hi I'm bill Barry a NASA chief historian

we're here in the NASA headquarters

historical reference collection a place

where we maintain an archive of

docs and reference books

that researchers can use and that we use

to answer all sorts of questions in

addition to NASA records we have records

from the National Advisory Committee for

Aeronautics the NACA we've been pretty

busy here for the last year getting

ready to mark the centennial of the

creation of the NACA but the importance

of the NACA is not just a matter of old
books and dusted records the story of

the NACA is one of incredibly dedicated

people pushing the cutting edge of new

technologies and doing that in new and

creative ways it had such a

revolutionary impact on a world that we

hardly notice it these days but you

might not have guessed this from its

modest beginnings with the passage of

the naval Appropriations Act on March 3

1915 the NACA came into existence its

mission to supervise and direct the

scientific studies of the problems of

flight with a view to their practical
solution and to determine the problems

which should be experimentally attacked

and to discuss their solution in their

application to practical questions

originally the committee was just that

it was a 12 member group appointed from

the military and other parts of the
government and also from academia and

industry experts although it would be

two years before the United States

joined the conflict in 1915 war was

already raging across Europe and on the

oceans and also that it moved into the

air it was just about a dozen years

since the Wright brothers first

00:01:32,349 --> 00:01:36,640
successful flights at Kitty Hawk but

00:01:34,450 --> 00:01:38,710
much to our surprise the United States

00:01:36,640 --> 00:01:41,829
found itself to be far behind Europe and

00:01:38,709 --> 00:01:43,719
Aeronautics how did that happen well

00:01:41,829 --> 00:01:46,420
after the Wrights demonstrated their

00:01:43,719 --> 00:01:47,829
flier in France in 1908 European

00:01:46,420 --> 00:01:50,480
governments and individuals began to

00:01:47,829 --> 00:01:53,849
invest millions in aeronautics research

00:01:50,480 --> 00:01:56,700
by 1912 the French government was

00:01:53,849 --> 00:01:59,250
spending 6.4 million dollars annually on

00:01:56,700 --> 00:02:00,990
aerial research and construction the

00:01:59,250 --> 00:02:03,480
Russian Empire wasn't far behind that

00:02:00,989 --> 00:02:05,099
year with five million dollars in the

00:02:03,480 --> 00:02:08,759
United States government spending on
Aviation in 1912 was only 140 thousand dollars by 1911 every major country in Europe had a government-funded Aeronautics laboratory as a result by the start of World War one Europe was far ahead in aircraft technology and even in the sheer numbers of military airplanes when the war started the French fielded 1,400 military airplanes Germany a thousand Imperial Russia had 800 in Great Britain 400 the United States at the start of the war we had just 23 military aircraft the United States was certainly not against
technology at the time after all by the summer of 1915 Henry Ford had rolled his one millionth car up the assembly line silent films were all the rage but between the Wright brothers patents and a lack of government interest we liked far behind Europe and Aeronautics and wound up having to use European aircraft when we answered the warden at the first meeting of the committee on April 23rd 1915 they selected an executive committee to manage the day-to-day issuesCharles Wolcott Secretary of the
Smithsonian Institution was chosen his chairman of the executive committee and even though the committee members were not paid their meager $5,000 budget did not go very far for the most part and went to pay researches in academia and other government agencies the committee would issue a research authorization on a topic that it thought was of interest and others would do the work executive committee chairman Walcott and a group of others had much greater hopes Wolcott made it his business to push for the construction of NACA research
facilities he was an uphill struggle

101
00:03:43,469 --> 00:03:48,020
President Wilson himself opposed but

102
00:03:46,169 --> 00:03:50,250
Congress voted in favor of adding

103
00:03:48,020 --> 00:03:53,010
$85,000 to the NACA budget for a

104
00:03:50,250 --> 00:03:56,669
laboratory in 1916 and work on it

105
00:03:53,009 --> 00:03:58,169
finally began in 1917 it was named in

106
00:03:56,669 --> 00:04:00,629
honor of Walcott's predecessor as

107
00:03:58,169 --> 00:04:02,939
secretary to the Smithsonian a Langley

108
00:04:00,629 --> 00:04:05,189
Memorial aeronautical laboratory and it

109
00:04:02,939 --> 00:04:07,680
rose slowly near Hampton Virginia until

110
00:04:05,189 --> 00:04:09,030
it was completed in 1920 eventually the

111
00:04:07,680 --> 00:04:10,680
NACA were growing to a total of three

112
00:04:09,030 --> 00:04:13,289
major laboratories in two major test

113
00:04:10,680 --> 00:04:15,300
facilities just before World War two

114
00:04:13,289 --> 00:04:18,209
Ames Research Center was built in
California's Bay Area this was quickly followed by the aircraft engine research laboratory in Cleveland Ohio after the war this has renamed in honor of the late NACA director of research George Lewis the Lewis laboratory it's since been renamed in honor of Ohio native John Glenn after the war the NACA also established a test facility at Wallops Island Virginia and a high-speed flight test research facility and a high desert of California it's now known as the Armstrong Flight Research Center these facilities and the amazing people who
worked at them were responsible for many breakthroughs in aeronautics of space but for the 200 or so people that worked at Langley the first big breakthrough came in the late 1920s using what was then the world's largest wind tunnel and one designed originally to study propellers NACA researchers led by Fred white discovered that wrapping airplane engines and a properly shaped metal cowling not only reduced the drag on the airplane but it actually improved engine cooling now up to that point airplane engines have usually been fully exposed
in the belief that this is the only way
to keep them from overheating
but this finding had huge effects
increasing the speed and range of
aircraft and an extremely small cost to
manufacturers
in 1929 the NACA was a word the first ofive Collier trophies
Collier is an award given every year for
the greatest achievement in Aeronautics
research but it also led to a
significant budget increase for the NACA
which allowed it to build many many more
facilities at Langley the NACA is
probably best known for its many wind
tunnels ones that could simulate various
speeds and altitudes and it ranged in
size from able to accommodate small
models to full-size airplanes but the
NACA used a variety of other facilities
example tow tanks the study amphibious
and float planes the NACA also pioneered
the field of systematic flight research
starting with a couple of borrowed army
jn4 Jenny's NACA technicians developed
the tools and equipment needed to take
precise measurements in the air freeing
the research pilots from having to take
handwritten notes they use this
equipment to study the performance of airfoils and also the structure of airplanes to make sure that they didn't break up under the stresses of flight, which was a common problem in the 1920s. In essence, the very shape of modern aircraft is a result of research done by the committee. The French car on g4 represented the peak of aircraft design in 1950 and it was a plane that was used by all the Allies during World War one. In about two dozen years, airplane design changed dramatically and...
to the shape that we all recognize now a metal tubular body engine is mounted on the front of the wings a single wing and when it's placed low down on the body all of these elements were tested and proven by NACA research in the 1920s and 30s NACA shared this research with the world and did its work in partnership with industry as a result NACA research was embedded into the airplane as we know it it's part of the DNA of airplanes in fact NACA designed wings were not only on US aircraft during World War two but on Allied aircraft
like the British Spitfire and even enemy aircraft like the German for wolf 190 in addition to innovations in aircraft and research the NACA also began to try new things with its staff prior to world war ii in the mid 1930s the NACA hired computers to deal with a huge flow of data coming from all those wind tunnels and flight research tests now these weren't computers like we think of them now they were woman interestingly enough as labor shortages grew during World War two the NACA reached across the racial
barrier and hired an african-american

woman to serve as computers as well well

this was a small step it represented a

major shift with repercussions that

would echo long after World War 2 chainz

a lot of things including the pace of

work done at the NACA and the kind of

work being done as well

virtually every aircraft flown by the

United States in the war was tested and

improved and the wind tells at Langley

names engine performance and reliability

was also raised to new levels by work at

Cleveland at what's now the Glenn

Research Center the cumulative effect of
all this work had a huge impact on the course of World War two and it gave the Allies an important margin in insuring victory in the air after the conclusion of two world wars the jet age had arrived and NACA was the cutting edge of this technology as well with flight test improvements and various developments the NACA established a new type of partnership with the Air Force and Bell Aircraft to build their research craft aimed at achieving supersonic flight in 1947 Air Force pilot Chuck Yeager would be the first person that flies
supersonic and the Bell X-1 this work

won the NACA along with partners the Air Force and Bell their third Collier trophy of 1947 the best of my brightest were tackling these problems and moving forwards towards conquering their hurdles of high-speed flight but other

NACA researchers were turning their minds to the edge of space and beyond even in the late 1940s the NACA would becoming a space agency one of the most critical breakthroughs in this space research was made by Harvey Allen one of the Langley cadre
that had helped set up and Research Center in 1940 Allen was the chief of the high-speed research division at Ames by 1945 and in the summer of 1952 he developed the blunt body concept now it had a lot been assumed that Wrentham spacecraft would be pointed like artillery shells for like Buck Rogers spacecraft from the 1930s but early experiments with designs of this sort proved disastrous and reentry vehicles were unable to survive the intense heat of reentry in another one of those counterintuitive NACA insights Allen
proposed that a blunt body shape would set up a shockwave ahead of itself and therefore keep the heat from reaching the vehicle instead it would be dissipated on the shockwave his 1952 paper and has proved quite controversial but since the military was also interested in this question for building nuclear missile warheads the work was classified and not well known until the late 1950s nonetheless Allen and his team proved his theories in the wind tolls at Ames and in the process to find the shape of all spacecraft that followed
Allen's blood bodywork was not only obvious in the space capsules in 1960s but was also incorporated into the x-15 in various lifting bodies in a space shuttle and today we can see it in the Commercial Crew vehicle designs like the CST-100 Dragon space capsule and also in our future captain force deep space exploration NASA's Orion spacecraft between its creation in 1915 and its recreation as NASA in 1850 - the NACA systematic approach to the problems of flight made fundamental contributions to the worldwide development of aeronautics.
the NACA is in process of great change

as you know the final decisions are

being made by the democratic processes of our chosen form of government that

will result in the establishment of a new agency the National Aeronautics of space agency built around the present NACA with responsibilities for the non-military aspects of space activities the culture that's a National Aeronautics and Space Administration it's built on the tenacity and expertise of NACA research of the transition from that NACA to NASA in 1958 as part of the
drive behind everyone with a passion for space travel in modern flame during the 50s and 60s aeronautics engineers transitioned into space flight directors leaders of the NACA brought us to the moon wind tell us what's used for aircraft test we're now being used to test both rockets and aircraft centers of aviation now built in designed and tested spacecraft in less than 70 years we as a nation in a world had gone from a fledgling motorized flight on a sand dune in North Carolina it's a supersonic flight above California's Mojave Desert
to walking out of a spacecraft onto the

00:12:06,619 --> 00:12:12,019
lunar surface these accomplishments and

00:12:09,528 --> 00:12:13,788
many more where squarely on the

00:12:12,019 --> 00:12:14,928
shoulders of the men and women of the

00:12:13,788 --> 00:12:17,058
National Advisory Committee for

00:12:14,928 --> 00:12:20,178
Aeronautics NASA was founded in October

00:12:17,058 --> 00:12:21,100
1958 but it was born on a 3rd of March

00:12:20,178 --> 00:12:23,500
1915

00:12:21,100 --> 00:12:25,420
this legacy of excellence continues an

00:12:23,500 --> 00:12:27,159
asset were not only re on a journey

00:12:25,419 --> 00:12:29,919
tomorrow's building on the legacy of

00:12:27,159 --> 00:12:31,179
NACA engineers but we continue to push

00:12:29,919 --> 00:12:32,199
the boundaries of performance and

00:12:31,179 --> 00:12:35,169
efficiency in the air

00:12:32,200 --> 00:12:38,560
NASA's with you when you fly but now we
have come to a new day and they say is
to become part of a new agency the
National Aeronautics and Space
Administration but and this is extremely
important both to you and to me as
individuals and to the success of our
mission na sa must be like NACA in the
qualities of strengths and characters
that make an organization great we got a
baby eagle has landed
this is a legacy this is a history well
worth celebrating