



The AMA History Project Presents: Biography of

ROBERT (BOB) APGAR CHAMPINE Modeler, Contest Director, Designer, Competitor

March 6, 1921 - December 17, 2003

Modeler starting in 1935 AMA #5160



Written & Submitted by HC (08/1993), AMA Staff (1994); Transcribed by NR (09/1998); Edited by SS (2002); Updated by JS (10/2007 and 05/2008)

Career:

- 1935: Flew model in first competition
- 1947: Employed by NASA (NACA) as test pilot; flew the X-1 after Chuck Yeager
- 1955: Was the FAI team Manager of Wakefield Competition; Placed Fourth
- 1960s: Was the U.S. Free Flight representative to CIAM
- 1974: Directed the FAI Indoor event at Lakehurst, New Jersey
- 1984: Set Radio Control soaring endurance record 9 hours, 53 minutes and 10 seconds
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Honors:

- 1974: AMA Distinguished Service Award
- 1993: Model Aviation Hall of Fame
- 1997 and 1999: AMA Superior Service Award

The following represents the biography of Robert A. Champine. This information was taken from the Model Aviation Hall of Fame application as submitted by Howard Crispin, Jr. on the Aug. 25, 1993.

Supporting Data Hall of Fame Nomination for Robert A. Champine

Competition

Bob has entered competition events dating from 1935, starting in Minneapolis, Minn. This has continued up through the present. He accomplished enough in his early years to be able to win a fifth place in Free Flight Gas at the 1939 Detroit Nationals. During flying, in more recent years, he has earned the League of Silent Flight Level V (LSF-V), an outstanding accomplishment in soaring. Bob also continues to be very active competition in both Free Flight and soaring.

Bob was the United States FAI Team Manager at the 1955 international competition. Bob was on the Wakefield Team at this event and placed fourth. He also won indoor Cabin Rubber, Stout, and Mulvihill at the 1963 Chicago Nationals. Many other wins can be documented with AMA record

Bob held many indoor record flights during the period between 1963 and 1975. He set the Radio Controlled Soaring Endurance record of 9 hours, 53 minutes and 10 seconds in 1984. He also set a slope endurance record during his quest for LSF-V.

One design that came from Bob is the Red Bird, an unlimited sailplane configuration. This design was used in many of the flights during the tries for LSF - V. Other fliers have used the design to their advantage. This appeared in *Radio Control Soaring Digest* in 1959. The Champine Special Mark III is the latest design to appear from the building loft in Newport News. This plan is just beginning to see some results in competition, recently as flown by Reid Roberts.

The field of aerodynamics was a natural for Bob in the sport of model aviation, especially with his beginnings, which introduced him to aircraft. He followed this with a degree in aeronautical engineering and used this knowledge to his advantage in model aviation as well as in full-scale activity. The knowledge was used in the development of many Free Flight models and later in the design of a number of sailplanes. Among these was a flying wing, which was the first model to fly at the AMA flying Site at the Muncie Grand Opening in 1992. Bob built five of the wind tunnel models used by Selig, Donovan, and Frazer in their research at Princeton University. This research ended with the publication of one of the most comprehensive studies of low speed aerodynamics ever conducted. This was printed in the publication *Soartech* 8.

Leader

The earliest model activity began while Bob was a youngster growing up in Minnesota. He helped found the Minneapolis Model Airplane Club in 1937, becoming vice president and secretary/treasurer of the club. He belonged to this club into his college years before World War II called for his services. After this period, he became a member of the renowned Brain Busters of Langley Field/Hampton, Virginia. He served at times as vice president and president of this club.

Throughout his life Bob has spent much time volunteering to promote model aviation. He devoted time to assisting young people coming into the sport. He has also worked diligently in promoting AMA activities by holding a number of volunteer positions. He is currently an associate vice president of AMA District IV. He served on the Free Flight Contest Board during the mid 1970s and is currently a member of the Soaring Contest Board.

In addition to the FAI competition and team management activities noted above, Bob was the United States Free Flight representative to CIAM in the 1960s. In this position, he was instrumental in making two changes to the indoor competition structure, which proved to have long-lasting effects, both in the international categories and in the AMA ones as well. These were both at his suggestion to the CIAM. These changes revitalized indoor. One change was permitting steering, especially by balloon. The other was to establish indoor categories by relating the event to ceiling height.

Contest Director

Bob has spent many hours, days, and weeks working on model aviation competitions. His position as a contest director goes back over a period of 50 years and he is still actively directing meets. He has directed over 175 local meets and over 50 regional meets. He directed indoor at

the Nationals from 1975 to 1978. He directed a number of FAI Team Selection meets for Indoor and Outdoor Free Flight Programs during 1963 to 1975. Bob also directed the indoor event at the FAI World Championships in 1974 in Lakehurst, N.J.

Writer

The name Champine is well known to people around the world. Numerous articles with his byline have appeared in various newsletters, magazines and other publications over the years. Bob has contributed to the advancement of model technology through these articles and especially to the advance of design in the category of soaring.

Aviation Career

Bob Champine grew up about a mile from the Minneapolis airport. The sight and proximity of aircraft played a large role in his future. Before, he could consider the possibility of flying on his own; he took up the art of Free Flight model flying. He continued this all of his life and it contributed to his entry into the University of Minnesota. Bob graduated with a degree in aeronautical engineering during World War II. He entered the Navy, got his wings, and flew a multitude of Navy aircraft.



1949: Bob and ground crew after the flight of the D-558-I Skystreak in Muroc, California.

After the war, Bob flew his Corsair over to NACA Langley Memorial Laboratory and applied for a job. They wanted him as a scientist, but he wanted to be a test pilot. After some negotiation, he was hired as a research pilot and shortly after, he was transferred to NACA Flight Research Station, Muroc, CA to test the new supersonic aircraft, the Bell X-1, the Douglas D-558-I Skystreak, and the Douglas D-558-II Skyrocket.

On December 2, 1948, Bob became the sixth man to break the mysterious sound barrier. He exceeded Mach 1 on NACA flight 23 checking handling qualities and pressure distribution on the X-1 #2, after having been dropped from the B-29 mother ship, above the Rogers Dry Lake in California. On August 4, 1949, NACA flight 32, he again exceeded Mach 1 performing rolls, pull-ups, sideslips, and check of stabilizer effectiveness. This was his 13th and last flight in the XS-1. He initiated the first NACA research flights of the D-558-I #3 (Skystreak) on April 22, 1949, and the first NACA research flights of the D-558-II #2 (Skyrocket) on May 24, beginning the supersonic research program for these aircraft on June 1, 1959.

In 1950, after two years in the supersonic flight research program, flying the hottest planes in the

world, Bob returned to resume his career at Langley where his continuing research activities helped to pave the way for the Mercury, Gemini, and Apollo astronauts into space flight. He, being too tall to fit into the Mercury capsule, played an important role in the astronaut screening and selection process.

His flying career with the Navy, NACA, and NASA covered 36 years from 1943 to 1979, and he flew as a private pilot for 56 years from 1939 until making his last flight in a Fairchild PT-19 in 1995. During this time he flew over 155 different types of aircraft with 11,300 flight hours.

For his distinguished contributions to National Aviation Progress, Bob was elected to the Virginia Aviation Hall of Fame in 1979 and was selected by the National Aeronautic Association as an Elder Statesman of Aviation in 2001. (More information about Bob's aviation career on his web page, <http://champine.wordpress.com/>.)

His relationship with NASA, many of the engineers and his fellow pilots extended into model activity. Many of the individuals associated with NASA programs were, from the beginning, model builders, and founding members of the Brainbuster Club. Today many of these people still belong to the club and there are others working with a number of youth programs and other aviation activities.

Bob has been honored by articles in local newspapers and in the NASA in-house journal. An airplane at the Smithsonian has his name stenciled on the side under the cockpit. Bob serves on the Board of Directors of the Virginia Aviation Museum and is in the Virginia Aviation Hall of Fame. Thus, in recognition of his long career in aviation, he is deserving of entry into the Model Aviation Hall of Fame for his life long contributions to model aeronautics. Few have associated themselves with both aspects of aviation for the advancement and promotion of both.

*(Signed) Howard Crispin
1993*

*The following information on Robert Champine was taken from his website,
<http://champine.wordpress.com>.*

He's Got the Right Stuff

By Gloria R. Champine

Bob was born Robert Harmon Claus on March 6, 1921, to Robert Claus, a furrier and Helen Minerva Apgar Claus, a beautiful young woman and professional ice skater. Helen was selected as Miss 1926 in the St. Paul/Minneapolis Winter Festival. His parents were divorced and Helen remarried in 1936.

When Bob graduated from Roosevelt High School in 1939, he decided to change his name to Robert Apgar Champine, in honor of his mother and stepfather, Clifford Champine, a local attorney. As a young man (and already an expert model airplane builder and competitor), he expressed a desire to fly. His mother said if he wanted to fly, he needed to know everything about airplanes; therefore, he had to go to college. Since he had not been the greatest of students, it

took quite a few meetings between his mother, his high school principal, and the administration of the University of Minnesota to convince them that he really could buckle down, study, and become an aeronautical engineer. Finally convinced he was sincere, he was admitted to the university, and this serious, truly focused young man devoted his energies to becoming a good student.

Bob graduated from the University of Minnesota, with a B.S. in aeronautical engineering in 1943 where he earned his spending money as a student working with Professor J. D. Akerman, head of the Department of Aeronautical Engineering, on the development of airplane oxygen systems and an early pressure suit.

While in college, World War II started and he began primary flight training under the Naval Civilian Pilot Training Program and upon graduation was commissioned an Ensign in the U. S. Navy. Since he wanted to be a naval aviator, he had to give up his commission and enroll in the Naval Cadet Program at Pensacola, Florida. At the end of his training, he was commissioned a naval aviator and his mother had the honor of pinning his wings.

During his years in the Navy, he had the opportunity to fly numerous World War II fighter aircraft such as the F6F Grumman Hellcat, the F4U Vought Corsair, and the F8F-2 Grumman Bearcat. Near the completion of his Navy tour, he flew his Navy Corsair over the James River from the Naval Air Station (NAS) in Norfolk, Virginia, to the National Advisory Committee for Aeronautics (NACA), landed at Langley Field, in Hampton, Virginia, taxied up to the NACA hangar, swung the tail around smartly, folded up the Corsair's wings, climbed out and asked the startled crowd that came out to watch him, "Take me to the boss, please."

After much negotiation with the NACA, who wanted him to come aboard as a scientist because of his aeronautical engineering degree, Bob said "no" emphatically, "If you can't hire me as a test pilot, I'm going to use my GI Bill and go up to Sikorsky and learn to fly helicopters." Head of the test pilots, Melvin Gough, and Herbert H. Hoover, Chief Test Pilot, said "Aw, come on, we'll hire you as a test pilot and teach you to fly helicopters here at Langley."

He entered on duty at the NACA Langley Memorial Aeronautical Laboratory in December of 1947. His flying career, with the Navy, NACA and NASA (National Aeronautics and Space Administration), covered 36 years (1943-1979) and he was a private pilot for 56 years (1939-1995) during a time of the most dramatic advances in aircraft research. The career he loved was full of highly technical research exploration with airplanes, rockets, and simulators for flight on this Earth and for the exploration of space. His early research activities covered some of the most exciting years of aircraft/rocket development. This included testing the most exotic supersonic aircraft, the Bell XS-1 (NACA tail #6063), the Douglas D-558 I, and D-558 II above the California desert at the NACA Muroc High Speed Unit. To get the complete story of these air/rocket craft, read Dr. Richard Hallion's historical document "Supersonic Flight: The Story of the Bell XS-1 and Douglas D-558-1 and D-559-II." Other documents by Dr. Hallion covering these flights include: "Test Pilots" and "On the Frontier – Flight Research at Dryden 1946 – 1981."

After receiving his discharge from the Navy, Bob remained with the Naval Reserve and served

for 22 years. He found a room in a home in Hampton, Virginia, and started working at NACA in December of 1947. Langley had many airplanes and helicopters and Bob was just thrilled and itching to get his hands on the controls. Shortly after being hired, Herb Hoover, his boss, best friend and mentor, gave him a manual and told him to take it home; they were flying the B-29 in the morning. This was the way a lot of his training went, read the manual and then go out flying. He thought he had just the best job in the world and did not realize that his salary was only peanuts – about \$50 a week.

In the pilot's office at Langley, everyone knew about the super-secret, hush-hush project that was going on in the California desert at the same time. Captain "Chuck" Yeager had broken the sound barrier in the Air Corps XS-1 #6062 on October 14, 1947 and NACA's Herb Hoover, the second man, broke the sound barrier on March 10, 1948 in the NACA XS-1 #6063. Howard Lilley from the NACA Cleveland Laboratory and Hoover continued with the NACA research program and on March 31, 1948, Lilly exceeded Mach 1 on his third XS-1 flight. In May 1948, he was killed on his 19th flight of the Douglas D-558-1 #2, which crashed after takeoff due to compressor disintegration.

Hoover needed another pilot at Muroc and quietly approached Bob about going out there to replace Lilly. At the time, Bob didn't know other pilots had been approached and had turned the assignment down for various reasons, he was just thrilled to be asked and quickly said yes but, with two conditions: (1) let him check out in all the planes Langley had and (2) that he would return to his job at Langley when he thought his assignment was completed.

He had a ball flying everything Langley had in their hangar and being under the wing of Herbert Hoover, who, behind closed doors, gave him critical instruction on the flying qualities of the XS-1 #2 and on NACA's aerodynamic research program. When Herb decided Bob was ready, Bob left Langley in October 1948 driving his old Ford out to California. Hoover returned to Muroc to train him and on November 1, 1948, he turned the XS-1 (the S for supersonic was dropped and it became just X-1) over to Bob. He made his first flight on November 23, 1948 for pilot familiarization, checking handling qualities and pressure distribution.

On December 2, 1948, Bob became the sixth man and third civilian to break the mysterious sound barrier in the X-1. He exceeded Mach 1 on NACA flight 23 checking handling qualities and pressure distribution on the XS-1, after having been dropped from the B-29 mother ship, high above the Rogers Dry Lake in California. On August 4, 1949, NACA flight 32, he again exceeded Mach 1 performing rolls, pull-ups, sideslips and check of stabilizer effectiveness. This was his 13th and last flight in the XS-1. He flew the first NACA research flights of the D-558-I #3 (Skystreak) beginning on April 22, 1949, and the first NACA research flights of the D-558-II #2 (Skyrocket) beginning on May 24, 1949, initiating the supersonic research program for these aircraft on June 1, 1949. The NACA D-558-II Skyrocket was delivered to NACA as a brand new airplane that had never been flown; Bob had the privilege of making the first flight. It had a Westinghouse J-34 engine that did not have much thrust and was not supersonic. Years later after Bob had returned to Langley, a rocket engine was installed and they dropped it from a Navy B-29.

Eventually Scott Crossfield (who was hired by NACA to take Bob's place when he returned to

Langley) took it to Mach 2 in November 1953 and now it is on prominent display hanging in the National Air and Space Museum in Washington, D.C., above the escalator. But on Bob's first flight in the Skyrocket, which featured 35-degree swept-back wings and a 49-degree swept-back tail in addition to being seven feet longer than the D-558-I Skystreak, he believed it might be his last.

“Expanding the Envelope: Flight Research at NACA and NASA” by Michael Gorn states: “Robert Champine...thought his first landing might be his last. He experienced ‘a terrible Dutch roll’ in which the aircraft swung 15- to 20-degrees in two-second intervals. Using the ailerons at the end of each oscillation seemed to worsen the problem, so he ‘punched it back a couple of times with the ailerons’ while the plane rocked back and forth. This cured the malady.

“I briefed every guy who flew after me and said, ‘You're not going to crash. You'll control it...in the end...right before landing. But you'll have serious doubts until that point.’ We got used to it, but it was never very comfortable.

“The Skyrocket also offered ample opportunity to evaluate the handling qualities of swept-wing vehicles flying at high speed. The big surprise occurred at high altitudes and at high angles of attack. As shock waves traveled over the wings, the tips stalled before the roots. When this phenomenon happened aft of the center of gravity, the aircraft pitched up. Before the High Speed Flight Research Center at Muroc undertook a series of experiments with wing ‘fences,’ slats and chord extensions, pilots like Robert Champine faced sudden, catastrophic encounters over Rogers Lake Bed.”

“Supersonic Flight,” by Dr. Richard Hallion stated, “By early August 1949, NACA had completed a total of six flights in the D-558-II and Champine had reached Mach 0.87 in a dive, the fastest flight yet. During the plane's seventh flight on August 8, 1949, Champine banked into a 4g turn at Mach 0.6. Suddenly – and without warning –, the nose of the plane pitched upwards violently, attaining a positive acceleration of 6g. Shaken, Champine applied full down elevator and the Skyrocket responded rapidly. Not taking any chances however, the NACA pilot landed immediately. Though model tests had indicated that swept-wing airplanes might experience longitudinal instability resulting in a ‘pitch up’ phenomenon, this seventh NACA flight provided aerodynamicists with the first indications of the severity and seriousness of the problem, particularly those that had their horizontal tail located high on the vertical fin.

“Bob said he thought he was going to be fired over this unexpected violent pitch-up when his Muroc boss told him he should have been a good enough test pilot to not get into this situation.

“Champine’s flight gave NACA aerodynamicists the first opportunity to study data taken during an actual pitch up excursion, as well as a new appreciation of the seriousness of the problem. For example, during takeoff and landing, pitch-up might stall a swept-wing airplane and plunge it into the ground before a pilot had a chance to recover. At high speeds, the danger of pitch-up might restrict the maneuvering performance of swept-wing jet fighters.”

Bob flew the XS-1 on 13 flights during the two years he was at Muroc. In addition, there were eight flights with the D-558-I and 12 flights with the D-558-II. There was a great deal of time

between flights, which could last only a few minutes each and, to keep proficient in flying many aircraft, he continued with his Naval Reserve activities at the Alameda Naval Air Station. Since the supersonic flight research program he was involved with at Muroc was highly classified, no one knew him by any name other than Ensign Champine. In order to keep up this farce, he would take the NACA C-47 (normally flown with a 2-or 3-man crew) and fly it over to the Naval Base, park it a great distance away from the hangar, then walk down the flight line and show up as Ensign Champine reporting for duty. No one was aware of his real activities as he lived it up flying every plane the Naval Reserve had available.

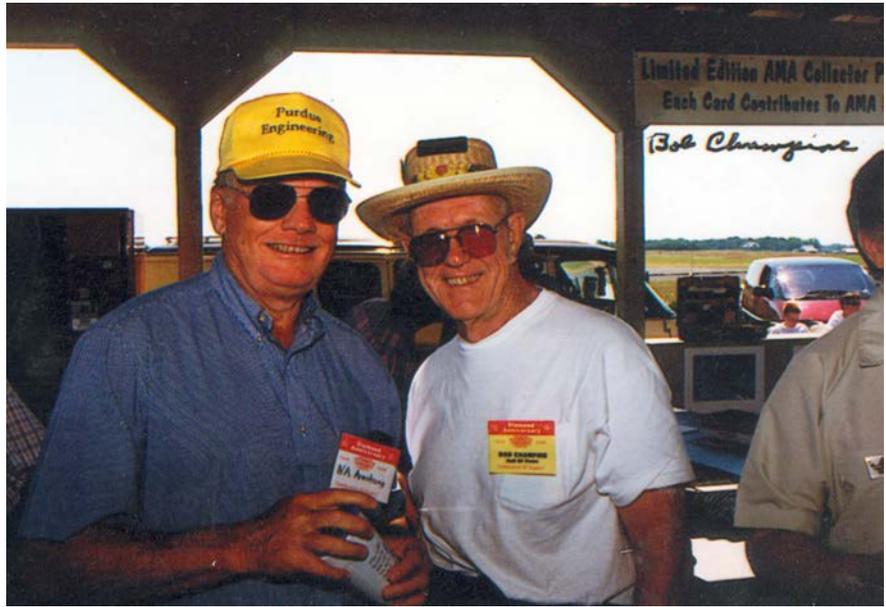
Life out in the desert of California was not the glamorous place you might have read about in books or seen in the movies and, because of the secrecy of the flight research, there were not many activities the pilots and other members assigned to the Muroc staff could engage in. Bob's test pilot boss, Herb Hoover, asked if there was anything he would like brought from home at Langley in Hampton, Virginia, during one of the back and forth flights of the Langley C-47. Frequently traveling from Langley to Muroc and return to Langley, if there was space available, personal belongings of the staff could be added to the cargo. Bob said, "Oh, yes, I would love to have some of my model airplanes out here if there was room to carry some of them." Hoover said, "OK, I'll see what I can do."

He returned to Langley and mentioned to John Worth – an expert modeler himself – that Bob sure missed having model airplanes to build and fly during off times when his experimental aircraft were under modification for the next research flights. John said, "Hmmm." The next time the Langley C-47 had space on its return to Muroc, Bob was called over to the flight line after it had landed. John Worth had carefully hung about 50 models from every conceivable notch within the fuselage of the C-47 and, with his careful packaging; they all arrived in perfect condition. Bob could not believe his eyes when he looked inside the aircraft. Little planes and big planes were hanging everywhere. Talk about a "Kodak moment" – his expression was sure one that was missed.

Outside of model airplane building and flying, there was little for Bob to do in his off-duty hours, so one evening he decided to visit a local hangout and while there he tried to catch the eye of one of the young beauties, when she looked over at him and said, "Go home, country boy" – little did she know that this good-looking serious young man was no "country boy."

In 1950, after two years in the supersonic flight research program, flying the hottest planes in the world, Bob returned to resume his career at Langley. His reason – boredom – Langley had about 40 to 50 planes in active flight research while at Muroc the research flights were sparse with a great deal of time between flights due to modifications to the research aircraft and necessary data reduction and analysis. Flights in the Naval Reserve aircraft kept him current and when Langley beckoned, he returned. At that time, the Flight Research Division at Langley was heavily involved in the study of flying qualities of airplanes. Arrangements had been made with the Air Force and Navy to send the third airplane off the production line (later the fifth) of each new design to Langley for studies to improve its performance, stability, and handling qualities.

Champine flew many of these airplanes to perform specified maneuvers and to discuss his options with the flight engineers for correlation with the characteristics measured in flight by recording instruments. A typical example of such tests is those made on the Vought F8U-1 Crusader. This new supersonic fighter had experienced crashes due to flaws in the design of a variable incidence wing and due to instability under high g conditions caused by



July 1996: Bob (right) with Neil Armstrong at the AMA's Gathering of Eagles.

interaction between fuselage bending and control linkages. The NACA tests discovered the causes of both problems and led to solutions allowing the airplane to be flown safely.

Don Mallick, another NACA/NASA test pilot recently recalled a situation concerning the F8U Crusader. Langley had an instrumented F8U flying test around 1957-1958 and Bob was the project pilot. The Navy also had the F8Us flying in fleet service and they had a big problem. They had pulled the wing off at least one airplane and had lost the Navy pilot. At the time, the Navy did not have an instrumented F8U at Pax River and they asked NACA to fly some high g turn test maneuvers. NACA had installed a camera on one side of the airplane, pointed at the joint of the wing and fuselage. Bob had flown some test flights with 4g turns and the camera showed about a 1/2-inch separation between the wing and fuselage. There was a lot of pressure on NACA to provide quick information to the Navy and Don's boss decided it would be good experience for him to sit in and listen to the review of the flight data gathered and the plans for future test flights since he was the "new kid on the block" in the pilot's office.

A discussion went on about installing another camera on the opposite side of the fuselage and wing. The project engineer was pressing to fly again without the second camera to gather more data quickly. There seemed to be different opinions concerning the importance of the second camera. At that time, the "new kid on the block" announced in a definite and strong voice, "I would not fly that aircraft without the second camera!" All eyes in the room turned to him with a "Who is this guy?" look. However, once he made the input, there was a short discussion and the decision was made to install the second camera – which took about a day and a half – before the next flight.

After Bob made the next test flight and the camera data was reviewed, the 4g turns still resulted in the 1/2-inch deflection on one side, but there was almost two-inches of deflection on the other side (side of the second camera), which indicated a high twisting load that no one, including the

manufacturer nor the Navy, had anticipated. A limit of 4gs was placed on the aircraft and a modification was made to all of the F8Us. That modification was to install an additional wing down lock on the side that moved two inches. Originally, there was only one lock down and that was on the side of the wing actuator. (What a story, thanks Don.)

Later, Champine became heavily involved with man's venture into the unknown hazards of space flight, the development of helicopter handling qualities and capabilities and extensive research into V/TOL aircraft (including the XC-142A, another fascinating story).

During the mid-to-late 1950s, NACA seriously began the quest for flight into space and Bob traveled to the Naval Air Development Center's Johnsville, Pennsylvania, centrifuge in order to determine pilot tolerance to unknown g forces and for performance studies of orbital re-entry acceleration. He "flew" many flights in the centrifuge's gondola strapped into his own form-fitting couch. Each of the NASA astronauts later had their own form-fitting couches. Earlier, Langley scientist Max Faget decided there should be some type of force-absorbing seat so the astronauts would not be injured by the g forces they would be exposed to with the thrust of the rockets taking them into orbit and back through earth reentry. Max got a large roll of brown wrapping paper and rolled it out on the floor and had Bob lie down on it. He then got down on his hands and knees and, using a pencil, drew the outline of Bob's body onto the brown paper. Later Bob was asked to strip to his skivvies and to put on his helmet. He then was asked to lie in what looked like a sand box in a comfortable seated position. This "sand" included particles of a type of silicon, which was heated to form a mold of his body. Bob stepped out of the sand box blistered from stem to stern, but the body mold for the initial form-fitting couch to be used to fly into space had been made.

Bob, using his newly made couch, flew in the centrifuge gondola, faster and faster, by degrees, up to 18 Gs. Each day he had to call back to NACA Langley to get permission (from Mother Gough) to go a little faster. During one of the research tests in the centrifuge gondola, it all of a sudden went "ape" – totally out of control. The gondola was turning in all directions with Bob in it. It took some doing to get it back under control and to stop the gondola from turning on all axes. Quickly, everyone started looking into what might have caused this problem. After a lot of head scratching and testing of the various systems, it was determined that a janitor had plugged the cord of his vacuum to clean the carpets into a wall socket in an area nearby, which, in turn, had caused interference with the controls of the centrifuge. There was a swift change in procedures and no vacuuming was allowed during the centrifuge tests.

After Bob had reached the level of 18 g's in the centrifuge, he was called away to participate in a conference for the early development stages of the X-15 experimental aircraft research program. During Bob's absence, Naval Lt. Carter Collins rode the centrifuge gondola using Bob's couch. Since he was a slightly smaller man than Bob's six-foot frame, the couch was filled with foam rubber to make it more form fitting to Carter's own body shape. He was able to reach 20 g's using Bob's couch. Bob missed his claim to fame.

On October 1, 1958, President Dwight D. Eisenhower directed that the NACA be changed to the NASA to more clearly define its space-oriented thrust and the space program emerged. NASA's Langley Space Task Group believed that the most important prerequisite for astronaut status was

to be a test pilot. Bob and Langley engineer, Charles Donlan, played important roles in the astronaut screening and selection process. The seven criteria developed for final selection were as follows:

1. Less than 40-years-old
2. Less than five-foot, 11-inches tall
3. Excellent physical condition
4. Bachelor's degree in engineering or equivalent
5. Test pilot school graduate
6. Minimum of 1,500 hours flying time
7. Qualified jet pilot

The process of choosing the first astronauts was rigorous and elaborate. Bob, at 37, in excellent physical condition, aeronautical engineering degree, 5,680 hours flying time, certainly qualified as a jet pilot, plus his X-1 and D-558 test flight experience was too tall. At 6-foot, he would not fit into the small Mercury capsule. Bob is classified as a NASA Test Pilot-Astronaut and through his continuing research activities contributed to paving the way for the Mercury, Gemini, and Apollo astronauts into space flight and for the others that were to follow. The original seven astronauts selected for the space program Bob trained with at Langley were Virgil "Gus" Grissom, Scott Carpenter, Donald "Deke" Slayton, Gordon Cooper, Alan Shepherd, Walter Shirra, and John Glenn.

Early in the 1960s, Bob performed many flights with the Rendezvous Docking Simulator suspended high above the hangar floor at Langley to perfect the docking and rendezvous maneuvers of spacecraft that we see being performed flawlessly by today's astronauts. Training in the Rendezvous Docking Simulator improved significantly the chances of mission success by giving astronauts the opportunity to pilot dynamically controlled scale-model vehicles in a safe and controlled three-dimensional environment, very similar to the conditions of space.

One of the concepts studied in the early 1960s to return spacecraft to earth was the Rogallo Wing, better known as the Parasev (Paraglider Rescue Vehicle) which was a delta-wing design patented by Francis Rogallo, a NASA engineer, and his wife Gertrude. They used to fly various designs of kites near their home in Hampton, Virginia, until they came up with the final design.

The Parasev was used to gain in-flight experience and was an open framework fabricated of welded steel tubing into a space frame resembling a tricycle on three wheels with a rudimentary tripod mast and perched on top of the mast was a Rogallo-type parawing. Bob flew the unpowered Parasev 1-A and sat on the open frame strapped in the seat with no enclosure. He controlled the descent rate by tilting the wing from side to side with a control stick that came from overhead.

Before testing the Parasev 1-A, Bob was sent to California to learn to fly conventional gliders. Most of his training was in the mountains of Tehachapi at the Holiday Soaring School flying Schweizer gliders. His first flight in the NASA Parasev was November 7, 1962, at Edwards AFB, California, and he was first towed by auto for taxi run, nose wheel lift off and some free flight. Later he was towed by aircraft. His first airborne flight was on November 15 and he was towed to 2,000 feet by Fred Harris flying a Stearman before being cut loose. On later flights, he was towed

to 4,500 feet and turned loose to free fly un-powered back to the runway. Bob had a total of 15 flights in the Parasev 1-A, and he, along with other Parasev pilots, decided it was too physically demanding to expect the astronauts to be able to return to earth in this manner after having been in a weightless state for a period of time. (For many years after, each time he would meet Francis Rogallo, Frank would say, "Remember, Bob, I flew it before you did.")

Bob retired from NASA Langley in January 1979 having spent many years during the mid-1960s working with the space program to develop the concepts of space flight, flight simulation and the vehicles to achieve a successful lunar landing, which included making the first flights at Langley's Lunar Landing Research Facility (LLRF) simulating landing on the moon's surface. He dangled 250 feet above the ground and flew the experimental Lunar Excursion Module (LEM) simulator to help prepare the astronauts for the final 150 feet of their lunar landing mission by simulating the lunar gravity environment with a full-scale LEM vehicle using an overhead partial-suspension system that provided a lifting force by means of cables acting through the LEM's center of gravity, flying it down to the surface which was modeled with fill dirt to resemble the landscape of the moon.

Before beginning his flights, he said he was not comfortable with the set up until he could go to the top of the gantry and walk around to get a feel for the research facility before starting the flights (he always has to kick the tires first). Once he had investigated every nook and cranny of the LLRF, he began his flight experiments. As with all space missions, the successful completion of Apollo 11, and those missions following the landing of the first two men on the moon depended heavily on the development of and continual flight testing of exotic equipment like Langley's Rendezvous Docking Simulator and the Lunar Landing Research Facility, which later were used for training the astronauts for their successful missions.

Even after retirement, he was asked, as a favor, to return to Langley to "fly" the shuttle simulator to furnish Langley scientists' data in preparing for the launch of the space shuttle. He flew it smoothly and flawlessly. A local television reporter was there and filmed this simulation flight. Bob was so at ease he was smoking his pipe during all of the filming without giving it a thought. We looked forward to his 15-minutes of fame on the 6 p.m. TV news and were anxiously watching at home when they showed his segment. There was this excellent pilot effortlessly flying the space shuttle controls, then the camera went to his face and centered on his pipe. Bob was making small smoke rings and the camera panned upward following the smoke rings. It was quite effective, but we knew the Langley director, if he was watching, had a white-knuckle grip on his easy chair.

This is just a small snapshot in the career of this quiet and modest man who continued his last research flights on the VALT (V/TOL Approach and Landing Technique) Program with the CH-47C Chinook helicopter right up to the time he needed to check out on his day of retirement.

For his distinguished contributions to national aviation progress, Bob was elected to the Virginia Aviation Hall of Fame in 1979. Bob was selected to receive the National Aeronautic Association (NAA's) Elder Statesman of Aviation Award for 2001.

Citation: Pioneer NACA pilot of the Nation's supersonic flight research program. Flight-tested

the Bell XS-1 taking it to Mach 1, and then initiated the next program phase with the Douglas D-558-I and D-558-II aircraft.

Modeling Overview

Began flying model aircraft competitively as a young boy.

Model activity consumed his spare time throughout his youth, through college and he built an aircraft carrier model to launch his model planes from as an Ensign in the Navy. He continued his hobby during his career with NACA/NASA and into retirement where he enjoyed loading his Dodge Van with models and equipment, towing a 28-foot trailer to compete in model competition throughout the United States and Canada. Even on a recent trip to the Hawaiian Islands, he had to visit all the model airplane-flying sites. Even at age 79, he was in Johnson City, Tennessee, at the University of Tennessee mini dome flying indoor models and having a wonderful time.

In 1996 Bob was elected to the Model Aviation Hall of Fame for his over 50 years of contributions to model aviation, as a contestant, contest director, and hobbyist. He is an expert in Free Flight, power and glider flying.

The following was published in the August 1994 issue of Model Aviation Magazine. Robert was inducted into the 1993 Model Aviation Hall of Fame.

Robert A. Champine has been a competitor, designer, experimenter, leader, and a great example for his contemporaries and newcomers.

With a competitive record going back to 1935, including placing fifth place in Free Flight Gas at the 1939 Detroit Nationals, Bob is also a Level V League of Silent Flight (LSF) member. Sailplane enthusiasts know that is a high accomplishment.

Bob served as FAI Team Manager at the 1955 World Championships and competed in Wakefield, placing fourth. In 1962, he won first place in Indoor Cabin, Stout, and Mulvihill at the Chicago Nats.

Other wins and achievements are well documented in AMA National Records listings, and they include a Radio Control soaring endurance record of nine hours, 53 minutes, and 10 seconds, set in 1984, plus a slope endurance record established during his LSF Level V quest.

As a youthful model enthusiast, it seemed natural for Bob to pursue a career as an engineer in aeronautical design. He has produced many Free Flight and Radio Control designs; in fact, his flying wing was the first aircraft to fly at the 1992 Grand Opening of the AMA Muncie Facility. Bob built five wing models for the Selig, Donovan, and Frazer Princeton research project that led to the publication of the most comprehensive paper on low-speed aerodynamics ever printed.

Growing up in Minnesota, Bob helped found the Minneapolis Model Club in 1937, acting as vice president and secretary/treasurer. After World War II service, during which he flew the *F4U Corsair*, he relocated to southeastern Virginia to work for NASA and became a member of the renowned Brainbusters at the Langley establishment.

As a club officer in several capacities, he always encouraged newcomers to the sport – especially the younger set. He promotes AMA membership and activities constantly and presently serves as an Associate Vice President in District IV.

On the international scene, Bob represented the US at the FAI meetings of the CIAM in Paris, France during the 1960s. He proposed several rule changes, and two of these still stand: steering Indoor models by a balloon, and establishing Indoor categories by ceiling height. These were responsible for revitalizing Indoor competition.

For more than 50 years, Bob has been directing contests and is still active in that facet of the sport. He has been CD for Team Selection meets for both Indoor and Outdoor Free Flight programs and served as CD at the Lakehurst FAI World Championships in 1974. He has earned fame as a writer with his byline appearing in magazines, newsletters, and other publications all across the country.

An aircraft with his name stenciled on its side resides at the world-famous National Air and Space Museum in the Smithsonian Institution in Washington, DC. Bob is also a director of the Virginia Aviation Museum in Richmond, Virginia.

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AMA History Project
National Model Aviation Museum
5151 E. Memorial Dr.
Muncie IN 47302
(765) 287-1256, ext. 511
historyproject@modelaircraft.org

