid submission by May 1st; immediately phones and telexes NASA Houston requesting two-month extension.

April 25 -- NASA Houston phones Bulova granting extension to all parties to 4:30 p.m. (Houston) May 31, claiming need to hold to astronaut training schedule does not permit further extension.

May 12 -- Bulova makes telephone and telex request for further extension of bid deadline citing three-week test cycle required at NASA certified test station (Dayton T. Brown)

May 16 -- NASA Houston extends deadline to 4:30 p.m. (Houston), June 21, in document signed today.

May 17 -- Bulova receives telephone notification at 10:37 a.m. from NASA Houston extending deadline to June 21.

June 20 -- At 4 p.m. Bulova receives report of NASA-certified test station (Dayton T. Brown) with test results; Bulova completes bid paperwork and Bulova engineer leaves for airport at 5 p.m.

June 21 -- Bulova engineer submits Bulova bid to NASA Houston at 10 a.m. (Houston).

September 20 -- NASA advises Bulova by phone at 1:15 p.m. (New York) that contract has been awarded to Omega, offers NASA technical report; Bulova accepts telephone offer of NASA technical report and follows with telex request for such report (which as of Oct. 12 has not been received by Bulova); NASA representatives distribute "NASA Fact Sheet" on NASA Chronograph contract awarded to Omega to U.S. Senators and Congressman, but not to Bulova; "Fact Sheet" says Omega made three bids.

Oct. 4 -- Bulova again telexes NASA Houston requesting NASA technical report discussed in NASA call of Sept. 20.

Oct. 6 -- NASA Houston telephones Bulova at 4:20 p.m. (New York) that NASA technical materials on way to Bulova by mail.

Summary:

Omega had from Feb. 17 to June 21 to prepare its bids, or more than four months. Bulova, in contrast could not fully proceed until the extension was granted May 16, notification of which extension was not received until May 17, and, therefore, had little more than a month to prepare a bid. Most of that period was consumed by NASA test station procedures.



BULOVA HOUSE LETTER

DATE: September 20, 1978
from Charles Sauter

TO Mr. H. C. Titchell

cc: Messrs: W. Gowen
G. Ott
R. Sagarino

Subject: NASA Chronographs
Re: Your Letter of September 22, 1978

As a result of our discussion yesterday morning, I would like to make the following comments:

1. All five of the Bulova chronographs performed admirably throughout the testing, unlike the Omega chronograph which failed during the vibration test. It is obvious that the Bulova chronographs would provide highly satisfactory service for the astronauts, on their missions and on the ground.
2. Bulova, with its extensive Research, Development and Manufacturing facilities in the United States, unlike Omega whose limited facilities are all overseas, would be able to respond quickly and competently to any NASA requirements for modifications, improvements, or changes required in the future. Our ability to meet this requirement is ample proof of this capability.
3. The NASA specification is very faulty, having apparently been thrown together at the last moment by picking bits and pieces out of existing specifications for other, large devices. For example, requiring eighteen shocks of 20 g intensity, for a product which has to withstand approximately 3500 g's in actual use, is ridiculous as well as needlessly expensive. However, the major flaw in the specification is the omission of any definition as to what constitutes passage or failure of any test. Because of this serious omission, neither the Omega nor the Bulova items can be stated to have passed or failed any of the tests.
4. It is intimated in the NASA September 20th Fact Sheet that a Bulova chronograph did not pass the salt fog test for case corrosion resistance, when in fact, the Bulova watches were unaffected by the test and the Omega did fail (was corroded). One Bulova watch lost a second hand during the test, because of faulty rush assembly of these one-of-a-kind products. But this is an easily correctable fix and not a failure of the salt fog requirements.
5. There was no NASA requirement that all five (Bulova) watches had each to be put through all the environmental tests; Dayton T. Brown did not do so, because of the limited time for testing. Consequently, the testing elapsed time was telescoped by conducting two or more tests concurrently. Since no particular watch was assigned to any particular test, all watches had an equal chance of facing any test. We, therefore, believe that any objection to the Bulova proposal on the grounds that no single watch faced all the tests is capricious.

6. We would be happy to resubmit a group of watches to NASA, for testing at NASA, now that the time pressure is removed. This would allow NASA to realize that the Bulova is, in fact, very capable of providing satisfactory service. We have 56 of them on hand, available for testing.

7. It appears that the Omega claim for inclusion under the Buy American Act is in fact fraudulent, whereas a major portion of the Bulova chronograph is actually made in America.

8. The NASA Fact Sheet states that the Bulova chronographs failed the temperature-vacuum test, which is not true. All three watches were in satisfactory operating condition after the test. A slight oil film was deposited on the inner surface of the crystal during the test, which does not violate any requirement of the specification. We improved the seals and retested the watches, and the resulting crystal haze was reduced to an imperceptible film that in no way interfered with the usability of the watch. (We also believe that NASA has no information as to whether a similar film was present on the Omega entries since there is no requirement for the watches to be examined by NASA after testing, either in the U.S. or in Switzerland.) Thus, we believe that this objection should be withdrawn by NASA.

On the basis of the above opinion, it is clear that the Bulova entry should be awarded higher marks than the Omega entry, which failed the vibration test, and that Bulova should be awarded the contract.

We further suggest an impartial review of the dates and content of the Omega proposals for test details, price changes, and Buy American claims, to see if improper influence has been exerted or fraudulent claims made. Price breakdowns of the Buy American claims should be analyzed for validity. The similarity to Bulova's price and proposal claims seems more than coincidental.



Charles Sauter, Staff Engineer
Research and Engineering Division

CS/jf

Lyndon B. Johnson Space Center
Houston, Texas
77058

OCT 13 1978

BB6

OCT 10 1978

Bulova Watch Company, Inc.
Attn: Mr. H. C. Titchell
Vice President
Bulova Park
Flushing, NY 11370

Subject: Astronaut Chronographs

This letter is to confirm our telephone conversation of September 20, 1978, during which you were informed that a purchase order for astronaut chronographs and associated equipment was awarded to Norman M. Morris Corporation, New York, New York, the exclusive agent for Omega in the United States.

Two offerors submitted responses to our Request for Quotation (RFQ). Bulova Watch Company, Inc., submitted a single proposal, and Omega Louis Brandt and Frere SA submitted three proposals on three separate candidate items. Included in all proposals were test data required by the RFQ to substantiate the capability of the candidate items to meet space flight environmental requirements.


A technical proposal evaluation team was established to evaluate the offers. The offers were evaluated in two areas; the first for compliance with environmental requirements, and the second for compliance with the technical specifications.

The evaluation team determined that the Bulova units were not submitted to the required environments in serial fashion, and therefore, no Bulova unit was exposed to all the environmental tests. These units failed in several environments, and all failed vacuum testing. Bulova's units were determined to be in noncompliance with the environmental requirements. In contrast, Omega units were tested serially in all required environments. The Omega Speedmaster Professional exhibited no failures. The Omega Speedmaster Automatic exhibited no failures but exhibited corrosion on the case after salt fog testing. This test was rerun after a process change was made on the case finish, and the unit passed the criteria. Both these units were determined to be in compliance with the environmental requirements. The Omega Speedsonic exhibited a sympathetic vibration phenomenon during vibration testing and was determined to be in noncompliance with the environmental requirements.

Despite the fact that the Bulova units did not comply with the environmental requirements, the evaluation team decided to perform a technical evaluation of all four proposals to determine whether the watches proposed conformed to the requirements of the specification. It was determined that the Bulova watch did not meet some of these requirements. Further, it did not adequately address the requirements in several areas and was difficult to evaluate. Bulova's technical score was slightly higher than one-third of that of the Omega Speedmaster Professional. Omega's responses fully addressed the requirements of the RFQ.

The prices quoted by both firms are obviously promotional prices not reflective of any market prices. We note that the three Omega chronographs are off-the-shelf items currently being sold to the public, while Bulova's is a special item developed for this requirement.

In summary, the results of this evaluation were that the offer by Omega Louis Brandt and Frere SA for a mechanical movement, manual wind chronograph, model Speedmaster Professional satisfies the environmental requirements, received the highest technical score, and was offered at the lowest price.


James L. Neal
Procurement Officer

C:Lmaf:A66451

OCT 31 1978

Honorable John W. Wydler
House of Representatives
Washington, DC 20515

Dear Rep. Wydler:

This acknowledges your October 24 letter to Dr. Frosch on behalf of ~~Mr.~~ Harry B. Henshel, Chairman of the Board of Bulova Watch Company, regarding the astronaut chronograph watch procurement.

As you know, Bulova officials will receive a debriefing on November 2 at the Johnson Space Center relative to the issues raised by Mr. Henshel in his recent letter and other matters brought up during the meeting held in your office.

As soon as possible, we will respond to Mr. Henshel's assertions and report on the results of the debriefing.

Sincerely,

Original signed by
[Signature]

for
Judith A. Cole
Deputy Director
Office of Legislative
Affairs

SUSPENSE DATE: 11/2/78
EXPECTED FINAL: 11/9/78

cc: H/Adm Evans
HM/Mr. Kennedy
GK-3/Mr. O'Brien
M/Mr. Germany
H/Mr. Hopkins
NHS-23

ATTN: Babs Raesly

C:TTF:js

October 13, 1978

MEMORANDUM

TO: G/Gerry Mossinghoff
FROM: C/Terry Finn

This is just to let you know of a potential future legal issue in regard to the procurement of the astronaut chronometers.

During today's meeting in Rep. Wydler's office, the Bulova people alleged that some of the certifications to us by Omega concerning the chronometers were fraudulent (their word, not mine) and they hinted that they would consider taking some sort of legal action.

The Bulova people asked, as did Wydler, whether we would cancel or reconsider the chronometer procurement if anything illegal by Omega turned up. Ed Golden responded basically by saying no. I responded by saying there were two kinds of responses we would have: (1) a human response where, if we found out we had been lied to, we would possibly react in the same fashion since NASA folks like everyone else don't like to be lied to, and (2) a legal response where the status of the chronometer procurement would be determined by the exact legal situation which none of us in the room knew or would be qualified to evaluate.

Original Signed by
TERENCE T. FINN

Director, Office of
Legislative Affairs

cc: C/Medway



OCT 13 1978

C:Ljv:A6386f:A5094f

Honorable John W. Wydler
House of Representatives
Washington, DC 20515

Dear Rep. Wydler:

This is in further response to your letters of July 6, 1978, and October 9, 1978, in regard to the procurement of astronaut chronograph watches.

Although we had advised a member of your staff that it would take some time for us to obtain the information requested, we did not anticipate the length of time necessary, and we regret any inconvenience this delay may have caused you.

As you know, a member of our legislative staff hand-delivered a Fact Sheet on this procurement matter to your office on September 20, concurrently with the notification to Omega and Bulova of our decision. This represented our effort to respond to your letter of July 6 as well as to keep you fully advised on a matter in which you had expressed an interest. Part of the Fact Sheet dealt with the subject of the Buy American Act, and has been questioned by officials of Bulova. With regard to the procurement of the watches, we have confirmed that the chronograph cases used by Omega are manufactured by the Star Watch Case Co., in Ludington, Michigan. The crystals themselves are shipped from Switzerland to the Star Watch Case Co., where they are installed.

The completed case and crystals are then shipped to the Hamilton Watch Co., in Lancaster, Pennsylvania, for inspection and testing. The case and crystal are then shipped to Switzerland, where the movement is installed and the entire watch is subjected to final inspection and environmental testing. Thus, the portion of the Buy American Act statement on page 3 of the Fact Sheet, quoted in your letter of October 9, 1978, is not accurate.

With regard to the concern of Mr. Harry Henshel of Bulova pertaining to the length of the bidding period, we want to point out that NASA twice extended the closing date of the astronaut watch solicitation in order to assure maximum competition, as we advised you by letter of June 23. We believe that NASA acted fairly and in good faith by extending the closing dates, and we believe that the time provided was adequate to meet the requirements for the Request for Quotation.

Please let us know if we may be of any further assistance to you.

Sincerely,

Original Signed by
TERENCE T. FINN

Terence T. Finn
Director, Office of
Legislative Affairs

cc: H/Mr. Evans--INFO PROVIDED BY
HM/Mr. Kennedy
H/Mr. Golden
M/Mr. McNickle
M/Mr. Yardley
G/Mr. Mossinghoff
A, AD, ADP, NHS-23

A 4851 +

A 5015 F

A 5094 F

September 20, 1978

Notification of the Astronaut Chronograph Procurement

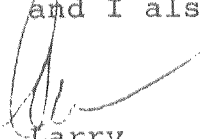
I called Senator Moynihan's office and requested to speak to Elliott Abrams, AA, or Ted Blanton, both were unavailable so I left word to have one of them call me back as soon as possible. At 12:15 Ted Blanton call me and I notified him of the forthcoming announcement notification to Omega and Bulova and briefly the reasons for the selection of Omega. I told him I had a Fact Sheet and would see him at his convenience. He scheduled me for 3:30.

I called Senator Javits (11:45) and asked to speak to Albert Lakeland or Wheeler Winslow. Neither one were available so I left a message to have either one call me back. Just before leaving for the Hill around 2:15 I called Javits office and spoke to Winslow informing him of the selection and that I would stop by with a Fact Sheet.

I called C/M Wydler (11:48) and spoke to Maura, the staff person who was handling this, and indicated I would stop by this afternoon with a Fact Sheet.

This afternoon I visited the three offices and spoke to the staff people. The Senate staff people indicated that earlier in the day they had received calls from Bulova but had not returned the messages left.

Additionally, before going to the Hill, I notified Jim Wilson, Tom van der Voort, Dick Malow and John Stewart, and I also had copies of the Fact Sheet sent to them.


Larry

Green

September 20, 1978

NASA FACT SHEET

Procurement of
Astronaut Chronographs
RFQ 9-BB6-5-8-13Q

NASA's Lyndon B. Johnson Space Center (JSC) issued Requests for Quotations (RFQs) on February 17, 1978, to 19 prospective sources for the purchase of astronaut chronograph watches* for the Space Shuttle. Offers were solicited on a fixed-price basis for furnishing 56 chronographs, a timing machine,** one-year maintenance agreement for servicing the watches plus a one-year option for extension of such services.

In addition to the technical specifications which describe the detailed requirements of the chronographs, the RFQ also set forth prescribed space flight environmental testing requirements (vacuum, low temperature, pressure, acceleration, vibration, salt-fog humidity and shock) which were to be completed on each chronograph offered. Offerers were required to submit with their quotations testing data, certified by any one of four independent laboratories listed in the RFQ, that their proposed chronograph had successfully passed the specified environmental requirements.

By the specified cut-off date of June 21, 1978, responses to the RFQ solicitation were received from Bulova Watch Company, Inc., Flushing, New York, and Omega Louis Brandt & Frere SA, Bienne, Switzerland. Bulova submitted a single proposal offering one type of chronograph. Omega submitted three proposals for three separate models.

Proposal Evaluation

A NASA technical evaluation team at JSC evaluated the offers received in two areas; the first for compliance with the space flight environmental test requirements, and the second for compliance with the technical specifications in the RFQ.

* A chronograph is a watch having in addition to conventional hour, minutes, and second hands, a center sweep-second hand that can be stopped, started, or reset to zero and that indicates intervals of time.

** A timing machine is used to measure the accuracy of the watches--how many seconds they gain or lose within a 24-hour period.

The technical evaluation team determined that of the five chronographs submitted by Bulova for space flight environmental testing requirements, no single watch was exposed to all environmental tests. Also, one watch failed in salt-fog testing, and all three watches exposed to vacuum testing failed to show adequate sealing. Accordingly, Bulova's chronographs were determined to be in noncompliance with specified environmental requirements.

Evaluation of Omega proposals disclosed that its chronographs were tested in all required environments. Omega chronograph model Number 1 exhibited no failures. Omega chronograph Number 2 exhibited no failures, but did show corrosion on the case after salt-fog testing. The test was repeated after a process change was made on the case finish and the watch passed the criteria. Both of these chronographs were determined to be in compliance with the environmental requirements. Omega Number 3 failed in vibration testing, and therefore, was not in compliance with the environmental requirements.

The evaluation team subjected each proposal to detailed evaluation on the degree of compliance with the technical requirements specified in the RFQ. Point scores were awarded in this evaluation with the following results.

Omega's proposal Number 1 received the highest technical score, followed by Omega Number 3 and Omega Number 2. Bulova's technical score was the lowest of the proposals evaluated by a considerable margin.

Price Comparisons

The fixed prices offered in the proposals of both Bulova and Omega are obviously promotional prices which bear no relationship to normal market prices. The prices offered are as follows:

<u>RFQ Requirements</u>	<u>Bulova</u>		<u>Omega</u>	
	<u>Unit Price</u>	<u>Total Price</u>	<u>Unit Price</u>	<u>Total</u>
56 Chronographs	\$ 1.00	\$ 56.00	\$.01	\$.56
1 Timing Machine	\$388.00	\$388.00	Price included in chronograph price.	
1-Year Maintenance Services for 56 Chronographs	\$ 1.00	\$ 56.00	Covered under warranty agreement.	
TOTAL PRICE		\$500.00		\$.56

In addition to the above, the RFQ contained an option, that may or may not be exercised, for an additional year of maintenance service. Omega submitted a price of \$20 per chronograph (including postage and handling). Bulova did not submit a price for the option year. Mr. Fitchell, Vice President of Bulova Watch Company, was contacted, and he verbally quoted a price of \$1.00 per chronograph for maintenance services in the option year.

Buy American Consideration

With regard to the Buy American Act, provision is made that a product is considered to be a domestic end product if at least 51 percent of the cost of its components are mined or manufactured in the United States. If, under such criterion, an end product is not a domestic end product, then a factor of six percent of the offered price is added to the offered price for purposes of evaluation only.

The posture of Bulova and Omega with regard to the Buy American Act is identical in this procurement. Each firm uses chronograph movements manufactured in Switzerland which are incorporated into the chronograph cases, and uses crystals that are manufactured and installed in the United States. Each offerer has certified that his chronograph meets the 51 percent criterion to be considered a domestic end product. Each offerer has also certified the timing machine to be purchased with the chronographs is of Swiss manufacture. Since the chronographs offered by each firm are domestic end products and considering that the addition of a six percent factor to the offered price of each timing machine would be inconsequential to the competitive posture of each offerer, the Buy American provisions are considered moot in the instant procurement.

The evaluation conducted, clearly shows that the Omega proposal Number 1 meets all environmental requirements, has the highest technical score and is offered at the lowest price. Therefore, the offer from Omega Louis Brandt & Frere SA for its Omega proposal Number 1 has been accepted for this procurement.

JUN 23 1978

LC-5:Ajv:N320123f

Honorable John W. Wydler
House of Representatives
Washington, DC 20515

Dear Mr. Wydler:

This responds to your letter of May 19 on behalf of
Mr. Harry B. Henshel, Chairman of the Board of Bulova
Watch Company.

A competitive solicitation containing the requirements for astronaut chronographs was issued on February 17, 1978. In advance of this issuance on December 21, 1977, the Commerce Business Daily informed prospective offerors of this planned procurement and requested interested firms to advise the Johnson Space Center of their interest. Bulova did not, in fact, respond to this announcement. It is our intent, however, to obtain maximum competition on this requirement as evidenced by the fact that we have twice extended the closing date of that solicitation, first on April 25, 1978, and the second time on May 16, 1978, both times at the request of Bulova. The present due date for receipt of competitive quotations is June 21, 1978.

We look forward to receiving Bulova's response among others to our solicitation.

Senator Javits also inquired into the matter on behalf of Mr. Henshel.

Please let us know whenever we may be of further assistance to you.

Sincerely,

Joseph P. Allen
Director, Legislative
Affairs Division

Allen

LC-5:Ajv:A48511

JUL 20 1978

Honorable Jacob K. Javits
United States Senate
Washington, DC 20510

Dear Senator Javits:

Your June 23 letter expressing interest on behalf of the Bulova Watch Company in providing chronograph watches for astronauts is readily understood and appreciated.

In the competitive solicitation for these requirements, responses were received from only Bulova and OMEGA by the final closing date of June 21, 1978. These responses are currently undergoing a thorough technical evaluation leading to the review and final selection of the firm for contract award. Throughout the evaluations and deliberations in this competitive process, you are assured that the Bulova Watch Company will receive every proper consideration.

Although we are unable to determine the anticipated award date at this time, we will be pleased to inform you of the final selection immediately upon receipt of the information.

Senator Moynihan has also expressed an interest in the matter.

Sincerely,
Original Signed by:
Judith A. Cole

Joseph P. Allen
Director, Legislative
Affairs Division

cc: H-1/Mr. Evans--INFO PROVIDED BY
HM-1/Mr. Kennedy
M, NHS-23, A, AD, ADB

SUSPENSE DATE: 7/25/78
EXPECTED FINAL: 9/19/78

11 MAY 1976

FAE

Mr. Chris H. Bailey
Director
American Clock & Watch Museum, Inc.
100 Maple Street
Bristol, CT 06010

Dear Mr. Bailey:

Dr. Fletcher has asked me to reply to your letter dated April 23, 1976.

We have an atomic clock at our Lyndon B. Johnson Space Center, Houston, Texas, that may be made available to you.

Please contact Mr. Charles Biggs, Code AP5, Office of Public Affairs, telephone Area Code 713/483-4241. Mr. Biggs will discuss the status of the clock and all other details of interest to you.

We appreciate your interest in the space program.

Sincerely,

Original Signed By
Robert J. Shafer

Robert J. Shafer
Acting Assistant Administrator
for Public Affairs

cc: Mr. Charles Biggs/JSC

A

AD

AEM-3

F ✓

FD

FA

FAE

FAE/RJTavares:gml:53345:5/10/76:A25322:Suspense Date 5/11/76

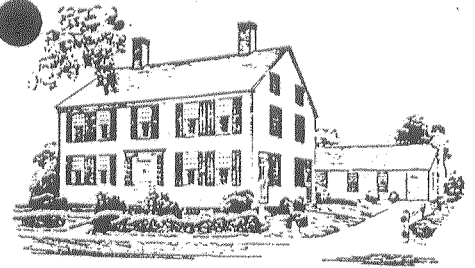
F

American Clock & Watch Museum

INCORPORATED

100 Maple Street, Bristol, Connecticut 06010

Tel.: 203-583-6070



April 23, 1976

The Director
National Aeronautics & Space Administration
Washington, D.C.

Dear Sir:

We have been realizing that since the NASA space program has been gearing down that there is a possibility that some of the atomic clocks built for your use might become obsolete. Is there a possibility that this Museum could get a donation of an atomic clock for display?

You will note from the enclosed brochure that our Museum has been located in Bristol for 22 years and we display about 800 clocks and a similar number of watches, mostly of American manufacture. Though most of our displayed items are from the 18th and 19th centuries, we have display items of very modern manufacture. An atomic clock would certainly be a fitting display.

We thank you for your consideration.

Cordially,

Chris H. Bailey
Chris H. Bailey,
Director

Action Copy to _____
Info Copy to _____

Fowler
A. A. R.

A-25322

Rec'd in NASA

4-27-76

Response Date

5-11-76

Prepare Reply for
Signature of

F

C:JP:dp:W303273f

1970

Honorable Stuart Symington
United States Senate
Washington, D.C. 20510

Dear Senator Symington:

This is in response to your inquiry on behalf of Mr. Tom L. Klein who requested information concerning the selection of Omega watches for use of the astronauts during space flights.

The Omega Speedmaster wrist chronograph was selected as the astronaut wrist timing device early in the Gemini Program after completion of a series of environmental tests (i.e., flight certification tests) performed on locally-procured samples of wrist chronographs manufactured by various vendors. Included in this test was a Rolex-manufactured device. The Omega device was the only unit of those tested which successfully completed the test program. Selection of this device was based upon its demonstrated ability to function under space flight conditions.

The Omega Speedmaster is not a self-winding device, and must be manually wound periodically for continuous operations. Self-winding watch mechanisms depend upon the action of an inertial pendulum in a gravity environment for performing the winding function. Consequently, these devices will not function in the reduced gravity environment encountered in space flight.

A mechanical escapement-type chronograph device was selected because the primary requirement for a wrist timing device was to provide the capability to perform short interval timing (i.e., utilize the device as a "stopwatch"). No electric "tuning fork" or quartz crystal timing devices were commercially available with chronograph or "stopwatch" capability at the time of purchase.

The in-flight applications for a wrist timing device did not require the greater accuracy potential of a certified chronometer movement, and all requirements were adequately met by

the chronograph device. In keeping with the policy of procuring the lowest cost item to perform the required functions, the less expensive nonchronometer device was selected for space flight use.

The requirement for a wrist timing device on space flight missions was to provide crew members with a portable means of readily measuring elapsed time for relatively short-time intervals while performing time-related tasks such as photographic time exposures, fuel cell purges, extravehicular activity stay periods, and other exercises not requiring a precise level of timing. Such a device in no way was intended to replace the highly accurate digitized vehicle timing devices but was provided to gain the flexibility of remote timing not offered by the stationary vehicle systems.

Planning for the Shuttle Program currently includes a wrist timing device in the crew equipment complement, and a Qualified Products List was established in 1972 and made available for participation by all interested vendors for possible future procurement activities. The application requirements for such a device will remain essentially the same. Future procurement activities will consider these and the advantages of the commercial state-of-the-art progression since the last procurement activities were initiated. Again, future selection will be based on the lowest cost unit which demonstrates that it will perform the required functions.

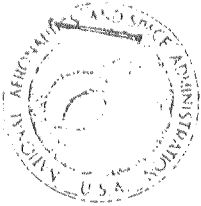
We trust this information will be of assistance to Mr. Klein.

Sincerely,

John A. ...

JP Joseph P. Allen
Assistant Administrator
for Legislative Affairs

cc: H. E. Clements/Code AC, JSC
INFORMATION PROVIDED BY: H.E. Clements



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS 77058

Shirley Bulova files
AD

REPLY TO
ATTN OF: AC

NOV 27 1972

Mr. Haskell C. Titchell
Vice President, Director of Public Relations
Bulova Watch Company, Inc.
630 5th Avenue
New York, New York 10020

Dear Mr. Titchell:

I understand that Dr. Fletcher had discussed with you the testing that had been conducted on the Bulova chronograph. The Manned Spacecraft Center would be very pleased to review the testing and the test data with you should you desire to visit with us in Houston. Either Mr. Donald K. Slayton, Director of Flight Crew Operations, or Colonel Thomas P. Stafford, Deputy Director of Flight Crew Operations, may be contacted directly at 713-483-2281 to make any necessary arrangements for your visit.

Sincerely,

Original Signed By
CHRISTOPHER C. KRAFT, JR.
Christopher C. Kraft, Jr.
Director

bcc:
NASA Hqs, Dr. J. C. Fletcher, A.
✓ Dr. G. M. Low, AD
Mr. D. D. Myers, M

Action Copy to _____
Info Copy to A, AD
ADA
M

A - 14799

Rec'd in NASA 11/28/72

Suspense Date _____
Prepare Reply for _____
Signature of _____



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

November 15, 1972

MEMORANDUM

TO: M/Associate Administrator
for Manned Space Flight

FROM: AD/Deputy Administrator

SUBJECT: Astronaut Timepieces

Please refer to my memorandum of September 20, 1972, concerning the chronograph for Apollo 17.

Based on information provided in your memorandum of November 13, 1972, you are authorized to continue to use the Omega chronograph in the Apollo program.

George M. Low
George M. Low

~~Attachment~~

Proc-2-2
Bulova
Astronaut Timepieces
C.F

November 15, 1972

MEMORANDUM

TO: Meyer
M/Associate Administrator
for Manned Space Flight

FROM: AD/Deputy Administrator

SUBJECT: Astronaut Timepieces

Please refer to my memorandum of September 20, 1972, concerning the chronograph for Apollo 17.

Based on information provided in your memorandum of November 13, 1972, you are authorized to continue to use the Omega chronograph in the Apollo program.

George M. Low

~~Attachment~~

bcc:
AXC/Beran
AX/Clements
AX/Hoban

AD/GMLow:ds 11/15/72

DL



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

NOV 17 1972

OFFICE OF THE ADMINISTRATOR

Honorable James L. Buckley
United States Senate
Washington, D. C. 20510

Dear Senator Buckley:

In my letter of September 19, I outlined the procedure we would follow in an attempt to identify an American-made chronograph to replace the Omega chronograph presently being worn by our astronauts in the Apollo program. The following is a report of the actions taken and the decision made as a result of those actions.

We solicited the watch industry to find out whether any chronographs that qualified under "Buy American" regulations were available. Only Bulova gave us an affirmative response.

We learned that Bulova had purchased through their subsidiary in Switzerland, Universal Geneve, 16 complete chronographs that were manufactured in Switzerland. These 16 chronographs were disassembled by Bulova in their research laboratory, and a new crystal, a new machine case, specially manufactured pins, a new crown and stem, a new face and dials, and certain gaskets, washers and screws were replaced on each watch. The original movement and the back of each of the watches were retained. In addition, Bulova stated that they invested \$23,000 of R&D funds in developing the tooling and the process for the new parts for these 16 watches. By utilizing these R&D costs, the watches were found to qualify under the Buy American Act. No additional watches beyond the 16 are available.

During the month of October, a Bulova chronograph furnished to us by Bulova for this purpose was subjected to space

qualification tests. These tests included high temperature and vacuum; low temperature; humidity; oxygen compatibility; acceleration; and random vibration. In general, these were the same tests to which the Omega chronograph had been subjected in the past, with the exception that the Omega was given additional tests which are no longer required. Test conditions and criteria for acceptance or rejection were predetermined.

The Bulova chronograph stopped three times during the humidity test and stopped again during the acceleration test. Based on our criteria, this chronograph, therefore, is not qualified for use on the Apollo 17 mission. (Incidentally, a Bulova representative reviewed the test setups and procedures, but left before actual tests were conducted.)

Based on the fact that the Bulova chronograph is unacceptable for flight, and based on the additional fact that it is the only chronograph available which qualified under "Buy American," we will continue to use the Omega watch in the Apollo program.

Please let me know if you would like additional information.

Sincerely yours,



James C. Fletcher
Administrator

Procurement 2-2
Bulova
Astronaut Timepieces C.F.

November 15, 1972

MEMORANDUM FOR:

Honorable Jonathan C. Rose
Special Assistant to the President
The White House

SUBJECT: Astronaut Timepieces

Please refer to my memorandum to Mr. Robert W. Miller dated September 19, 1972, a copy of which is attached.

Since September 19, the following has happened:

1. We solicited the watch industry to find whether or not any chronographs that qualified under "Buy-American" regulations were available. Only Bulova gave us an affirmative response.

2. We learned that Bulova had purchased through their subsidiary in Switzerland, Universal Geneve, 16 complete chronographs that were manufactured in Switzerland. These 16 chronographs were disassembled by Bulova in their research laboratory, and a new crystal, a new machine case, specially manufactured pins, a new crown and stem, a new face and dials, and certain gaskets, washers and screws were replaced on each watch. The original movement and the back of each of the watches were retained. In addition, Bulova stated that they invested \$23,000 of R&D funds in developing the tooling and the process for the new parts for these 16 watches. By utilizing these R&D costs, the watches were found to qualify under the Buy-American Act. No additional watches beyond the 16 are available.

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Based on the fact that the Bulova chronograph is unacceptable for flight, and based on the additional fact that it is the only chronograph available which qualifies under "Buy-American," we will continue to use the Omega watch in the Apollo program.

Please let me know if you need any additional information.

George M. Low
Deputy Administrator

cc: Honorable William A. Anders
Executive Secretary
National Aeronautics and Space Council

Mr. Robert W. Miller
Assistant Director for the Council on
International Economic Policy
The White House

bcc: A/Dr. Fletcher
ADA/Mr. Shapley
G/Mr. Hosenball
M/Mr. Myers
KD/Mr. Vecchietti

AD/GMLow:ds 11/15/72

bcc: AXC/Beran
AX/Clements
AX/Hoban

MSC/Dr. Kraft



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON, D.C. 20546

IN REPLY REFER TO:

NOV 13 1972

MEMORANDUM

TO: Dr. George M. Low
Deputy Administrator

FROM: Associate Administrator for Manned Space Flight

SUBJECT: Bulova Chronographs

The special Bulova chronographs purchased by MSC for possible application to Apollo 17 and Skylab have failed their qualification test, both in humidity and acceleration. Enclosed is the MSC test report on this failure.

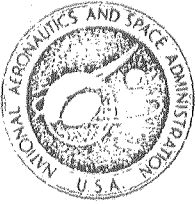
I have instructed the Manned Spacecraft Center to take no further action with respect to chronograph testing of Bulova or other companies' watches (copy of my memo to Chris is attached).

I consider the Bulova watch issue closed.


Dale D. Myers

Enclosure
as stated

11/14/72
A-14614



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS 77058

REPLY TO
ATTN OF: CD4

NOV 6 1972

Mr. Dale D. Myers
Associate Administrator for Manned Space Flight
National Aeronautics and Space Administration
Washington, D. C. 20546

Dear Dale:

Enclosed is a summary of the results of the recent tests performed on the Bulova chronographs. Please advise us of the action you wish us to take considering the test failures experienced.

Sincerely,

Christopher C. Kraft, Jr.
Director

Enclosure

Action Copy to _____
Info Copy to RL _____

Rec'd in Office 11/6/72

Signature of _____

September 28, 1972

MEMORANDUM

TO: A/Administrator
FROM: AD/Deputy Administrator
SUBJECT: Astronauts' Timepieces -- Continued

The attached undated memorandum was given to me while I was at MSC yesterday.

My biggest concern is that only 16 of these timepieces have been manufactured. Thus, there is really no reliability type of experience available for these watches.

We are, of course, going ahead with the tests as planned, and will use these watches on Apollo 17 if they pass the tests and if the legal department certifies that they indeed qualify under Buy-American regulations.

Myers indicates that for "insurance purposes" the astronauts will probably also want to wear their Omega watch as a second timepiece.

Original signed by
George M. Low

George M. Low

Attachment

bcc:

AXC/Beran

AX/Clements

AX/Hoban

} w/att.

AD/GMLow:smm 9-28-72

The team that was sent to Bulova has completed their review with the exception of further evaluations that are being performed by the auditors. The following represents the situation as assessed by the team:

Bulova purchased through their subsidiary in Switzerland, Universal Geneve, 16 complete chronographs that were manufactured in Switzerland. The cost of these chronographs may vary due to currency exchange and the tariff anywhere from \$20 to \$50 per chronograph. These 16 chronographs were disassembled by Bulova in their research laboratory, and a new crystal, a new machine case, specially manufactured pins, a new crown and stem, a new face and dials, and certain gaskets and washers and screws were replaced on each watch. The original movement and the back of each of the watches were retained.

Bulova has stated that they invested \$23,000 of IR&D funds in developing the tooling and the process for the new parts for these 16 watches. If these costs (the IR&D costs) are utilized in the Buy-American formula, the watch would qualify under the Buy-American Act. The chronographs were manufactured in the 1969-1970 time period, and there are only 16 available. The team has indicated that the watches all show usage and apparently have been worn and utilized for tests. The two watches that have been provided to MSC for testing show indications of wear, and at least on one of the watches the back is scratched. They were

forwarded to MSC with Swiss watchbands attached. The new Bulova chronograph has a lever action, rather than a pin action as the Omega chronograph utilizes, which gives a very positive on-and-off action, but the team is concerned that it might also result in inadvertent resetting of the chronograph. The team stated that they did not see any evidence of test data that would comply with our requirements.

Action is being taken to initiate testing of the two watches that have been provided by Bulova. The earliest these tests would start is the week of 2 October 1972.

Astronaut Watcher (Timepieces)
C.F.

September 20, 1972

MEMORANDUM

TO: M/Associate Administrator
for Manned Space Flight

FROM: AD/Deputy Administrator

SUBJECT: Astronaut Timepieces

The Administrator has decided that if an American-made chronograph that meets our general requirements for manned space flight use is available, such a chronograph will be used on Apollo 17.

I discussed this with you on the telephone late last week, and specifically requested that the following actions be taken:

1. All manufacturers of watches should be asked on short notice whether or not they have a chronograph which meets our requirements that qualifies under the "buy American" regulations.
2. If no such chronograph exists, we will continue to use the Omega.
3. If only one chronograph meets these requirements, we will test it to make sure that it qualifies technically and, if it does, use it on Apollo 17.
4. If more than one chronograph meets the requirements, all will be tested and one will then be selected on the basis of technical suitability.

2

I have also asked George Vecchietti to establish an audit team to make sure that any "buy American" claims made by any of the watch manufacturers can indeed be verified.

The rationale for this decision is attached to this memorandum.

Original signed by
George M. Low
Deputy Administrator
George M. Low

Attachment

cc:

A/Dr. Fletcher ✓
ADA/Mr. Shapley ✓
D/Mr. Moritz ✓
G/Mr. Hosenball ✓
KD/Mr. Vecchietti ✓

bcc:

AXC/Beran ✓
AX/Clements ✓
AX/Hoban ✓

AD/GMLow:smm 9-20-72

put made in AXC

G/SNHosenball
9-18-72

At the time NASA purchased chronograph timepieces for use by astronauts in the Manned Space Flight (Apollo) Program, there was no American manufactured timepiece that met NASA mission requirements which could be purchased at a reasonable cost. NASA understands that timepieces of domestic manufacture that meet mission requirements have recently become commercially available at a price equal to or less than timepieces currently in use. NASA, therefore, intends to substitute a domestically manufactured timepiece for use during the Apollo 17 flight this December, as the net cost of such replacement by the Government would be minimal.

NASA has used American-made products, except in those few instances where domestic items were not available at a reasonable cost or domestic products could not meet technical mission requirements. This is in accordance with established Buy American policies of the United States Government as codified in law, executive order, and NASA regulations.

The watch industry is of strategic importance to the United States; and NASA, therefore, believes it would be in the national interest to use an American manufactured timepiece in the last Apollo mission to the moon. NASA's use of any product, whether domestic or foreign, does not constitute an endorsement of such product for general public use.

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SEP 19 11 57 AM '72

RECEIVED
GENERAL MAIL ROOM

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NASA MSC HOU

VO ISCE 1-213925A263 09/19/72

TRX PULOVS WTCR NY
202011 WOODSIDE NY SEPT 13
TEL 702931 NASA MSC HOU
ATTN JAMES L MIEL
MSC PROCUREMENT OFFICER
NASA MANNED SPACE CRAFT CTR
HOUSTON TEXAS

BT

RE YOUR TELEX RECEIVED SEPT 13.
ANSWERS TO A, D & C AFFIRMATIVE.

TEST RESULTS, INCLUDING COMPARISON TO OMEGA PRODUCTS, READY AND
CAN BE SENT TO YOU AT YOUR REQUEST.

SUBJECT: WRIST-CHRONOGRAPH CAN BE MADE AVAILABLE TO NASA FOR APOLLO
PRIMARY AND SECONDARY FLIGHT CREWS AT NOMINAL COST OF ONE DOLLAR PER
UNIT AS PULOVS FURTHER CONTRIBUTION TO AMERICAS SPACE PROGRAM.

BBN

1130 EST

NASA MSC HOU

NAME
DE (or
A FORI

THE WHITE HOUSE

WASHINGTON

September 19, 1972

Dear Dr. Low:

Thank you for your Memorandum outlining NASA's position on the Chronograph. I deeply appreciate your giving me this information.

Relative to the position of Astronauts Borman and Scott, please remember that I have no personal knowledge in this matter, and was merely relaying to you comments which had been made to me. I have absolutely no way of knowing whether there is any validity in these comments or not. But rather, pass them on to you only as a part of the information which was provided to me.

Again thanks for looking into this.

Sincerely,

A handwritten signature in cursive script that reads "Robert W. Miller". The signature is written in dark ink and is positioned below the word "Sincerely,".

Robert W. Miller

Dr. George M. Low
Deputy Administrator
National Aeronautics and Space Administration
400 Maryland Avenue, S. W.
Washington, D. C. 20546

THE WHITE HOUSE
WASHINGTON

September 19, 1972

Dear Dr. Low:

Thank you for your Memorandum outlining NASA's position on the Chronograph. I deeply appreciate your giving me this information.

Relative to the position of Astronauts Borman and Scott, please remember that I have no personal knowledge in this matter, and was merely relaying to you comments which had been made to me. I have absolutely no way of knowing whether there is any validity in these comments or not. But rather, pass them on to you only as a part of the information which was provided to me.

Again thanks for looking into this.

Sincerely,



Robert W. Miller

Dr. George M. Low
Deputy Administrator
National Aeronautics and Space Administration
400 Maryland Avenue, S.W.
Washington, D. C. 20546

September 19, 1972

NOTE TO: Mr. Robert W. Miller
Assistant Director for the Council on
International Economic Policy
The White House

I am sorry that we have been unable to make connections on the telephone. The attached memorandum indicates where we now stand. In essence, it says that if Bulova meets the "buy American" qualifications, and also passes our technical tests, we will use it unless there are also other American-made watches that meet the same requirements. In that event we will use the one that is technically most suitable.

I thought that you should also know that I talked to Frank Borman to find out what he really said about the Bulova chronograph. Frank told me:

1. The Omega watch is a perfectly adequate timepiece for the astronauts.
2. He couldn't possibly have said that the Bulova is superior because he has never evaluated it (and might not even have seen it).
3. He did suggest to General McCormack, who represents the Bulova Watch Company, but is also on the Eastern Airlines Board, that he should contact Dave Scott to have the watch evaluated.
4. Nobody told him not to talk about the Bulova watch, and as a matter of fact nobody has ever been able to "muzzle" Frank Borman while he was in NASA or since.

2

None of this changes our decision to go ahead with what I have stated in the attached memorandum, but I thought you would like to know what the real facts are.

George H. Low
Deputy Administrator

George M. Low
Deputy Administrator

Attachment

bcc:
AXC/Beran
AX/Clements
AX/Hoban

AD/GMLow:smm 9-19-72

X of Jonathan Rice
White House

HXC
Page 2-2
Astronaut Watches
C.F.

September 19, 1972

MEMORANDUM FOR:

Mr. Robert W. Miller
Assistant Director for the Council on
International Economic Policy
The White House

SUBJECT: Astronaut Timepieces

We have decided that we will use an American-made chronograph as the astronaut timepiece on Apollo 17 provided only that one is available and meets our technical qualification requirements.

Specifically, we have taken or are taking the following actions:

1. We have asked all manufacturers of watches to let us know on very short notice whether they have a chronograph that generally meets our requirements and secondly, whether it qualifies under the "buy American" regulations.
2. If no chronograph meeting these conditions is available, we will continue to use the Omega watch.
3. If only one meets these requirements, we will test it to make sure that it qualifies and, if it does, use it on Apollo 17.
4. If more than one chronograph meets these requirements, we will test all of them and then select one on the basis of technical suitability.

George M. Low
Deputy Administrator

J

2

cc: Honorable Jonathan C. Rose
Special Assistant to the President
The White House

Honorable William A. Anders
Executive Secretary
National Aeronautics and Space Council

bcc: A/Dr. Fletcher
AXC/Beran
AX/Clements
AX/Hoban

AD/GMLow:smm 9-19-72



*Walt. J. J. Watches
Astronaut Watches
C.F.*

September 15, 1972

MEMORANDUM FOR THE RECORD

SUBJECT: Astronaut Timepieces

Robert Miller, deputy to Peter Flanigan on the CIAP staff, called me on September 14, 1972, to discuss the "Bulova watch problem."

He told me that he had received a note from Rose Mary Woods asking what the problem was in making NASA fly a Bulova watch, and that Peter Flanigan had gotten quite excited about the subject, asking "Why can't we fly an American watch on an American wrist on Apollo 17?"

I briefly reviewed the history of the astronaut timepiece procurement, and also told him the actions now under way as requested in my memo to Clements of September 14, 1972. I told him that I would let him know within a day or two what our conclusions were. (For the record, the actions initiated in my memo to Pete Clements were the result of a phone call on the previous day from Bill Anders on the same subject.)

Miller also informed me that he had spent a couple of hours with Henshel, the president of Bulova, and others discussing the situation. He stated that Bulova is convinced that NASA "has it in for Bulova" but that they indeed do have the best timepiece. He went on to say that both Borman and Scott had informed Bulova that their timepiece was superior to the Omega timepiece, but that they had been "muzzled."

Subsequently, I called Frank Borman and asked him how he felt about the Bulova watch. Frank told me that his only contact with the Bulova Watch Company was through General McCormack who is on the Eastern Airlines Board. McCormack had asked

2

Frank at one time whether it wouldn't be possible to get NASA to evaluate the Bulova watch. Frank had passed this request on to Dave Scott and apparently introduced Scott and McCormack. Frank made it very clear that at no time did he suggest to Scott that the watch be flown, nor would he ever have suggested to anybody to fly a piece of hardware that was not approved by NASA. Insofar as Frank's own assessment of the watch is concerned, he indicated he doesn't have any since he has never had a chance to evaluate the watch in any way. (I am not even sure that he has seen it.) He stated that from his point of view the Omega watch was perfectly adequate for manned space flight.

Insofar as being muzzled is concerned, Frank got quite upset and said that nobody has ever muzzled him while he was in NASA or since.

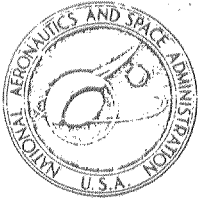
Original signed by
George M. Low

George M. Low

cc:

✓ A/Dr. Fletcher

AD/GMLow:smm 9-15-72



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

July 7, 1972

Honorable James L. Buckley
United States Senate
Washington, DC 20510

Dear Senator Buckley:

After our recent conversation on the potential use of a Bulova chronograph in our space programs, I again asked our Office of Manned Space Flight to evaluate the possibility of substituting Bulova for the Omega watches which have been used to date. The result of their reevaluation was a renewed finding that there is no valid or plausible reason to arbitrarily switch from one make watch (which has served us well) to another.

However, we decided that it would be appropriate to survey the market now to determine the types of products presently available and the companies who would be interested in bidding. This action will be initiated immediately. Once this survey has been completed we will be able to determine when and how to procure the next required quantity of astronaut watches.

While Bulova has not supplied the astronaut watches, they have provided vital components which have been carried to the lunar surface on three separate occasions. I refer specifically to the timing devices for our ALSEP (Apollo Lunar Surface Experiment Package) experiments which were made by the Accutron Division of Bulova and were flown on Apollo 11, 12 and 14. I also understand that the Seismic Profiling Experiment on Apollo 17 has a timing device made by the Bulova Instrument Division. I would think that Bulova could point to these accomplishments, which demonstrate their technical excellence, with justifiable pride. I would be pleased to provide your office or the Bulova company

2

additional details regarding the use of their products in our space programs, if desired.

May I express my sincere appreciation for your continued support of NASA's space programs.

Sincerely yours,

A handwritten signature in cursive script that reads "George M Low". The signature is written in dark ink and has a fluid, connected style.

George M. Low
Acting Administrator

O + m i Policy
Astronaut Watches

JUN 26 1972

TO: Manned Spacecraft Center
Attn: AA/Director

FROM: W/Associate Administrator for Manned Space Flight

SUBJECT: Astronaut Watches

A recent review of astronaut watches indicated that sufficient quantities are on hand to last through the Skylab Program. However, we should begin now to determine our future requirements with respect to the number desired and our specifications.

For this reason, I request that you conduct a survey of the market to determine the types of products presently available and the companies who would be interested in bidding. This action should be initiated within 15 days of receipt of this letter. In accomplishing this survey it should be suggested that the product must be qualified by the vendor to our specifications, but that NASA would pay for the watches when procured.

Original signed by

D. D. Myers

Dale D. Myers

cc: AD/Low

M-1/ROLittlefield:eeb:6/26/72

54

O + M 1
Policy
NY Administrator

~~SENSITIVE~~

JUN 14 1972

MEMORANDUM

TO: Dr. James C. Fletcher
Administrator

FROM: Associate Administrator for Manned Space Flight

SUBJECT: Watches

As you know, all elements of equipment carried by an astronaut on a space flight are government-furnished, with the exception of those limited items which are contained in the Personal Preference Kit. I believe that, after a pioneering activity such as our programs have involved, we should consider an arrangement wherein we loan the astronaut, for the duration of his life, the watch he has worn during the flight. The government, and more specifically NASA, would benefit by allowing this artifact to remain with the astronaut, since he will in all probability remain a public figure during his lifetime. As such, he will have occasion to display the equipment in conjunction with personal appearances to discuss space activities. Displaying a watch at such gatherings would aid NASA in its task of dissemination of information regarding the nation's space activities.

Because the watch may be of considerable value for exhibit or to a collector, I recommend that the following policy be adopted:

- 1) That the watches be permanently retained as government-furnished equipment, but loaned to the astronaut during his lifetime, unless it is called in for display by the Smithsonian.
- 2) That only one watch be issued (astronaut's choice, if he used a different watch on different flights).

A-12646
6/14/72

3) That the watch be returned to NASA on demise of the astronaut, unless it has previously been agreed by NASA that the watch become an exhibit of the Smithsonian.

4) That no watch be flown by more than one astronaut.

If such a policy is established, it should not be implemented prior to the completion of the Apollo Program. If we implement the policy after the Apollo Program is complete, we may still have enough watches for Skylab. I would suggest we have an open competition for new watches sometime in 1973 or 1974. We might ask for qualification by the watch manufacturer, but I would think we would want to pay for the individual watches.

If you concur, the Office of the General Counsel, with the aid of Manned Space Flight, will prepare the appropriate NASA Management Instruction for your review and approval.

Original signed by
D. D. Myers

Dale D. Myers

cc: Dr. Low
Mr. Beresford
Mr. Oannolly
Mr. Grubb
Mr. Gorman
Dr. Petrone

DDMyers/lid/13 Jun 72

AD MA

(see previous concurrence) (see route slip in background)

C G
(see prev conc) (see prev conc)

O + M I
Policy
XASJ Proc. 2-2

May 26, 1972

MEMORANDUM FOR THE RECORD

SUBJECT: Astronaut Time Pieces

Dale Myers has agreed that it would be best to take the first steps that might lead to a procurement action for astronaut time pieces. Specifically, he will work with the procurement organization to determine the proper approach for soliciting the appropriate industry in an effort to determine what in the line of astronaut time pieces is currently available.

After this determination has been made, it may or may not be appropriate to enter into a competitive procurement for these time pieces.

As soon as the proper form for the initial solicitation has been determined, it will be possible to respond to Senator Buckley's letter in a positive way.

Original signed by
George M. Low

George M. Low
Deputy Administrator

cc: A/Fletcher
AX/Clements

bcc: AXC/Beran
AX/Hoban

May 26, 1972

MEMORANDUM FOR THE RECORD

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George M. Low

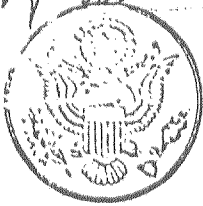
George M. Low
Deputy Administrator

cc: A/Fletcher
AX/Clements

bcc: AXC/Beyan
AX/Hoban

X Ref Astronauts Watcher

O + M /
Policy
X Ref aero astro 2-2



EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON 20502

EXECUTIVE SECRETARY

March 31, 1972

Mr. Donald K. Slayton
Director of Flight Crew Operations
Manned Spacecraft Center
Houston, Texas 77058

Dear Deke:

No insult intended! I only responded in a rather formal manner because from your first letter I got the impression that the GAO was looking right over your shoulder and that we had all better sound very "legal".

I took your suggestion and talked to George the other day. He suggested I call Dale. I passed to him my hope that a solution might be found for all the factors of the problem, including my interest in maintaining some custody of the watch I wore on Apollo 8, or at least not having it get "eaten up" by the system. Of course, I realize you have a lot of other pressures on you on this and I will be pleased to cooperate in any manner, as I hoped my last letter implied. I would rather have the watch hand carried rather than mailed. Since Dale is working with you on this and will probably see you before I will, I will pass it to him.

It sounds like things are progressing well for Apollo 16. After the budget and policy fights I've been in over the Shuttle and IRDM the past several months, I'm really looking forward to getting down to the Cape for the launch and a change of scene. Maybe I'll see you there or in Houston during EVA?

Sincerely,

William A. Anders

Action Copy to M
Info Copy to A.P.
AXC files

Rec'd in NASA 4-4-72

Suspense Date None
Prepare Reply for _____
Signature of _____

10

0 + m. 1
policy

X ref also astro 2-2

~~NO FORN DISSEMINATION~~

March 24, 1972

MEMORANDUM

TO: *Myers*
M/Associate Administrator for Manned Space Flight

FROM: AD/Deputy Administrator

SUBJECT: Watches and Other Things

On several occasions I have been asked my views concerning the ultimate disposition of the watches worn by astronauts during space flights.

I am told that traditionally many military pilots feel that a wrist watch is part of personal gear, theirs to keep after retirement. I am also told that legally the watches remain government property and must be turned into the government unless special means are found to let the astronauts keep or buy the watches. (Beresford apparently has some suggestions along these lines.)

Recently the Astronaut Office has called back all of the watches that are now outstanding. I believe this came about primarily because (a) Buzz Aldrin reported that he had lost his watch or that it had been stolen and (b) there is a shortage of watches for Skylab. Some of the astronauts who have been called about this have, in turn, called me and said they would be glad to turn them over to me, provided that I would guarantee that the watch would be kept as an artifact, but were very reluctant to turn them back to the Astronaut Office for subsequent use and presumably loss of that particular watch as an artifact.

Obviously, the situation is a complex one. When the situation first arose I asked Rocco Petrone to undertake the development of a policy concerning astronauts' personal gear, as well as other "mementos" of their flight which they might want to keep, and to review this policy with MSC and, of course, with the

30

2

functional offices here in Headquarters. I assume that Rocco is working on this policy, but in the meantime the subject keeps coming up. The purpose of this memorandum, therefore, is to formalize my request to Petrone to come up with either a policy or a set of guidelines concerning this subject.

Original typed by
George M. Low

George M. Low

cc:

A/Fletcher
G/Beresford
MA/Petrone

AX/Clements
AX/Hoban

AD/GMLow:ns:3/24/72

31

1972

MLO

MAR 16 1972

MEMORANDUM

TO: AD/Deputy Administrator

FROM: SA/Associate Administrator for Manned Space Flight

SUBJECT: Skylab Timepieces

We have again examined the Skylab Program requirements for crewman timepieces and find no Program or operational need to run a competition for new items. It has been our plan for Skylab to use the ample supply of durable Omega timepieces that remain available from Apollo. Some 99 of these timepieces were purchased in the mid-1960's in two separate buys from the Norman H. Harris Corp. of New York City, the U.S. distributor for Omega. These watches are cleaned and calibrated every six months and continue to function satisfactorily for manned space flights. Refurbishing of these watches is done by the Norman H. Harris Corp. at the cost to us of \$30 a watch. Crew members to date have been well satisfied with the performance of these timepieces.

Qualification of a new timepiece to the specifications for low pressure, vibration, shock, temperature and humidity is presently estimated to cost \$15,000-\$20,000. Documentation charges for a new timepiece might cost another \$10,000. With our increasing tempo of operational activities in preparation for the first Skylab launch, I do not feel it is desirable to invest the time and money required to run a competition and possibly qualify another timepiece.

Original signed by
D. D. Myers

Dale D. Myers

Prepared: MLO/JLCooper:ppp:53331:3/14/72

ML AT's 81-72 & 83-72
M72-169 & M72-168
(Suspense: 3/14 & 3/17)

MLE

MLO

MS

14 MAR 1972

NLO

MEMORANDUM

TO: M/Associate Administrator for Manned Space Flight
FROM: ML/Director, Skylab Program
SUBJECT: Skylab Timepieces

I have reviewed this with Dena Clayton and feel we should proceed with our plan to utilize the Omega watches for Skylab. A proposed response to Dr. Lee is attached.

Original signed by
Robert O. Aller
William C. Schneider

Jon

Attachment

Prepared: NLO:ROAller:pmp:53327:3/14/72

ML AT#61-72&83-72
M72-168&M72-169

P. 100 2-2
Bulova

March 8, 1972

MEMORANDUM

TO: ^{Meyer} M/Associate Administrator for Manned Space
Flight

FROM: AD/Deputy Administrator

SUBJECT: Bulova Timepieces for Skylab

Periodically over the past several years, officials of the Bulova Watch Company have come to us with a suggestion that we replace the Omega watches currently used by our astronauts with a newly developed Bulova timepiece. MSC has evaluated the Bulova timepiece and has found that it offers no significant advantage over the existing Omega watches and has, therefore, always turned down the suggestion even though the Bulova watches were offered to us at no cost. (The reason for the turn-down which I have always accepted was that we have a sufficient number of Omega timepieces, that they're functioning properly, that no change was necessary, and that a change would involve a great deal of paper work.)

In our discussions with Bulova we have implied that we may need additional timepieces for future programs (i.e. Skylab) and that we may well run a competition for Skylab timepieces.

The question was again raised in a recent telephone call to Dr. Fletcher. (See attached memorandum from Fletcher to Low, dated March 6, 1972.)

2

Would you please let me know within one week:

1. Whether we will run a competition for Skylab timepieces.
2. When this competition will be held.

Original signed by
George M. Low

George M. Low

Attachment

cc: A/Dr. Fletcher ✓
ADA/Mr. Shapley

bcc: AX/Clements
AX/Hoban

March 8, 1972

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Flight

FROM: AD/Deputy Administrator

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2

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2. When this competition will be held.

Original signed by
George M. Low

George M. Low

Attachment

cc: A/Dr. Fletcher
ADA/Mr. Shapley

bcc: AX/Clements
AX/Hoban

March 6, 1972

MEMORANDUM

TO: AD/Dr. Low

SUBJECT: Telephone Call from Senator Buckley on the
Bulova Timepiece.

Senator Buckley called to inquire as to why we were so firm in our position not to go with the Bulova timepiece on future manned flights. I indicated to him that the problem was not with all future manned flights but only with Apollo; that in the last go-around we found that although it was likely that Bulova could compete technically with the Omega, there were two considerations which influenced our decision not to change:

a. Although Bulova was incorporated in the U.S., it had a large segment of its business in Europe and could only be considered slightly more U.S. than its competitor.

b. The enormous amount of red tape involved in changing to a new piece at this late date as well as the new qualification tests did not seem worth it in view of the situation in a. above.

Senator Buckley took issue with the first consideration rather vigorously, indicating that Bulova was primarily a U.S. company and was severely handicapped in its advertising because it was unable to indicate use in U.S. space programs. Furthermore, he indicated that he thought Bulova was in serious jeopardy of "going under" or, at any rate, is severely suffering as a consequence of our refusal to change. I agreed to take another look at the question and to let him know as soon as possible. Is there any reason we can't commit to Sen. Buckley to seriously

2.

consider the Bulova watch as a competitor for the Omega
on the Skylab?

Original signed by
James C. Fletcher

James C. Fletcher
Administrator

cc: ADA/Mr. Shapley
M/Mr. Myers

A/Fletcher/erc/3-6-72

32195
Proc 2-2

DEC - 4 1970

Mr. ~~Harry E. Henshel~~
~~President~~
Bulova Watch Company, Inc.
630 Fifth Avenue
New York, New York 10020

Dear Mr. Henshel:

Reference is made to your letter of November 9, 1970. The Office of Manned Space Flight has conducted a thorough review of the astronaut timepiece situation. Even though the Bulova chronograph has many desirable features, it does not offer any significant advantages over those that are currently in use. We, therefore, cannot justify changing to a new timepiece in the middle of the ongoing Apollo/Skylab programs.

Follow-on manned flight programs will not occur until late in this decade. At that time we will once again evaluate the chronographs that are then available and select the one that best meets our requirements.

Sincerely yours,
Original signed by
George M. Low

George M. Low
Acting Administrator

cc: General Bradley, Chairman of the Board, Bulova Watch Co.

bcc: M
MO
X/Forley
X/Sedlczek

Prep: MO/JDStevenson 11/30
Rewritten: M-1/RCLittlefield 12/1/70
Rewritten: GMLow:css:12/4/70
Control A32195

X Ref aero astru 2-2

4

file
proc. 2-2

NOV 16 1970

Mr. Harry B. Henshel
President
Bulova Watch Company, Inc.
630 Fifth Avenue
New York, New York 10020

Dear Mr. Henshel:

Based on my conversation with General Bradley, I have asked the Office of Manned Space Flight to review again the merits of the Bulova chronograph.

We do have the watch General Bradley left with me, and if additional time pieces are required we will be in touch with you.

In any case, I will inform General Bradley and you of the results of our evaluation as soon as it is completed.

Sincerely yours,

Original signed by
George M. Low

George M. Low
Acting Administrator

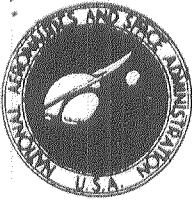
bcc: M/Mr. Myers

OE/Mr. Farley
X/Mr. Sedlazeck

MFSedlazeck:css:11/16/70 Interim A 32195

X R/ deo usin 2-2

5



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

250/2
Page 2 of 2
Bulova

OFFICE OF THE ADMINISTRATOR

November 9, 1970

TO: ~~M/Associate Administrator for Manned Space Flight~~
SUBJECT: Astronaut Watches

As a result of a meeting with Bulova representatives (briefing material attached) on Friday, November 6, 1970, Dr. Low would like you to review again our selection of the Omega watch as the standard astronaut flight time piece. This review should be conducted only from the standpoint of determining whether any new information has been generated that would indicate that we should reconsider our selection of the Omega watch.

I have a Bulova watch if it is needed for testing in the conduct of this review.

Martin F. Sedlazek
Martin F. Sedlazek
Assistant Executive Secretary

read
MO 11-17
Action Copy to ~~27m~~
Info Copy to L.M.M.

11/10/70
70-450
11/25/70

m

ADMINISTRATIVE

14

April 21, 1969

Mr. Sol E. Flick
Executive Vice President
Bulova Watch Company
630 Fifth Avenue
New York, New York 10020

Dear Mr. Flick:

I enjoyed visiting with you in my office and want you to know that we appreciate the attention you and Bulova have given to the matter of an improved chronograph for possible astronaut use.

I have discussed the matter in great detail with Mr. George Low, Apollo Spacecraft Manager, in Houston and he in turn had a review with the proper people on his staff concerned with this kind of flight hardware.

The conclusion arrived at is, simply stated, that any change in chronographs at this time would require a rather costly new qualification program in addition to some costly paperwork. It would also probably mean flying with more than one kind of watch on a flight, a move deemed to be inconsistent with our overall policy to stabilize all equipments in the Apollo program.

There are presently on hand enough chronographs to carry us through the Apollo program. However, we do plan to initiate a new procurement in Fiscal Year 1970 --beginning July 1, 1969--if budgetary plans can be arranged. You will be notified of this competitive action.

2

I hope this information is helpful to you and I regret that circumstances will not allow introduction of a new timepiece in the current Apollo program.

Sincerely,

Julian Scheer
Assistant Administrator
for Public Affairs

cc: Mr. Wm. Ruder, Ruder & Finn
Mr. George Low, MSC
Mr. G. W. S. Abbey/Mr. James A. Taylor

F/JS:mlh

CARL BYOIR & ASSOCIATES, INC.
800 SECOND AVENUE
NEW YORK, N. Y. 10017
YUKON 6-6100

Bulova

December 7, 1966

Mr. James M. Grimwood
Chief, MSC Historical Office
NASA Manned Spacecraft Center
Houston, Texas

Dear Mr. Grimwood:

Enclosed for your interest is a news release (two copies), cleared through NASA, on the Bulova Accutron timepieces used by the Gemini Program, plus a glossy print (two copies) of a captioned three-photo layout.

We are submitting these materials, on behalf of our client Bulova Watch Company Inc., for possible use in the history of the Gemini Program being written and compiled by you and a team from the University of Houston. I note that the Gemini press reference book, published by McDonnell and supervised by John H. Bickers of McDonnell carried references to the Bulova Accutron, starting with the revision for Gemini 5.

When the history is available, we would like to order copies and would appreciate knowing ordering procedures and prices.

Sincerely,



William Gowen

WG:jt
Enc.

B.9

Green

BGT & APPRO 4-2
Congressional Hearings

x ref: Bulova Watch Co.

August 13, 1964

MEMORANDUM FOR Mr. Callaghan - AC

General Bradley, Chairman of Bulova Watch Company, is anxious that if the Preparedness Subcommittee dealing with the contributions of the domestic watch manufacturing industry to space and defense asks us for a witness along this line, we provide the best possible person. A hearing on this subject was held a year ago, and I believe Senator Symington and many on the Space Committee will be involved in this hearing, including Margaret Chase Smith and Senator Stennis. My information is that it will be held Monday and we may be asked to send a witness, as will the Department of Defense. If so, I will appreciate it if you will coordinate with Mr. Marx Leva, who is attorney here for Bulova, and who was formerly Assistant Secretary of Defense and understands a good deal of how these matters are handled. While we would like to be helpful to any industry which serves us, I think we must be careful to be sure we do not take a position different from that of other agencies who are more vitally concerned than are we.

Original Signed By
James E. Webb

James E. Webb
Administrator

cc:
AD/Dryden
ADA/Simpson
K/Friedl
A/Scrivener
AO/Vogel
AX/George

A:JEW:jr 8/13/64

(Green)
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON 25, D.C.

MEETINGS

1-2

Attend.

June 14, 1963

OR: AD - Dr. Dryden
AA - Dr. Seamans

From: AM - Walter L. Lingle, Jr.


Subj: Bulova Watch Company, Inc., presentation
June 27, 1963

This is to confirm the fact that you are scheduled to have lunch with General Omar N. Bradley and executives of the Bulova Watch Company at 12:30 p.m., June 27, 1963.

Following lunch and beginning at 1:45 p.m., the Bulova Watch Company will make a presentation of their capabilities to NASA. We hope that you can also attend this presentation.

We have arranged to give the Bulova executives a review of the NASA Program beginning at 10:30 a.m.

The morning presentation to Bulova will consist of a one-hour coverage of our total Program by Mr. Fleming; followed by a 1/2-hour presentation on the activities of OART by Dr. Kurzweg.


Walter L. Lingle, Jr.
Deputy Associate Administrator
for Industry Affairs

O & M
Bulova

AM/Mr. Lingle

May 17, 1963

A-S/C. S. Barden
Original Signed by
Charles S. Barden, Jr.

Letter from Gen Bradley and enclosed statement of Bulova's capabilities

As the recommendation on the attached briefing ticket states, Mr. Webb wishes this letter referred to you for action in setting up a NASS/Bulova briefing. He is particularly interested in closely following the briefing as it is arranged and wishes it to be of the same quality and type as the one just completed with AT&T.

Mr. Jack Young is being asked to develop profiles on the personnel mentioned in the letter. Please coordinate the reply to General Bradley with him.

Attachments

cc: E/Mr. Young

CSB:man